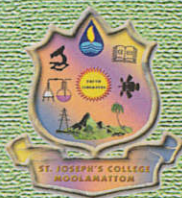




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Josephine Researcher - III



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Editorial

Josephine Researcher-III is the third issue/volume of an innovative initiative from St. Joseph's College, Moolamattom and is a collection of Interdisciplinary Research articles. This resource book provides a deeper insight and greater interest in the minds of students, teachers and researchers in various fields. It can act as a platform for an in-depth analysis of issues, comments and concerns on different scientific, social, ethical and literary events. The ultimate goal of this venture is to rejuvenate the field of higher education and to strengthen the research activities of various stakeholders of our campus.

The Interdisciplinary Research Resource Book, **Josephine Researcher**, which has been assigned International Standard Book Number (ISBN), is committed to provide space for genuine research publications of scientists, social activists, researchers and faculty members belonging to various disciplines. At this juncture, we extend our sincere thanks to our contributors and readers for their whole hearted support.

We are extremely grateful to our manager **Very Rev.Fr. Sebastian Elanjikkal CMI** for his encouragement. We sincerely thank **Rev. Dr. Jose Nedumpara CMI** (our local manager and chairman of the advisory board). We are also thankful to **Dr. Saju M. Sebastian**, our Principal, under whose inspiration and guidance, the **Josephine Researcher-III** comes into existence. We also express our gratitude to **Rev. Fr. Libin Valliyaparambil CMI**, our bursar.

The present issue (third Volume) includes nine research articles from science, four from social science and ten from literature. All the articles in this issue bear clear signs of ingenuity and resourcefulness of the teaching community. We expect that these articles of primary and secondary nature would enable us to have a share in creating a more harmonious world.

Dr. Ebey P. Koshy

Dr. Joshy Varghese

Dr. Jose James

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Supreme Court Verdict on Ayodhya: A Balancing Act to Solve Centuries Old Dispute

Dr. Fr. Jose Nedumpara

On Saturday, 9th November 2019, a five judge bench of the Supreme Court of India put their best foot forward to deliver a unanimous verdict on a religious dispute, running on for more than a century. The judicial resolution by the apex court came after India's politicians proven themselves unequal to the task and all mediation efforts failed. The Supreme Court's much anticipated ruling on the disputed site in Ayodhya has been hailed as balanced and practical one.

The Constitution Bench of the Supreme Court permitted the construction of a temple at the site where the Babri Masjid once stood and asked the government to allot a "prominent and suitable" five acre plot of land for Muslims to construct a mosque in Ayodhya.

The Bench directed that the Sunni Central Waqf Board should be given a five acre plot, either by the Central Government from within its acquired area, or by the Uttar Pradesh Government "at a suitable, prominent place in Ayodhya". The Board would be at liberty to construct a Mosque there. This should be done simultaneously with the transfer of the property to the proposed Trust.

In a unanimous judgment a five member bench headed by Chief Justices of India Ranjan Gogoi and Justices Sarad Arvind Bobde, D Y Chandrachud, Ashok Bhushan, and S Abdul Nasser asked the Central Government, which had acquired the entire 67.73 acres of land including the 2.77 acres of the disputed Ramjanmabhoomi- Babri Masjid Premises in 1993, to formulate a scheme within three months and setup a Trust to manage the Property and construct the temple. For the time being, the possession of the disputed property would continue to vest with the central government until a notification is issued investing the property in the Trust.

The apex court overruled the Allahabad High Court's partition of the disputed property among the three major litigants as legally untenable. The Allahabad High Court had proposed a three way bifurcation of the disputed premises among the Sri. Bhgawan Ram Lalla, Nirmohi Akhara and the Sunni Central Waqf Board. The court said that it did not secure a lasting scene of peace and tranquility.¹

The bench concluded that Sunni Central Waqf Board was unable to prove its claim of exclusive title and continuous possession of the disputed site. "The Muslims have offered no evidence to indicate that they were in exclusive possession of the inner structure prior to 1857 since the date of the construction in the sixteenth century"²

On the other hand, the court held there was both oral and documentary evidence to support the Hindus faith that the JanmaAsthana was located where Babri Masjid was constructed. It was beyond the ken of the court to probe whether this belief was justified. Judges cannot indulge in theology, but restrict themselves to evidence and balance of probabilities.

The court said there was proof of exclusive worship offered by the Hindus, especially in the outer courtyard where Ram Chabutra and Sita Rasoi are located even before the annexation of the Oudh by the British in 1857.³ The Hindus possession of the outer courtyard has been established.

The supreme Court accepted the findings of the Archaeological Survey of India (ASI) that the Mosque was not constructed on the vacant land. The ASI had found the remains of a large pre-existing structure underneath the Babri Mosque which was "non -islamic" in nature.⁴

The ASI had found the artefacts collected from the dig and the pillars of the mosque were of a non-Islamic origin. The ASI had also maintained a studied silence on the issue whether Ram temple was demolished to construct a Mosque. Instead they said that the pre-existing structure was used to build the Mosque.

The Supreme Court Bench also refrained from arriving at a conclusion on the issue whether the pre-existing structure (temple) was demolished to construct the Mosque.

Many have argued that the order of the court has privileged belief over evidence. In a century long dispute, evidence cannot mean title deeds and property papers. It is found to be based on assessment of accounts of the use of property.

The court said title cannot be established on the basis of faith and belief. Faith and belief are indicators towards patterns

of worship at the site on the basis of which claims of possession are asserted. In deciding claims of possession the court evaluated a variety of evidence, including religious texts, Travelogues, oral evidence and particularly the controversial and disputed findings of the Archeological Survey of India.

Major Findings Of the Court

1. Faith and belief of Hindus since prior to construction of mosque and subsequent thereto has always been that Janmastan of Lord Ram is the place where Babri Mosque has been constructed which faith and belief is proved by documentary and oral evidence (from the addendum written by one of the five Judges).
2. On the balance of probabilities, this is a clear evidence to indicate that the worship by the Hindus in the outer courtyard continued unimpeded in spite of the setting up of a grill-brick wall in 1857. Their possession of the outer courtyard stands established together with the incidents attaching to their control over it.
3. The destruction of the Mosque took place in breach of the order of statusquo and an assurance given to this court. The destruction of the Mosque and the obliteration of the Islamic structure was an egregious violation of the rule of law. The Judges declared that the demolition of the 16th century Babri Masjid on December 6th, 1992 was "an egregious violation of the rule of Law" and a calculated act of destroying a place of public worship."⁵ The Muslims have been wrongly deprived of a Mosque which has been constructed well over 450 years ago.
4. The disputed site was government land in the revenue records. The fact that there lay a temple beneath the destroyed structure has been established by the Archaeological Survey of India and the underlying structure was not an Islamic structure.
5. The court concluded that the Muslims were ousted from the 1500 square yards of the Mosque through acts of damage during communal riots in 1934, desecration in the intervening night of December 22-23 of 1949 when idols were placed inside the Mosque and finally the demolition of the Mosque in 1992.
6. The Bench shut the door for fresh litigation to alter the statusquo of sites such as those in Kashi and Mathura which have also seen discord over worship. Driving home this message in its 1045-page Judgment the Bench placed solid emphasis on the mandate of the places of worship (special provisions) Act which came into force on July 11, 1991. Interestingly the 1991 Act kept the Ram Janmabhoomi – Babri Masjid dispute outside its ambit.

Much of the voluminous judgment revolves around evaluation the faith and belief of Hindus in and reverence for a disputed site. One of the Judges felt it necessary in an addendum to the judgment, to provide further evidence of the belief of Hindus in the disputed site as the birth place of Rama.

Addendum for Birthplace Proof of Lord Ram

The addendum prepared by one of the Judges of Supreme court Bench concluded that "the faith and belief of Hindus prior to construction of the mosque and after has always been that 'Janmasthan of Lord Ram' is the place where Babri Mosque has been constructed."⁶ Ain-i-Akbari", a 16th century document which deals with the administration of Mughal Emperor Akbar, mentions the time of birth of Lord Rama in the Treta Yuga in the city of Ayodhya, the Supreme Court Judge said.⁷

Similarly, the Bala Kanda of GosvamiThulasidasa not only refers to the birth of Lord Ram but points out to a place where he will take human form which is clearly depicted in the words "*Tinhakegraha*" (in their house of Dasaratha and Kausalya).⁸

The 116 page addendum confirms the belief that Lord Ram was born exactly at the spot under the central dome of the Babri Masjid in Ayodhya. The addendum says the faith of the Hindus about the exact birthplace of Lord Ram is based on documents, scriptures and books, including Valmiki Ramayana and SkandaPurana. There is no harm in trusting these works. Such faith is not groundless.⁹

Balance of Probabilities

The case has been decided on the balance of probabilities that Hindus have proved a better title than Muslims. Senior advocate C.S. Vaidhyanathan pointed out that travelogues of foreigners like the missionary, Joseph Tiefenthaler and others like William Finch, Montgomery Martin and so on talk about the history of Ram and ruins of a temple in Ayodhya.¹⁰ It shows that the belief of the people about the holiness of the place remained undisturbed despite various invasions and happenings.

The Supreme Court rejected a demand by Hindu parties to legally recognize devotees belief that Rama Janmabhumi is a distinct legal personality. Senior advocate Parasaran, counsel for Hindu parties advanced the proposition that Ram Janmastan (birthplace) itself constituted a juristic person as from time immemorial. Devotees thronging Ayodhya not only worshipped Ram Lalla (idol) but also revered and worshipped the birthplace as a sacred place. But the Bench did not accept this argument.¹¹

A close reading of the 1075- page judgment reveals that an exclusive right to the entire property has not been declared in favour of the Hindus, even though they have been awarded exclusive possession. The rationale for awarding the whole land to the Hindu parties, seems to be that the deity had an "exclusive right" over the outer courtyard, given the long history of worship and Hindu festivals held there, and "contested right" in the inner courtyard.

On the other hand the court held that the Muslims failed to prove an exclusive right even in the inner courtyard where the Mosque was located and that there were frequent complaints of interference by Hindus, and instances of contestation and disputes. At the same time, the judgment holds that there is no evidence to establish that Muslims abandoned the mosque or ceased to perform namaz in spite of the " contestation" over their possession of the inner courtyard after 1858.¹¹

Nowhere in the verdict is there a finding that Hindus had exclusive right of worship or possession on the entire premises. What tipped the scales in favour of the Hindu parties seems to be the prevalence of worship by Hindu pilgrims from a much earlier era, whereas, the offering of namaz has been established only from around 1856-57.

Instances given by the court indicates that there were attempts by the Hindus to set up idols and perform pooja within the inner courtyard. With Hindus constantly trying to worship inside the precincts of the mosque, the British administration set up a railing in 1857 to bring about peace. The existence of an Islamic structure at a place considered sacrosanct by the Hindus did not stop them from continuing their worship at the disputed site and within the precincts of the structure prior to the incidents of 1856-57, observed the court.

A platform, Ramachabutra, was set up within 100 feet of the inner dome. It must be seen as an expression or assertion of the Hindu right to worship at the birthplace of Lord Ram", the court said.¹² Even after the railing was put up, they stood on the divide between the inner and outer courtyards to pay obeisance to the *garb-griha* (sanctum sanctorum)¹³

In 1934 the domes of the Mosque were damaged in a riot and the British administration renovated them at its own expense. By repeatedly challenging the Muslim mode of worship, Hindus managed to come across as those with unimpeded possession in the outer courtyard and with a partial stake in the inner courtyard too.

Senior advocate Rajeev Dhawan for the Sunni Waqf Board argued that the idols were placed surreptitiously by the Hindus in the intervening night of December 22-23, 1949. Advocate Meenakshi Arora, also for the Sunni Board argued that the findings of the archaeological excavations did not show one structure but several constructions spread over different areas. It is not that of a single massive structure as claimed by Hindus.

Senior advocate Sushil Kumar Jain for the Nirmohi Akhara submitted that Muslims had stopped offering regular prayers at the Babri Mosque in 1937 when there was riot. The Akhara argued that the mosque literally ceased to be one since 1937.

Courts not to Correct Historical Wrongs

The Supreme Court ruled that courts could not correct historical wrongs and rejected Hindu parties pleas to correct the action of Mughal emperors of demolishing several temples, including the Ayodhya temple for construction of mosques. A mistake of the past sovereign regimes could be corrected by the courts only if the present sovereign recognized and accepted the action of the past sovereign. Absent from such recognition, the change of sovereignty is an act of state and this court cannot compel a subsequent sovereign to recognize and remedy historical wrongs.¹⁵

The Supreme Court's final judgment in the Babri Masjid- Ram Janmabhoomi dispute has cleared the way for the construction of a Ram temple in Ayodhya. The positive aspect of the verdict is that most political parties and groups have publicly accepted it. It should not allow the judgment to be perceived as an endorsement of any challenge to the rule of law in the name of faith.

In allowing a temple comes up through a government appointed Trust at the disputed site in Ayodhya, the Supreme Court has apparently chosen a path most conducive for social harmony. What is most welcome about the 1045 page verdict of a Bench

of five Judges is its unanimity. It sends out a message that the judiciary has, with a single mind, ventured to give legal burial to a prolonged dispute that began as a minor litigation, expanded into a divisive political cause and become a festering wound on the body - politic for years. The fact that the case is over at last must come a great relief to all peace-loving people.

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Transport and Morphological Behaviors of SBR-PMMA Interpenetrating Polymer Networks

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Abstract

A series of interpenetrating polymer networks (IPNs) of styrene butadiene rubber (SBR) and poly(methyl methacrylate) (PMMA) have been synthesized by adopting the sequential interpenetration and in-situ polymerization method. The morphologies of the IPNs were analyzed with scanning electron microscopy (SEM). It is found that more interpenetration occurs as PMMA content in IPN enhances and there is a reduction in free volume of the corresponding IPN. Also the morphology changes from dispersed island pattern to a co-continuous one. Besides, the transport parameters and morphological behavior of IPNs were studied in detail. The specific physics involved in the characterization protocol is effectively utilized to explore the chemistry of IPN formation.

Key words: Interpenetrating networks, transport behaviour; microscopic techniques; morphology.

1. Introduction

Multi-component polymeric materials enable a new fabrication method to associate the properties of different polymers into one tailor-made material.¹ The synthesis of an interpenetrating polymeric network (IPN) provides a promising path in this direction. IPNs are a combination of incompatible polymer networks in which at least one of the polymer is synthesized and / or cross-linked in the presence of the other.² Conventional blending is usually accompanied by phase separation. This is in addition to their potentially wide ranging applications on account of the possibility to adjust the sorption and mechanical properties.

Amorphous materials like rubber and plastic are characterized by a rich concentration of free volume defects, which are the unoccupied regions available for segmental motion within the polymer material. The detailed analysis of transport parameters of the polymer networks has been made and is the highlight and novelty of the present work. The motivation behind the adoption of this particular protocol of characterization is that the IPNs can act as platforms for designing cost-effective toughened plastic with controlled morphology and properties.

2. Experimental details

2.1. Materials and methods

Styrene butadiene rubber (SBR) used for this study was supplied by Indian Synthetic Rubber Limited (ISRL) and methyl methacrylate (MMA), dicumyl peroxide (DCP), divinyl benzene (DVB) and benzoyl peroxide (BPO) of 99% purity were purchased from Sigma-Aldrich. Toluene, used as the solvent for transport studies, was purchased from Merck, India Ltd.

2.2. Preparation of IPNs

SBR was masticated with DCP (1/2/3 per hundred gram rubber (phr)) in a two-roll mixing mill at room temperature as per ASTM standards. The curing behavior of SBR compounds were studied on a Rheometer and the optimum cure time was determined. The mixture was vulcanized at 423 K on a hydraulic press and a cross-linked SBR sheet was obtained.

The cross-linked SBR sheet (2mm thick) was then weighed and kept immersed in a homogeneous mixture of MMA, DVB and BPO (of concentrations based on the MMA content) for different time intervals. The semi-IPN fabrication was carried out as per the above method without using the cross-linker (i.e., DVB). The obtained swollen samples with different weight percentages

of MMA were kept at 273 K for three hours in order to get an equilibrium distribution of MMA monomer in the matrix. These swollen networks were heated at 353 K for 16 h for polymerization. Thereafter, the rubber sheet was vacuum dried to constant weight under reduced pressure to remove the unreacted monomer. A series of flexible IPN sheets were synthesized by this technique.

The composition of the IPN and semi-IPN samples was determined on the basis of their final weights. The IPNs and semi-IPNs using benzoyl peroxide as the initiator (for MMA) can be represented as $^1\text{SBP}_c\text{D}_d$ where a indicates the weight of DCP per 100 gram of SBR rubber, S denotes SBR rubber, B represents benzoyl peroxide (initiator for MMA polymerization), P is used for PMMA, c indicates weight percentage of PMMA, D stands for divinyl benzene and d corresponds to the wt. % of the divinyl benzene content.

2.3. Diffusion experiments

IPN samples of circular shape with diameter 2 cm and selected thickness (h) were weighed using highly sensitive electronic balance and then kept immersed in an organic penetrant (toluene, in this case) taken in stoppered diffusion bottles. At fixed time intervals, the swollen samples were taken out, wiped, weighed and again immersed back in the stoppered bottles. This process was continued until equilibrium in swelling was confirmed. To minimize the error due to solvent evaporation from sample surface, each weighing was completed within 40 seconds. From the diffusion data, the mol. % uptake of solvent per gram of the polymer, denoted as Q_t , was determined using the equation³

$$Q_t = \frac{m_s / M_s}{m_p} \times 100 \quad (1)$$

where m_s is the mass of the solvent sorbed by the polymer, M_s is the molecular mass of the solvent and m_p is the initial mass of the polymer. When equilibrium is established, Q_t becomes Q_∞ . The details of an exclusive treatment for transport behavior of our IPN system (SBR/PMMA) with theoretical modeling have been already published elsewhere.⁴

2.4. Microscopic analysis

The morphology of the IPNs was studied using a JOEL-JEM 2010 model scanning electron microscope (SEM).

3. Results and discussion

3.1. Transport properties analysis and Morphology

The transport phenomena provide a dependable route to establish the structure-behavior relationship of the multi component polymeric system. The sorption of toluene into SBR/PMMA membranes was studied from this viewpoint to find the extent and rate of penetration. Diffusion of molecules occurs through the free-volume holes in the polymers, which in fact depends on the microstructure morphology of the polymer matrix.⁵ The transport phenomenon in IPN is therefore expected to mainly depend on its blend ratio.⁶ In order to verify this, the mol. % uptake of solvent per gram of the polymer, as defined by eq. (1) and denoted by Q_t , is illustrated in Fig. 12 for three different blend ratios, i.e., for SBR/PMMA = 70/30, 50/50 and 30/70. It is found in the case of the particular IPN series that, as the PMMA content increases, the uptake of the solvent (toluene) decreases (Fig. 1). This means the blend ratio is one of the decisive factors in controlling the mol. % uptake at equilibrium (Q_∞). The uptake is in the order $Q_{t(70/30)} > Q_{t(50/50)} > Q_{t(30/70)}$.

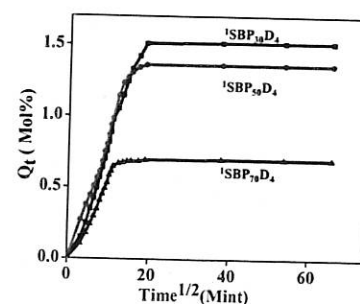


Fig. 1. The mol. % uptake of toluene (Q_t) vs. time^{1/2} plot in the case of the IPN (D_4 series) samples.

From Fig. 1, it is also found that there is a relatively less decrease in solvent uptake for IPNs as the PMMA concentration enhances from 30 to 50 % than when it increases from 50 to 70 %. As the PMMA content in the IPN increases to 70 %, the solvent uptake value decreases to half of its value, which is in agreement with the morphological changes of the system where the PMMA phase forms a well interconnected network structure with the SBR phase leading to less free volume content. The SEM images shown in Fig. 2 provide further support to this argument.

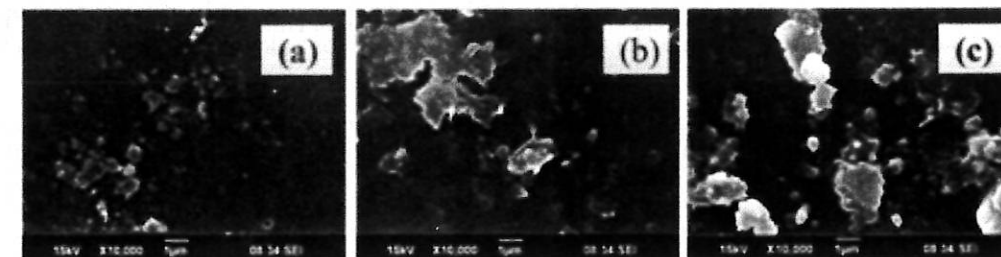


Fig.2. Scanning electron micrographs of (a) $^1\text{SBP}_{30}\text{D}_4$, (b) $^1\text{SBP}_{50}\text{D}_4$ and (c) $^1\text{SBP}_{70}\text{D}_4$.

The effect of blend ratio on the positron lifetimes and intensities can be explained further by the observations from the SEM images. Fig. 2(a)-(c) show the SEM images of the IPNs with different PMMA concentrations ranging from 30 to 70 %. The SEM images show a gradual gradation from sea-island morphology ($^1\text{SBP}_{30}\text{D}_4$) to a co-continuous one ($^1\text{SBP}_{70}\text{D}_4$). As the PMMA content in IPN enhances, a reduction in the average size and concentration of the free volume defects occurs with enhancement in PMMA domain size, an observation which is already supported by the findings from the o-Ps lifetime and intensity in the positron annihilation studies.

4. Summary and conclusions

A series of SBR/PMMA IPNs and semi-IPNs has been prepared by adopting sequential polymerization protocol. Their transport behavior in toluene and the mechanical properties were measured. The extent of sorption and diffusion of toluene into IPNs varied with PMMA content. The sorption coefficient (S_t) and the diffusion coefficient (D) increased with increases in free volume concentration. Finally, it is pointed out that the fabricated IPN system with SBR/PMMA ratio 50/50 with low free volume fraction and co-continuous morphology can act as a potential candidate for toughened plastic with cost effectiveness. This new modality of characterization uplifts and widens the application prospect of this type of elastomer- thermoplastic IPNs.

Conflicts of interest

There are no conflicts to declare.

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Thermal and Microwave assisted polymer-supported halogenation reactions using NNMBA-crosslinked polyvinylpyrrolidone-bromine complexes

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Abstract

A fast and simple method for the halogenation of some activated aromatic compounds and α -halogenation of ketones under microwave irradiation and conventional heating, is reported, using N,N'-methylenebis acrylamide crosslinked polyvinylpyrrolidone-bromine complex

Key words: microwave assisted, polyvinylpyrrolidone, oxidizing reagent, polymer-supported, functionalized polymer

1. Introduction

Application of polymer-supported reagents in organic synthesis has grown over the years due to its convenient handling and easy work up procedures. But the main drawback of the use of polymer-supported reagents is that the reaction kinetics are generally slower compared to traditional solution-phase chemistry. This is due to the necessity for the reactant to diffuse through the polymeric network in order to come in contact with the reagent, only at which point can the reaction take place. This drawback can be minimised by doing polymer supported reactions under microwave irradiation. Chemists are increasingly looking for a strategy that would combine the advantages of microwave heating with polymer assisted organic synthesis¹.

Microwave-assisted and polymer supported organic synthesis have emerged independently as versatile tools for rapid generation of organic molecules. A massive number of research publications have appeared over the last decades in the application of microwave technology in organic synthesis such as pericyclic², cyclization³, aromatic and nucleophilic substitution⁴, oxidation⁵, alkylation⁶, decarboxylation⁷, condensation⁸, peptide synthesis⁹, acylation¹⁰, cycloaddition¹¹, deprotection and protection¹², heterocycles¹³ etc. Some of the major advantages include spectacular decrease in reaction time, improved conversions, clean product formation and wide scope for the development of new reaction conditions.

Halogenation of organic substrates is an important reaction for the preparation of pharmaceutical and agricultural chemicals. Here we report the synthetic applications of NNMBA-crosslinked polyvinylpyrrolidone-bromine (PVP-Br) complex in a solvent free condition under microwave irradiation. This reagent was found to halogenate activated aromatic compounds. It can also be used for the α -halogenation of ketones.

2. Experimental

2.1 General: N-vinylpyrrolidone was purchased from Merck, Federal Republic of Germany. N, N'-methylene-bis-acrylamide (NNMBA) was purchased from Aldrich U.K. All low molecular weight compounds were commercially available samples and were purified by distillation or recrystallization unless otherwise stated. IR spectra were recorded on a Shimadzu FTIR-8400S spectrophotometer. UV spectra were recorded using shimadzu UV-2450 spectrophotometer. All microwave experiments were performed using a Onida Powersolo 20 microwave oven.

2.2 Preparation of NNMBA-crosslinked poly(N-vinylpyrrolidone)

To a solution of 0.46g of 10% aqueous solution of sodium dibasic phosphate and 40% of sodium sulphate in 240ml of water heated to 50-65°C, a solution of N-vinylpyrrolidone (43.12g) NNMBA (1.85g) and AIBN (0.12g) were added. The mixture was heated to 60-70°C for 5h. It was cooled to room temperature with stirring. The product was filtered, washed with water (25mlx4times) and acetone (20mlx5 times), dried at 60°C and yield (80%) was noted.

2.3 Preparation of polyvinylpyrrolidone-bromine (PVP-Br) complex

To a suspension of NNMBA-crosslinked PVP (5g) in CCl₄ (20ml), bromine (5ml) was added and stirred at room temperature

for 4h. The product resin was filtered and washed with CCl₄ until the filtrate was completely free from bromine and dried in vacuum to afford orange red of PVP-Br. Yield: 8.1g.

2.4 Estimation of bromine capacity of PVP-Br resin

PVP-Br resin (200mg) was added to 20ml ice-cold dimethyl formamide. To this suspension 1g of KI was added. The well-stoppered container was shaken occasionally and kept in the dark. The liberated iodine was titrated against 0.05N Na₂S₂O₃ solution until the disappearance of the brown colour of iodine. This was repeated 2-3times until all the complexed halogen had reacted. From the titre values the bromine equivalent on the resin was calculated. The bromine capacity was found to be 3.4 mequiv/g.

2.5 Halogenation of activated aromatic compounds and ketones under microwave condition : General Procedure

A fivefold molar excess of PVP-Br resin (500mg) was impregnated with activated aromatic compounds or alkanones dissolved in dichloromethane. The solvent was then removed by evaporation, and the solid support, with adsorbed substrate was subjected to microwave irradiation. The rate of the reaction was followed by TLC. After complete conversion the product was extracted with dichloromethane and isolated by filtration and evaporation of the solvent. The products were characterized by comparison of IR, M.P/B.P and GCMS with authentic samples.

2.6 Halogenation using PVP-Br complex at refluxing temperature: General procedure.

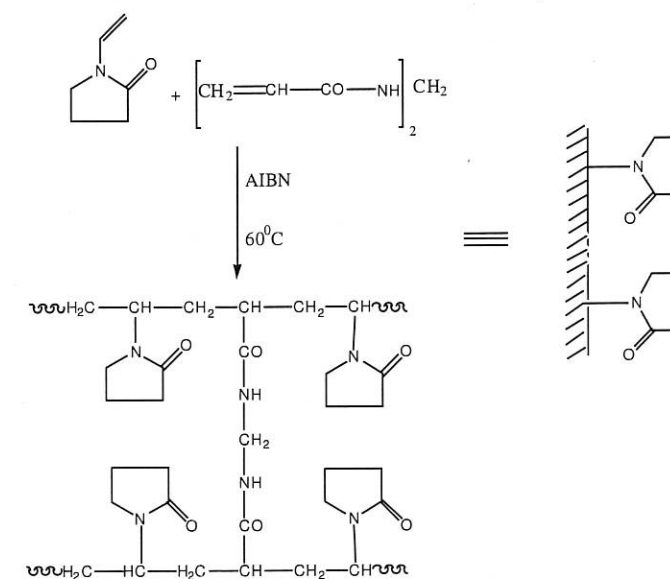
In conventional method of heating, the 3% NNMBA-crosslinked polyvinylpyrrolidone-bromine complex (1g) was heated with a suspension of the organic substrate (100mg) in cyclohexane (20ml) at refluxing temperature for 5 h. Since the polymeric reagent is insoluble, the products were easily isolated by filtration and washing with cyclohexane. The combined filtrate and washings on evaporation followed by purification yielded the product. The products were characterized by comparison physical and spectral characteristics with authentic specimens.

3. Results and Discussion

3.1. Preparation of 3% NNMBA Crosslinked Polyvinylpyrrolidone

The NNMBA crosslinked polyvinylpyrrolidone was prepared by suspension polymerization of the monomers N-vinylpyrrolidone and NNMBA, using AIBN as initiator¹⁴.

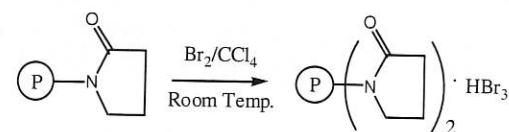
The polymer was characterized by IR spectroscopy. A peak at 1664.9cm⁻¹ shows the amide carbonyl of the pyrrolidone unit. A peak at 1292cm⁻¹ shows the C-N stretching of the vinylpyrrolidone.



Scheme 1. Preparation of NNMBA-crosslinked polyvinylpyrrolidone

3.2. Preparation of NNMBA Crosslinked PVP-Br complex

The reagent is prepared from 3%NNMBA crosslinked polyvinylpyrrolidone by simple one step procedure. The procedure involves stirring the crosslinked PVP swelled in CCl_4 with bromine in CCl_4 for 4 h on a magnetic stirrer at room temperature. Orange red PVP-Br complex formed was filtered, washed with CCl_4 and dried at 40-45°C.



Scheme 2. Preparation of PVP-Br Complex

3.3. Estimation of bromine capacity

The functional group capacity of the reagent was determined by iodometric titration and found to be 3.4 mequiv/g of PVP-Br resin.

3.4. Halogenation of activated aromatic compounds

NNMBA-crosslinked (3%) polyvinylpyrrolidone-bromine complexes were used for the bromination of activated aromatic compounds and the results are listed in Table I. In microwave assisted approach the polymeric reagent and the aromatic compound in the molar ratio 5:1 taken in a 50 ml borosil beaker was irradiated with microwaves at a power level of 320 W. For proper mixing of the polymeric reagent and aromatic compound, the reagent was impregnated with a solution of the aromatic compound in dichloromethane. After removing the solvent, the polymeric reagent along with the adsorbed low molecular weight electron rich aromatic compound was subjected to microwave irradiation for 10 minutes. Impregnation of the polymeric reagent with substrate solution by adding dichloromethane and removal of the solvent was repeated after every two minutes of microwave irradiation for proper accessibility of the reactive functional groups present in the polymeric reagent to the low molecular weight substrate molecules. The reactions were carried out in cycles of 2 minutes of irradiation. The progress of the reaction was monitored by thin layer chromatography. After irradiation, the reaction mixture was cooled, the product extracted with dichloromethane, filtered and washed with more solvent. The combined filtrate and washings on evaporation followed by purification yielded the product. The products were characterized by comparison of physical and spectral characteristics with authentic specimens.

In conventional method of heating, the 3% NNMBA-crosslinked polyvinylpyrrolidone-bromine complex was heated with the aromatic compound dissolved in cyclohexane at refluxing temperature for 5 h. A 5:1 molar ratio of the polymeric reagent to the substrate was used for the reaction. The progress of the reaction was followed by thin layer chromatography. Since the polymeric reagent is insoluble, the products were easily isolated by filtration and washing with cyclohexane. The combined filtrate and washings on evaporation of the solvent followed by purification yielded the product. The products were characterized by comparison physical and spectral characteristics with authentic specimens.

Comparative study of the two methods showed that all the reactions under microwave irradiation gave 85-88% yield within 10 minutes where as similar reactions under conventional heating (water bath) need much longer reaction time (5 h) for comparable yield.

3.5. α -Halogenation of ketones

The α -halogenations of ketones were carried out by irradiating the substrate with 3% NNMBA- crosslinked polyvinylpyrrolidone-bromine reagent. The results were summarized in Table II. The two heating methods, microwave heating and classical thermal heating, were used for the α -halogenation of ketones using NNMBA-crosslinked polyvinylpyrrolidone-bromine complexes.

In microwave heating the polymeric reagent taken in a 50 ml borosil beaker was impregnated with a solution of ketone in dichloromethane. The solvent is then removed by applying vacuum. The reagent and the ketone were taken in the molar ratio 5:1. The polymeric reagent along with adsorbed substrate was then subjected to microwave irradiation for 10 minutes at a microwave power level of 320 W. Impregnation of the polymeric reagent with a substrate solution by adding dichloromethane and removal

Table I Bromination of electron - rich aromatic rings using 3% NNMBA-crosslinked polyvinylpyrrolidone-bromine complex under microwave activation (MW) and classical heating (Δ)

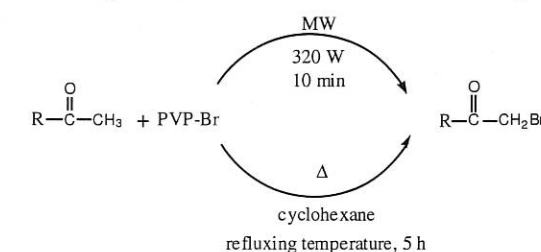
Entry	Substrate	Product	Yield ^c (%)	
			MW ^a	Δ ^b
1	2-Naphthol	1-Bromo-2-naphthol	86	85
2	4-Methylphenol	2-Bromo-4-methylphenol	85	87
3	N,N-Dimethylaniline	4-Bromo-N,N-dimethylaniline	86	84
4	2,6-Dimethylphenol	4-Bromo-2,6-dimethylphenol	87	86
5	4-tert-Butylphenol	2-Bromo-4-tert-butylphenol	88	85
6	N,N-Diethylaniline	4-Bromo-N,N-diethylaniline	87	86

^a All microwave reactions were carried out at 320 W for 10 minutes in cycles of 2 minutes.

^b All thermal reactions were performed at refluxing temperature for 5 h in cyclohexane.

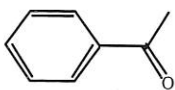
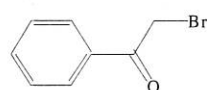
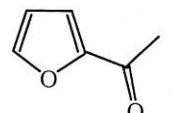
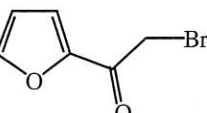
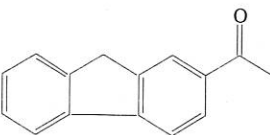
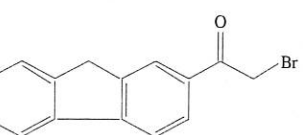
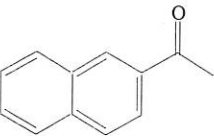
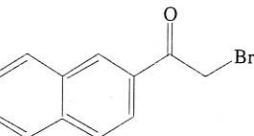
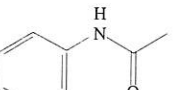
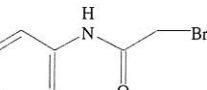
^c Isolated yield.

of the solvent was repeated after every two minutes of microwave irradiation for proper mixing of the organic substrate with the polymeric reagent. The reactions were carried out in cycles of 2 minutes of irradiation. The rate of the reaction was followed by thin layer chromatography. After irradiation, the reaction mixture was extracted with dichloromethane followed by washing with more solvent. Evaporation of the combined filtrate and washing followed by purification afforded the product. The products were characterized by comparison of physical and spectral characteristics with authentic specimens.



Scheme 3. α -Halogenation of ketones

Table II. α - Halogenation of ketones using 3% NNMBA-crosslinked polyvinylpyrrolidone-bromine complex under microwave activation (MW) and classical heating (Δ)

Entry	Substrate	Product	Yield ^c (%)	
			MW ^a	Δ ^b
1	 Acetophenone	 α -Bromoacetophenone	88	90
2	 2-Acetylfuran	 2-(Bromoacetyl)furan	85	89
3	 2-Acetylfluorene	 2-(Bromoacetyl)fluorene	86	89
4	 2-Acetylnaphthalene	 2-(Bromoacetyl)naphthalene	84	88
5	 Acetanilide	 α -Bromoacetanilide	86	88

^a All microwave reactions were carried out at 320 W for 10 minutes in cycles of 2 minutes.^b All thermal reactions were performed at refluxing temperature for 5 h in cyclohexane.^c Isolated yield.

In conventional method of heating a mixture of polyvinylpyrrolidone-bromine complex and the ketone taken in the molar ratio 5:1 in a R. B flask fitted with a condenser were heated for 5 h at refluxing temperature in cyclohexane. The progress of the reaction was monitored by thin layer chromatography. After heating for 5 h, the insoluble polymeric reagents was filtered off and washed with cyclohexane. The combined filtrate and washing on evaporation followed by purification yielded the product. The products were characterized by comparison of physical and spectral characteristics with authentic specimens.

The results indicated that the microwave assisted reaction was remarkably successful and gave corresponding α -halogenated product in higher yields at less reaction time compared to conventional heating method.

4. Conclusion

PVP-Br complex is an efficient and highly specific halogenating reagent for the electron - rich aromatic rings compounds in quantitative yield. This reagent is very specific for the α -halogenation of carbonyl compounds. It was also noted that the microwave condition increases the reaction rate and yield and moreover the use of large excess of the reagent does not cause any side reactions.

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Prospective Advantages of Social Media in Higher Education

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Abstract

Recently social networking sites became the most admired communication tools evolved as the central of information allocation source around the world. The potential positive outcomes of social networking are numerous and wide-ranging. There are serious apprehensions over how they could be integrated in the present academic atmosphere. As a net working tool, its effectiveness has already been manifested in millions of people who use these networks for amusement, communication and exchanging of observations, knowledge, data and information all over the world. The development of Web 2.0 technologies paved the way for the fast proliferation of social media. Currently, students and lecturers use social networking sites during working hours for entertainment, communication, exchanging views and knowledge, and even as efficacious teaching tool. When more and more people make use of the Web, additional knowledge, data and information is created, evolved and nourished daily. As more students and teachers involved in generating educational content, the quality, reliability, availability and standard of information gradually improve. Consequently, each and every net work browsing now becomes an uninterrupted learning experience for each user. Hence, gurus have to create conducive ambiance for formal and informal learning - that hold fast to educational guidelines and tie together social networking communities. A thorough examination of the impediments involved in the creation of new learning ecology, and a meticulous exploration of the challenges faced by both technology experts and teachers in delivering a truly ground-breaking and effective approach to education are authentic need of the time. This article intends to highlight the potential benefits of social media in today's education.

Keywords: Education, Facebook, Media literacy, Content Creation, Collaborative Learning, Mobile technology, Social Networking, Social Networking Sites

1. Introduction

Nowadays, besides entertainment and informational purposes, social networking sites have penetrated many fields of educational practices and processes. It transformed young people's way of thinking, doing, behaving and living, while it acts as the most appropriate means of communication and entertainment. Social media like Web 2.0 technologies, Facebook, Twitter, Myspace, Google+, LinkedIn, Instagram, Blogs, micro-blogs(Wikis), Ning, MySpace, Delicious, Digg, Flickr, YouTube, Dailymotion and RSS are used daily by millions and millions of youth worldwide. The development of Web 2.0 technologies triggered the fast proliferation of social media. Its web-based tools and platforms facilitate discussion, participation, and sharing of various forms of content (namely, text, video, audio and image) in a very convenient way. Increased broadband availability, the improvement of software tools, and the development of more powerful computers and mobile devices, have played pivotal role in integrating technology, social interaction and content creation through Web 2.0 technologies.

Social media encompass a wide range of tools that integrate technology, social interaction and content creation. Social networks certainly tone up the behavioural patterns of the adolescent who enjoy and universally acknowledge this medium in their life. As a net working tool, its effectiveness has already been manifested in millions of people all over the world who use these networks for amusement, communication and exchanging of observations, knowledge, data and information. Currently, students and lecturers use social networking sites during the working hours, not only for entertainment but also for communication, exchanging views and knowledge, and even as efficacious teaching tool. They are able to acquire collaboration, motivation and understanding or identifying methods of collaborative learning. When educators provide more information about their activities which they followed for academic processes, students' expectations about their trustworthiness are positively influenced and improved. This will bring their students closer, aiming at encouraging them to make progress of their educational experience. Further, it will reinforce their motivation for learning, positively reform educational reality, and enlarge the learning process beyond the boundaries of a traditional classroom. Social media platforms can be grouped into three major categories. The first

category consists of social network sites like Facebook, Ning, MySpace and Twitter. The second category consists of content sharing and organizing sites like Delicious, Digg, Flickr, YouTube, Dailymotion and RSS readers. The third category is composed of content creation and editing websites such as Blogger Google Docs, Wikipedia and Word Press.

Facebook, MySpace and Twitter, for instance, can serve as backchannels for communication among students and between teachers and students within or between classes. Instructors can answer students' questions via a Facebook page or Twitter feed, post homework assignments and lesson plans, extend in-class discussions, send messages and updates, schedule or announce forthcoming events, and inform learners about special lectures, panel discussions or guest speakers. This teacher-student interaction will certainly contribute in understanding various learning related difficulties and solving them in less time. A student who hardly ever participates in class may get actively engaged in co-constructing his learning experience with his teachers, collaborating with his fellow classmates, and may feel more comfortable to express himself and to share his resources and ideas on Facebook, Twitter, or YouTube [8]. Using tools such as Google Apps for Education or Ning would enable students to have access to valuable learning resources regardless of time and space. Collaborative and participatory tools like Wikis, Blogs, and Google Docs can encourage students to become active participants or even co-producers rather than passive consumers of content. To counter classroom boredom and enhance behavioral engagement, social media tools could be used to design learning activities that are both social and interactive (e.g. discussion, debate, group projects, etc.). This would enable students to learn from one another and interact with other people beyond the school walls. Social media actually allow students to work together on projects beyond an individual's capability. Furthermore, in the future, the social-networking sites will have the significant potential to expand teaching and learning beyond the walls of classrooms.

Advantages like flexibility, repetition, convenience and accessibility have a vital influence in the use of social networking in education. Face-to face classes are likely to enable high levels of emotional understanding, while the convenience and flexibility of online components can motivate students to complete educational tasks. It allows each student (slow or quick) to study at their own pace and speed (self-pacing). The social networking allows access to courses available in their sites, allowing the learner to follow-up online at any time one deems appropriate, and overcomes the limitations of space and time in the educational process. Students are comfortable in a dynamic, digital, and social world. In fact, their expectations embrace the wide range of ever changing technologies available for their online education, as well as, in the classroom.

Objectives

1. To study the uses of social media.
2. To highlight the benefits of social media in education.

Media literacy and content creation

With the advent of new media technologies, research into media literacy has gained new impulses. Media Literacy is inclusive of content creation, access, analysis, and evaluation. Content creation would give more insight into the conventions and merits of the produced material and enable the user to become a better technical and critical consumer and producer. Teaching youth the abilities to create content is more crucial than ever. Cognitive, intellectual, rational and practical competencies play a significant role in media literacy and content creation. The relationship between the technology and the user should not result from the technology and its practical requirements, but should be judged by how youngsters experience the technology; how technology serves man best, as well as by its advantages and disadvantages for the individual. Social media literacy in education requires more attention for the affective competencies. The emotional involvement of users has to be taken into account in content creation. Motivational dispositions for dealing with media literacy and content creation in a participatory and critical way are characterized by the concern for enhancing one's skills to do a certain task well. Consequently, social media literacy and content creation must involve the acquisition of cognitive, intellectual, rational, practical and affective competencies in order to participate in media literacy and content creation competently. In teaching social media literacy and content creation, teachers should not only focus on the competencies to adequately perform these actions or forms of social media literacy, they must also take into account the competencies to deal with the consequences related to social media literacy and content creation. The web provides rich multimedia educational experiences for students. Lectures and other educational materials can be delivered in a variety of formats with the seamless integration of class-based and virtual learning content. As more people use the web, more

data is created and evolved. With more students and teachers involved in creating educational content, the quality, reliability and availability of information improves. Subsequently every browsing session now becomes a continuous learning experience for the user. While these social information systems are essentially leisure focused, there is a growing emphasis on exploiting the tools for education and other productive pursuits (Olson et al., 2010). Social software tools promote interactivity and create engaging learning environments, and two web technologies that show great promise in the educational domain are wikis and blogs. The applications, advantages and disadvantages of these tools in an educational setting will also be assessed. There is evidence that educators have failed to fully embrace the emergent web 2.0 technologies in media literacy and content creation, hence leaving a gap in the potential application of social networking in education and the actual practical use of this medium.

Collaborative learning

Anderson (2006) examines the importance of "People Power" in the "age of peer production." Giving the examples of video sharing on YouTube and the power of user reviews on Amazon, Anderson highlights that the business models of the world's most successful web companies are built on user-generated content. With the development of web 2.0 tools, collaborative learning's new practices of sharing information are constantly emerging (Flickr, YouTube, and Slideshare), which are entirely user led and user oriented. Along with these come new mechanisms of collaboration and communication including blogging, micro blogging (Twitter), wikis, and peer-to-peer mentoring and online debate. Assessing the impact of technology on collaboration, Johnson and Johnson (2004) report that cooperative learning, results in higher academic achievement than individual learning. The sharing of online communal spaces and peer-to-peer communication are the "massive part of what excites young people and therefore should contribute to users' persistence and motivation to learn" (Mason & Rennie, 2007). Wikis are open editing web sites that allow a community of users to collaboratively add and update content, resources, and link to other internal and external web pages. Multi-participation leads to rapidly evolving content and helps to reduce inaccuracies and misinformation. Wikipedia, the online encyclopedia, is the most famous example of a wiki community of more than 75,000 contributors sharing and contributing to vast amount of information (Tsai et al., 2011). Critics argue that user-generated knowledge platforms such as wikis and blogs undermine the role of the expert. This could be enforced with the use of registered user groups with passwords to access editing functions. As blogs are in the public domain, less confident students may be unwilling to express themselves or their opinions. Blogs can provide a rich learning experience in collaborative learning, provided the sources are reliable and trustworthy and some experts believe that students must be provided with the opportunity to make collaborative judgments on the worthiness and accuracy of online information. According to Mason & Rennie, 2008 Technologies like blogs, wikis, media-sharing services, mashups and collaborative editing tools are harnessing the "collective intelligence" of students and teachers, promoting collaboration and the sharing of knowledge.

Facebook

Facebook is the perfect tool to improve both educational as well as cultural adaptation. It provides an informal forum to students and faculty to informally discuss personal and educational issues. Recent researches found that using Facebook is advantageous to students on a range of levels such as facilitating knowledge exchange, alleviating apprehension, enabling socialization and building fraternity. Key issues related to the use of face book such as privacy and the blurring of social boundaries between staff and students are addressed with strict privacy guidelines. Facebook actively encourages the students to participate in discussion on social networking sites due to the contribution they provide other users with new perspectives. In a study by Bowers-Campbell (2008) Facebook was used as an academic motivation tool for students in a developmental reading course. In educational activities even academic institutions make use of Facebook for internal management of educational issues. In some cases, teachers seem to be unenthusiastic to engage Facebook in educational processes, despite studies encourage them to do so. Also, the administrative and teaching staffs appear to be quite hesitant about the contribution of Facebook to internal institutional and educational processes. As a unique tool it enhances cognitive behavior, self-esteem, greater social acceptance, better memory management, and better cognitive language skills of the adolescent. Through this medium student can bout with young people with a similar way of thinking and exchange information and enlightening experiences in an informal way for educational purposes. Students who use Facebook daily for their studies bring certain positive results in their exams. The vast majority of high acievers uses Facebook for learning, communication and imbibes academic way of life.

Mobile technology and social networks

In the present day and age, mobile devices and smart phones have become "extensions of man" ever more so in the 21st century than when the term was first coined by McLuhan in 1964. Mobile technologies and social media help us connect, but this may come at a cost given their unequivocal impact on our behaviour, thinking, and ways of relating. It has become such an important aspect of a user's daily life that it has moved from being a mere 'technological object' to a key 'social object'. Mobile technology has gradually been introduced into educational contexts over the past 2 decades. Its large amount of computing power and portability makes one-to-one computing a learning tool of great potential in both traditional classrooms and outdoor informal learning. As the penetration of mobile phones in societies increases, there is a large growth in the use of mobile phones especially among the youth. Globally in many countries even elementary- and middle-school students and their teachers have their own mobile devices. 1.2 billion Mobile devices such as smart phones and tablets are manufactured every year which offer all-pervading access to social networks and online learning content. Students make use of their mobile phones and social networking on a daily basis to harmonize their social and school lives, using internet resources to aid study and share resources with friends, and texting to communicate with their friends about their studies.

Mobile technology gathers and shares information to promote innovative teaching methods such as cooperative, exploratory learning and game-based learning. Mobile technologies have great potential to facilitate the development of communication, problem-solving, creativity, and other high-level skills among students. Frohberg, Goth, and Schwabe (2009) categorized 102 mobile-learning projects, and discovered that most mobile-learning activities occurred across different settings, and took place within a physical context and an official environment, such as a classroom or workplace. Regarding the pedagogical roles that mobile devices play in education, most research has used mobile devices primarily as a sort of reinforcement tool to stimulate motivation and strengthen engagement, and secondarily as a content-delivery tool. Few projects have used mobile devices to assist with constructive thinking or reflection. Furthermore, most learning activities using mobile devices have been controlled by the teacher, with there being only a handful of learner-centered projects in existence. Wong and Looi (2011) investigated the influence of mobile devices on seamless learning. Seamless learning refers to a learning model that students can learn whenever they want to learn in a variety of scenarios and that they can switch from one scenario or one context to another easily and quickly (Chan et al., 2006; Wong & Looi, 2011).

Twitter

The most famous micro-blogging service is Twitter. Blogs are web-based logs or journals that enable users to post their thoughts, ideas, writing, and opinions for other people to view. This media serves as a "back channel" for instructors after class. This tool can be used to share resources, promote brainstorming, extend class discussion, and to promote student sense of community. Today students use Twitter in order to increase their professional awareness, reinforce educational activities and increase academic performance. Twitter offers an opportunity for educators to tie together enthusiasm for technology and utilize it for educational framework. Educators can develop specific classroom content using best practices. Examples for each level include: (1) *Creating* a Twitter profile for a historical figure, (2) *Evaluating* a "tweet" and writing about it, (3) *Analyzing* (compare/contrast) the use of Twitter as compared to other social media, (4) *Applying* the use of Twitter to examine popular trends, (5) *Understanding* a poem or short story by tweeting the main idea in 140 characters or less, and (6) *Remembering* content by rewriting tweets in your own words. (Barnes, 2013)

Wikis

Wikis are websites that are developed collaboratively by a community of users. The largest and most popular wiki is Wikipedia, a user contributed online encyclopedia currently hosting millions of articles and is considered as "living content" in over more than 200 languages. Wikis are unique because they blur the line between the author and the audience by allowing multiple users to edit and add to the wiki. Wikis often annotate additions and deletions with the author's name and the time and date when the change is made, thus making it possible for teachers to verify the participation of various group members.

Wikis offer teachers and students a single destination where they can bring their ideas together, examine them with their colleagues and publish in a way that can be edited. It always promotes the learning experience. It gives people the power to share and makes the world more open and connected. Wikis empower students to be the co-creators of learning content. This fits in

with the proactive approach to education promoting learning as an involving and shared experience. Any wiki can be formed around any subject matter and they are the amazing medium to develop group discussion projects for academic courses. Wikis promote collaborative learning and by sharing the construction of information, students as individuals gain important team-work skills. The information in a wiki is fluid and changeable to reflect the progress of knowledge and the changing needs of the users. By linking to and from other resources and related content wikis also contextualize knowledge and widen the scope of student understanding. The visibility of wikis can help teachers trace the activities of students and assess their overall contribution to a project (Kussmaul, 2011).

Social Bookmarking

Social Bookmarking websites, also termed as collaborative tagging systems, give people the opportunity to tag their favorite links and share the results with other users. Usually organized by topic, bookmarks can be saved privately, shared with certain people or groups, or made available to the public. Delicious, Digg, Reddit, Stumbleupon, to name just a few, are good examples of websites offering bookmarking services.

Pinterest

People pin anything from fashion, recipes, videos, entertainment, or educational boards. Some professors, use Pinterest in the classroom to inspire students, increase student participation, and help students tell stories. (Kompleks Creative, 2014) Additionally, educators could create boards for specific classes, focus groups, or "topic by week" and the boards are used as supplementary reading material.

Challenges of social networking

Social networks are primarily used for social engagement, particularly to maintain real-life relationships. Different people use social networks in different ways. For instance, extroverts use them for social enhancement, whereas introverts use them for social compensation, suggesting the use of social networks can have distinct relationship benefits for users. Social networks may lead to less participation in real-life relationships as well as lower academic achievement, and relationship problems. Cramer and Hayes (2010) outline a series of risks to students associated with social media that will have to be taken into consideration when forming policy regarding social net work in educational institutions. These include sexual solicitation, online bullying, and cheating in the classroom. Educational institutions face the challenge to put into practice efficient technology and procedures to combat these difficulties. Tools such as internet filters can be effective in some cases, but cyber bullying and cheating can be more difficult to define and combat. One key area is the establishment of Critical Domain Centers without walls where experts and staff can use social media to effectively exchange information for the greater good of a programme. Spending larger amount of time on Instagram may lead to stronger beliefs that other people lead happier lives. This feeling may be exacerbated when users are connected online to people they do not know personally as Instagram is a platform that allows individuals to follow celebrities and public figures, many of whom lead privileged lives, leading to a correspondence bias and a possibly problematic upward comparison. This may lead to lower self-esteem as the repetitive viewing of other people being "happier" than yourself can contribute to feeling depressed [Donnelly & Kuss, 2016]. Taken together, there is increasing evidence to suggest that excessive use of social media can in some cases be associated with a wide variety of behavioural and mental health problems, including academic, professional, and relationship problems, addiction and depression. Spending a lot of time browsing these social networks can affect the way the genes operate within the human body, and weaken the immune and hormone levels, and the function of arteries and even impact on mental health. Face to face communication allows individuals to perceive physical clues like tone, inflection, body language, in an online environment, these are lacking. Privacy, real friendship, taking up time and miscommunication are the most important challenges facing education through the social networking.

Conclusion

Social media like Web 2.0 technologies, Facebook, Twitter, Myspace, Google+, LinkedIn, Instagram, Blogs, micro-blogs (Wikis), Ning, MySpace and, Delicious, Digg, Flickr, YouTube, Dailymotion and RSS are used daily by millions and millions of youth worldwide. The development of the above mentioned technologies contributed to the fast proliferation of social media. Their web-based tools and platforms facilitate discussion, participation, and sharing of various forms of content (namely, text, video, audio and image) in a very convenient way. Often times, however, the features and functions of a social media network can

overlap, making a tool appropriate for more than one category. Facebook, MySpace and Twitter, for instance, can serve as backchannels for communication among students and between teachers and students within or between classes. Instructors can answer students' questions via a Facebook page or Twitter feed; post homework assignments and lesson plans; extend in-class discussions; send messages and updates; schedule or announce forthcoming events, and inform learners about special lectures, panel discussions or guest speakers. This teacher-student interaction will certainly contribute in understanding various learning related difficulties and solving them in less time. Adolescents' interaction with social networking provides a platform for building collaborative learning. Every student has his or her own unique learning requirements. Today, more emphasis is on students' involvement in sharing and co-creation of knowledge and learning, and teachers take on the role of facilitators who successfully blend formal and informal learning.

Educators must provide rich educational environments that promote individual and group activities through multiple channels of communication and collaboration. Social networking and social software tools represent an evolution in learning, as they are changing the way we access information. Social networking such as Blogs, Wikis and Social Networks, promote and stir up debate acting as a catalyst in the generation and refinement of information. In addition, they provide a new framework for learning that implements a range of useful tools available to both academics and students, promoting greater communication and support. Educational institutions will have to rethink their policies on the use of mobile technology, and develop approaches to incorporating these devices into their learning strategies. Social Networking Systems must be used to facilitate the exchange of information, heighten social awareness and civic engagement, and promote lifelong learning. It is now up to the experts to make the most of this opportunity and turn it into the dynamic global learning resource and promotes learning opportunities that extend beyond both the classroom and our own communities. We can become part of a movement – 'research centers without walls' – where scientists, experts, governments, educational facilities and members of the public collaborate and contribute to the general improvement of society.

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Green Technology Protocol- An Introduction

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Abstract

Green technology has a significant impact on environmental, economic, and social status of society. Renewable technologies facilitate large-scale production of materials, novel innovation methods, abatement of pollution, and energy in a low-costly manner. The different notions of green and eco-friendly technology are of practical and academic importance. In this chapter we give the basics of green technology.

Key Words: Green technology; energy; pollution; cost-effective; large-scale; renewable

1. Introduction

Green technology is an eco-friendly concept that is being applied to basic education, technology, and engineering for production of materials that are less harmful to the eco-system of the planet. Green technology suppresses adverse gas emissions to the atmosphere, save water resources, and preserve features of soil. It encourages environment friendly techniques with minimum waste. Green technologies utilize less amount of energy than the conventional technologies. It is a clean technology based on principles of environmental science, green chemistry, and modern technologies. Natural resources are exploited in a green path way to produce materials with multidimensional characteristics. It also takes into account the various impacts of technology on the environment. Efficiency of the technology, recycling provisions, and issues related to the health of man, animals and plants are the major concerns of green technology. In order to deal with these concerns, green technology proposes a few major concepts. Hence, any knowledge of green technology requires an adequate understanding of these concepts. Of the many concepts we identify three major concepts. They are (1) cleaner production, (2) green innovation, and (3) social sustainability.

1.1. Cleaner production

The concept of cleaner production envisages the combination of the protection of environment and economic development. It rules out the opportunity for the accumulation of waste and ecologically unacceptable pollutants. It is an integrated attempt for sustainable development. Cleaner production demands changes in raw materials, changes in technology, and changes in production process. Sometimes quality, composition, and durability of the product needs to be compromised in an acceptable manner in order to reduce hazardous emissions. It requires more responsibility and offers new opportunities for innovation. Individuals as well as industrial undertakers must contribute towards the implementation of clean production. The availability of sophisticated instruments and necessary funding are inevitable for the implementation of the technology. Government has to insist policies and regulations for the fulfillment of the idea in to reality. Encouragements and incentives are to be given at appropriate time to inculcate the scheme of clean production into the mainstream.

1.2. Green innovation

Protecting our environment is our great responsibility. Green innovation urgently catches international attention as the natural resources dreadfully declines and environmental pollution increases. Green innovation involves three categories, namely product, process and managerial innovations. Environmental awareness requires the supply, production, and packaging design of products with minimum hazardous and toxic substances¹. Besides the above mentioned three categories of green innovation, there are six important aspects of green innovation. They are the innovation of new objects and the methods of their production,

developing eco-friendly market orientation, inculcating environmental aspects in the production and distribution of goods and services, developing a consumer habit taking into consideration the full life cycle of each individual, reduction in the anti-environmental attitudes at economical and ecological level, and enforcing and promoting green standards to industrial and agricultural firms.

1.3. Social sustainability

Social sustainability is the approach that covers areas including societal, cultural, health, human rights, labor, and justice. Social sustainability requires more attention in identifying and managing the problems and their impacts on people. Sustainable development must ensure the secure survival and welfare of all the people on the planet. Green technology incorporates the environmental, economic, and other public aspects of production and consumption. The social sustainability is achieved by personnel quality improvement and novel professional opportunities².

2. Green technology Concepts

Green technology is a holistic approach to the production and use of goods and services. Modern world needs safe, green, less costly and less hazardous routes for the synthesis of materials. They supplement chemical equivalents pathways in a greater manner³. Some of the areas of green technology are discussed below.

2.1. Renewable resources

Non-renewable resources of nature are depleting alarmingly by over extraction and overuse. Besides this, natural sources are also being drained out by pollution. In this context, it is highly expedient to invent and use renewable resources. Renewable resources are those resources which can be regenerated by natural means. Solar energy, natural wind patterns, fresh water resources, plant kingdom etc. are some renewable items. Some of the renewable means for energy, information technology, building, Biotechnology etc. are discussed here.

2.1.1. Renewable Energy Production

In the past and also in the present humanity depend on fossil fuel for energy. However, resources of fossil fuels are limited and are depleting day-by-day. International forums point out that mining and the use of fossil fuel caused drastic climate changes which in turn causes deforestation and similar issue which adversely affect the eco-system of the planet. The use of fossil fuels cause environmental pollutions, human health problems, and socio-economic impacts. Destruction of biodiversity, decrease in the level of rainfall, changes in rain and wind patterns, scarcity of drinking water, rapid increase in global temperature etc. are some negative effects of the excessive use of fossil fuel⁴. Analysis of environmental policies made by developed countries showed that the replacement of fossil fuels by green, environmentally benign technologies for the production of energy is a revolutionary innovative step⁵. The major influencing factors for green technological innovations in the area of energy include industries, economic and social development. The preservation of the green energy sources is also important. The support from the government to minimize the environmental pollution and investment in green energy supply is also significant⁶.

2.1.2. Communication Purposes

The use of renewable energy sources for the communication purposes enables the efficient data transmission in a reliable manner. Wireless sensor systems that harvest energy from solar and wind sources and microbial fuel cells are known to be highly effectively performing in this regard⁷.

2.1.3. Biodiesel production

The increasing demand for the replacement of petroleum-based fuel leads to the crop-derived or algal derived biofuels. Biodiesel production can be carried out by using potential green solvent supercritical carbon dioxide from the microalgae *Scenedesmus dimorphus* by lipid extraction. Compared to crop-derived biofuel, algal-derived biodiesel has the benefits of fast growth, low level of land use, utilization of wastewater, higher oil content, geographic flexibility etc. Supercritical carbon dioxide has the power to enhance the extraction yield, and fuel efficiencies⁸.

2.2. Green building technology

Engineering and construction ends up with carbon emissions. In order to reduce the impact of construction and development, green building information modeling came to reality as a thought-provoking insight. Green building technology describes an

innovative approach and requires a holistic thinking to enhance sustainability⁹. Green building is a venture of sustainable building that decreases the adverse effects of pollution happening in air, noise, water, and soil during the construction process. The preformed reduction in energy consumption and emission of greenhouse gases are also attained along with healthy habitat conditions. Green concept in construction utilizes green building materials. Green building materials include wood chips, waste newspaper, waste concrete, recovered iron powder etc. Color of the green building materials induces quality and beauty of the green buildings¹⁰. Selection of paints is also affect the green building quality in terms of reduction of energy consumption and global greenhouse gases emissions¹¹. The cost of construction is also a serious issue and timely maintenance is required to increase life span of the inhabitants. Proper management benefits life-cycle and cost¹². Green building has a higher rate of accommodating specific geographic, climatic, and economic conditions. Energy efficient applications and lifecycle of buildings are important in this sustainable design. It also adopts the concept of reduce, reuse and recycle in the engineering.

2.3. Green Information Technology

Computers made revolutionary changes in the modern world mainly in the office sector. Green computing is initially implemented to create paperless offices. Nevertheless, the IT sector has its own contribution towards environmental problems such as usage of large amount of electricity, emission of greenhouse gases, and huge amount of e-waste. Health and environmental issues caused by the use of computers can be minimized by using green computing. For example, the energy star labeled computers went to sleep mode when it is not used for a long period (16 minutes). Care must be taken in designing and operating computers. Since printing is an essential activity related to the use of computer, reusing or recycling of ink/toner cartridges is necessary. Non-petroleum based inks contributes largely towards green computing.

2.4. Green Biotechnology

Bioinformatics is the study of biological systems aiding information technology. Bioinformatics tools enable eco-friendly development of knowledge. The information gathered is free of environmental contamination with reduced cost. Green Biotechnology uses plants or animals for environment-friendly solutions in agriculture, horticulture, and animal replication processes. The production of bio-fuel also comes under green biotechnology. Permanent reductions in fuel usage and CO₂ emissions can be achieved by green biotechnology. Safety assessments of biotechnology crops are necessary.

2.5. Organic agriculture

The production of food is an intrinsic necessity as far as human beings and animals are concerned. It also has tremendous impact on economic growth and social wellbeing. Global food industry looks at organic farming for tasty and healthy food habits. However, the use of fertilizers and pesticides adversely affects the structure of soil and its fertility, the diversity of nature, and the nutrient capacities agricultural products. Pest management and disease management in modern agricultural sectors using fertilizers and pesticides also affect quality of food produced.

However, the financial performance of organic farming is economically significant. Organic farming requires manual work and the workers should get fair incomes and dignified working conditions. It must keep in mind that although food items produced by organic farming are good for health and nature, it alone cannot feed the planet. However, it reduces food waste and promotes a self-sustained human population. It also reduces toxic effects and is a step towards plant-based balanced diet¹³.

2.5.1. Safe fungicides

Bio-based pesticides catch more and more attention in environmentally benign agricultural practices. Bio-pesticides are natural products used to control pests, weeds and plant diseases. Chemical fungicide has harmful effects on the environment. Among the bio-fungicides, dithiocarbamate derivatives are soluble in water and are harmless. Synthesis of safer fungicides is an urgent need. Direct functionalization of glycerol with a dithiocarbamate moiety can be done cost-efficient and environmentally friendly route using safer fungicides. The modern agriculture highly demands the phytosanitary chemicals. The extensive utilization of chemical fungicides in the by agriculture sector raises some serious concern about the environmental sustainability of current chemistry. The search of safer fungicides has now become a challenging and urgent task, and modern agriculture strongly desires greener solutions¹⁴.

2.5.2. Herbal products

Herbs are the natural resource of plant chemicals. Ayurveda is a *modus operandi* for modern healthcare systems. Pharmaceuticals based on single chemical are of greater importance. Adequate extraction chromatographic finger printing and spectral identification organic compounds are of foremost importance for specific activity of herbal medicine.

3. Awards and Recognitions

For giving motivation and constant support for a green culture, in 1995 the presidential green chemistry challenge award was announced for green synthesis pathways for old chemicals and for green protocol for new compounds. UK green chemistry award was given to young academic researcher. Another precious award is RACI green chemistry challenge award to promote innovative chemical research in fundamental chemistry. Multinational organizations like UN promote green chemistry initiatives that facilitate economic and environmental perspectives. Green chemistry concepts and approaches are now included in curriculum for schools and universities in order to get an academic and research spirit for clean chemical technology. For the implementation of green chemistry within the pharmaceutical level the Green Aspiration Level (GAL)-based standardization procedure is followed. R&D operations that cope up with reference standard incentives are given by the government¹⁵.

4. Green Chemistry

Green chemistry otherwise known as sustainable chemistry is an umbrella concept of sustainability. By definition, green chemistry is the design, development, and implementation of chemical products and processes to reduce or eliminate the use and generation of substances hazardous to human health and the environment. Anastas and Warner formulated the twelve principles of green chemistry in 1998.

1. Prevention of waste: Productions of unwanted materials or byproducts during chemical reactions that adversely affect the environment are prevented. Formation of zero waste is better than managing it after the formation.
2. Atom economy: Synthetic methods should be designed to maximize the incorporation of all materials used in the process in the final product.
3. Safer chemicals: Wherever it is practical, synthetic methodologies should be designed to use and generate substances that possess little or no toxicity to human health and the environment.
4. Chemical products should be designed to preserve efficacy of function while reducing toxicity.
5. Safe solvents and auxiliaries: The use of auxiliary substances (e.g., solvents, separation agents, etc.) should be avoided whenever possible and innocuous when used.
6. Energy efficiency: Energy requirements should be recognized for their environmental and economic impacts and should be minimized. Synthetic methods should be conducted at ambient temperature and pressure.
7. Renewable feedstock: A raw material feedstock should be renewable rather than depleting whenever technically and economically practical.
8. Avoid unnecessary derivatization: Avoid blocking group, protection/deprotection, and temporary modification of physical/chemical processes if possible.
9. Use catalytic reagents (as selective as possible) are superior to stoichiometric reagents.
10. Chemical products should be designed so that at the end of their function they do not persist in the environment and break down into innocuous degradation products.
11. Analytical methodologies need to be further developed to allow for real-time in-process monitoring and control prior to the formation of hazardous substances.
12. Accident prevention: The use of substances and the form of a substance that are potential cause for chemical accidents, including releases, explosions, and fires must be minimized

Some of the cases of green chemistry are briefly mentioned below

4.1. Green Reaction Media

In order to avoid carcinogenic solvents, green, inexpensive and non-toxic solvents are suggested. For example, supercritical

fluids and ionic liquids are inexpensive and green non-toxic solvents. Supercritical carbon dioxide provides good reaction media and makes product separation easier. Organic reactions using benign solvents, especially water, and reaction taking place at the interface are also known case of green reaction media.

4.2. Solvent-free reactions

Solvent-free reactions are one of the ways to green chemical reactions. Chemical processes that do not require solvents are highly recommended to avoid hazardous and environmental polluting problems associated with solvents. Green synthesized palladium nano-particles capped by gelatin/pectin can be used as catalyst in solvent free Mizoroki-Heck reaction¹⁶.

4.3. Green experimental methods

The tool kit of green methods has to follow three Rs strategy where Rs stands for reduce, reuse and recycle. Reducing means the decision not to use resources if an alternate source is available. Reusing means that finding a way to reuse a resource. Recycling is the action of reprocessing.

4.4. Green chemical reactions

Many nanoparticles can be prepared by green chemical routes as well as green only routes. For example graphene supported palladium nanoparticles can be developed by green- chemical route and this heterogeneous catalyst functioned as reusable, recyclable catalyst for the reduction of nitro compounds¹⁷

4.4.1. Catalysis

Heterogeneous catalysis is one of the ways to reduce environmental pollution. Catalysis generate less waste and higher yield of manufactured products. Novel clean catalytic routes are of high priority in different R & D groups. In green manufacturing, advanced oxidation processes have an added advantage in waste water purification and organic synthesis. Heterogeneous catalyst deposited in the microreactor has many applications in petrochemical and pharmaceutical industries¹⁸. Nano crystals prepared by green pathway function as environment friendly catalyst in the oxidation, hydrogenation and semi hydrogenation reactions¹⁹. Graphene based compounds have proved their efficiency as Heterogeneous catalysts²⁰. Bimetallic Ni-based catalysts have tunable chemical and physical properties and find utility in environmental remediation and energy production²¹.

4.4.2. Polymer synthesis

Many polymer syntheses can be done using enzyme catalysts. Enzymes are green catalysts and helps metabolic reactions that leading to generation of bio macromolecules. Mysterious enzymatic reactions are the most studied reactions. By mimicking the biochemistry, it is possible to generate novel polymers with advanced functionalities. Biomass sources are economically important for the manufacture of technologically relevant molecules. Many polymer precursor moieties like acrylic acid, adipic acid and α -caprolactam etc. derived from bio renewables and their bio-based preparation pathways are sustainable alternatives²².

4.4.3. Cross coupling reactions

The palladium-catalyzed Suzuki cross-coupling reaction for the construction of carbon-carbon bonds between aryl bromides with aryl boronic acids can be enabled using PdCl_2 catalyst in aqueous DMF at room temperature²³

Suzuki-Miyaura cross-coupling reaction is used for the synthesis of biaryls and alkene derivatives. Water catalyzed reactions leads to formation of supramolecular assembly held together by various no covalent interactions²⁴. Ligand-free Suzuki-Miyaura cross-coupling reactions are possible using palladium acetate catalyst. Here aqueous extract of banana is used in room temperature and it is an efficient green protocol²⁵. Green synthesized palladium nanoparticles supported on *Pistacia atlantica kurdica* acts as heterogeneous catalyst for Mizoroki-Heck and Suzuki-Miyaura cross-coupling reactions in water media²⁶. Ullmann-type C-N cross-coupling between carbazole derivatives and aryl iodides are catalyzed by iridium-based photocatalyst under mild conditions using blue light of LED²⁷.

4.4.4. Biodegradable polymers

Polymers are used in the production of textiles and plastic bags. Since packing materials are discarded into the environment these polymers should be biodegradable. Biochemically synthesized polymeric materials include carbohydrate polymers. In 1990s, BASF developed a material called SavantTM, made from nylon 6 fiber. Natural fiber composites namely coir fiber reinforced biocomposites reduces carbon footprint to the atmosphere and find use in automobile, building purposes, consumer goods etc²⁸. These

examples show how innovative science and technology can supports sustainability through the development of sustainable materials.

5. Green technologies

5.1. Ultrasound technology

It utilizes the ultrasonic power primarily to manipulate the material mechanically. Pulsed sono-electro-chemical synthetic method involves alternating sonic and electric pulses, and electrolyte composition plays a crucial role in the shape formation. Sonochemical method is a green method and no solvent or non-conventional solvents like ionic liquids, water, ethylene glycol etc. are used²⁹. Bismuth based oxide ($\alpha\text{-Bi}_2\text{O}_3$) nanostructures were prepared by ultrasound-assisted method. These nanostructures can be utilized for degradation of rhodamine B under UV light irradiation³⁰. Good conductive and micro-molded nanocomposites based on poly(α -caprolactone) and multi-walled carbon nanotubes (MWCNTs) can be prepared under ultrasonication³¹. Ultrasound extraction of compounds reduces environmental and health risks to greater extents. Yield of production as well as extraction of heat-sensitive components is enabled by this technology. Piezoelectric and magnetostriuctive materials can be used as transducers for the extraction using ultrasound technology. Green solvents ultrasonication can be used for the extraction of biologically-active phytochemicals from plants.³² Novel ultrasound transmitters are manufactured based on photoacoustic principle. Based on this concept most of the optical fibers generates ultrasound in which optical energy absorption and conversion is taking place³³.

5.2. Microwave technology

Microwave radiation of frequency of 2400 MHz was fixed for industrial and domestic purposes by law. A domestic microwave oven can function as a reactor for conducting many more reactions. Rotational changes accompanied by the absorption of microwave radiation results in dielectric or dipolar heating. For this purpose, polar solvents like water, ethanol, DMF etc. can be used. Since water is polar it has good potential to absorb microwaves and convert them into heat energy, consequently accelerating the reactions in an aqueous medium as compared to results obtained using conventional heating. MW-enhanced chemistry is based on the efficiency of the interaction of molecules in a reaction mixture (substrates, catalyst and solvents) with electromagnetic waves. This process mainly depends on the specific polarity of molecules. Irradiation of a reaction mixture in an aqueous medium by MW results in the dipole orientation of water molecules and reactants in the electric field. Reactants under sealed containers on microwave irradiation give high efficiency in products with added advantage of high purity at a faster rate. Dry media synthesis or solvent free synthesis, supported reactions at the solid surfaces. It benefits the high risk of high pressure, and tedious purification procedures. This non-conventional technique is largely employed in pharmaceutical and medicinal purposes. This technique is green, cost effective and reduces environment pollution also.

5.3. Bio-based protocols

Biochemical approaches are eco-unfriendly, less expensive and do not use toxic chemicals in the synthesis protocols. An example is nanoparticles production by using bacteria, yeasts, fungi, algae etc. Bio-based protocols depends on the type of organism used, their properties, optimal conditions for cell growth and activity, optimal reaction conditions, and selection of the biocatalyst, substrate concentration, pH, light, temperature, buffer strength, electron donor (e.g., glucose or fructose), biomass and substrate concentration, mixing speed, and exposure time etc. Unicellular and multicellular organisms are used in the synthesis. Plant extracts provides single step for many biosynthesis process. The understanding the chemistry of natural processes will apparently help in the discovery of entirely new and unexplored methodology of material synthesis.

5.4. Photochemical reactions

Photochemical reactions are a choice for the green synthesis. Light source may be sunlight, visible light, UV light or any source of light. It utilizes light photons which leave behind zero waste. Photochemical reactions proceed rapidly at normal temperatures. This synthetic strategy has fewer steps also. Facile, eco-friendly and green photoredox and H-atom-transfer reactions are enabled in microcapillary reactor. The UV-A-driven C-C-coupling reaction and the mediated benzophenone and phenanthrene catalyzed Minisci-type cross-coupling reactions are feasible by harvesting sunlight³⁴. Photocatalysts by the absorption of a 400 nm photon selectively produce single enantiomer. Chiral photocatalysts induce their chirality to the product³⁵. Harmful pollutant chemicals in the environment can be degraded by the assistance of light.

Efficiency with which a photochemical reaction has performed is called quantum yield. The photodegradation can be

conducted in presence of UV light with an oxidant like H_2O_2 and photo oxidation by UV light alone. Many pollutant organic dyes were decomposed in presence of sunlight alone using a photocatalyst. Degradation of the dye methylene blue (MB) was enabled by zinc oxide-reduced graphene oxide nanocomposite catalyst under UV irradiation (500W)³⁶. Noble metal nanoparticles synthesized using green reducing agents functioned as catalyst for the photodegradation of cationic dyes³⁷. Visible light-induced photodegradation of methylene blue in the catalytic presence of bio-synthesized silver nanoparticles and the catalyst is an excellent nominee for the partition of hazardous materials³⁸. Titanium dioxide supported silver nanoparticles prepared in green paths is efficient for the photocatalytic degradation of azo dyes³⁹.

6. Conclusions

Green technology is the technology for sustainable development and is implementation of knowledge for practical purposes. The adaptation of green technology is to reduce waste produced industries. Sustainability is one of the important issues in the eye of green technology. It aimed at innovations without destructing the natural resources. Green technology is a design with an intention. The aim of green technology is to make products and processes with less hazardous outputs through green technological corridor.

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Synthesis of Hierarchically Porous MOFs for Dye Degradation

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Abstract

Hierarchically porous MOFs (HP-MOFs) containing mesopores (2-50 nm) along with micropores (< 2 nm) have raised considerable interest recently, due to their variety potential applications in adsorption, separation of molecules, drug delivery, catalysis etc. In this work we report a simple, green and ultrafast route for the synthesis of a hierarchically porous Zn-BDC MOF using the cooperative template strategy by the simultaneous introduction of ZnO as the accelerator and cetyltrimethylammonium bromide (CTAB) as the surfactant. The advantage of this method is that the synthetic procedure was accomplished in a few minutes (6 minutes) at room temperature and pressure and the synthesized MOF was found to be an efficient catalyst for photo-induced dye degradation.

Introduction

Water is essential for the existence of life on earth. However due to various anthropogenic activities, water is getting polluted day by day. On one hand industrial developments makes human life better whereas on the other hand, cause depletion of potable water. Water gets polluted mainly by heavy metals, industrial effluents, fertilizers, pesticides, organic dyes etc¹. Organic dyes from textiles, medicines, pesticides, solar cells etc contaminate the open water resources thereby causing threat to aquatic life leading to environmental imbalance². This has led to intense research in the field of technologies related to water treatment all around the world³. Porous coordination network structures called MOFs with fascinating applications such as adsorption, catalysis, separation, sensing etc have proved very early to be efficient photocatalysts for degradation of organic dyes⁴. Hence, hierarchically porous MOFs (HP-MOFs) with micro/meso/macro-pores in the network structures should be better catalysts for dye degradation than conventional MOFs⁵. Presence of mesopores along with micropores in the MOF networks enable them to be used as hosts to accommodate bulky molecules which enable their reaction or transformation in these pores. To generate MOFs of tunable porosity, different approaches were explored, resulting in hierarchically structured materials which include encapsulation and etching technique, ligand extension technique, ionic liquid assisted technique, induced-defect-formation, spray-dry technology etc⁶⁻⁹. However most of these methods use high temperature and pressure, long reaction time or special apparatus which are energy consuming and pollution causing. A time-controlled room temperature synthesis of HP-MOFs with high STYs (2035 kgm⁻³d⁻¹) was reported by Huo et al¹⁰. However, extending this strategy to green and facile synthesis remain challenging¹¹. A recent approach of synthesizing mesoporous materials with certain templates or surfactants that can act as structure directing agents has proved to be a promising route for the synthesis of HP-MOFs with tunable surface area and porosity¹²⁻¹⁶. Recently methods like modified template strategies as well as cooperative template strategies were developed to prepare HP-MOFs which have enabled the reduction of the synthesis time, under facile synthetic conditions¹⁷⁻²¹. Here, a simple room temperature method was applied successfully for the synthesis of a HP-Zn-BDC MOF which has proved to be an efficient photocatalyst for dye degradation.

Methods

(a) Rapid room temperature synthesis of hierarchically porous Zn-BDC MOF

14.4 mmol ZnO powder was dispersed in 32 mL deionized water and 72 mL DMF (solution A). 28.8 mmol Zn(NO₃)₂·6H₂O was dissolved in 72 mL deionized water (solution B). Then, solution B was mixed with solution A under fast magnetic stirring (solution C). 14.4 mmol of CTAB (surfactant) and 21.6 mmol of 1,4-benzene dicarboxylic acid were added to 64 mL ethanol and stirred for 30 minutes (solution D). Solution C was added to solution D under fast magnetic stirring for 2 minute and allowed to stand for 5 minutes. The colourless solid product was filtered, washed and dried in a vacuum oven at 150°C to obtain HP-Zn-BDC MOF which was further used for photocatalytic dye degradation studies of the dye Rhodamine-B.

(b) Photodegradation studied of the Dye Rhodamine B using the synthesized HP-Zn-BDC MOF

The photocatalytic dye degradation performance of the synthesized HP-Zn-BDC MOF was measured by a common organic dye Rhodamine B (RhB). The degradation of the dye was investigated under sunlight. For the experiment, a solution of 10 mg/L of RhB was prepared. To 50 ml of this solution, 0.01 g HP-Zn-BDC MOF was added. The solution was stirred for one hour, in a glass bottle under dark condition to ensure the establishment of adsorption-desorption equilibrium. The mixture as well as the blank dye solution (without added MOF) were then irradiated under sunlight. The UV-Visible spectra of the blank dye solution as well as clear solution after centrifugation were measured from 200-900 nm at different time intervals.

Materials Characterization

X-ray diffraction (XRD) patterns of the sample was recorded on a diffractometer system (D8 ADVANCE, Bruker Twin-Twin). Scanning electron microscopy (SEM) as well as Energy dispersive X-ray spectroscopy (EDAX) images were obtained using a SEM-EDAX (Jeol 6390LA/ OXFORD XMX N). Transmission electron microscopy (TEM) images were obtained using an HRTEM (Jeol/JEM 2100). Thermogravimetric analysis (TGA) of the samples were performed with a TGA-DTA (Perkin Elmer STA6000). Fourier Transform infrared (FTIR) spectra were recorded on an FTIR spectrometer (Thermo scientific Nicolet iS5, 4000 cm⁻¹ to 400 cm⁻¹, resolution 4 cm⁻¹). Dye degradation studies were carried out using a UV-Vis Spectrophotometer (Thermo Scientific Evolution).

Results and Discussions

The present work demonstrates the synthesis of HP-Zn-BDC MOF using zinc ions and benzene dicarboxylic acid (BDC) with ZnO and CTAB. The crystalline properties of the synthesised MOF were investigated using powder XRD analysis (Fig. 1). The XRD peaks which are sharp and distinct confirm good crystallinity of the synthesized MOF and the diffraction peaks match well with the previously reported works.

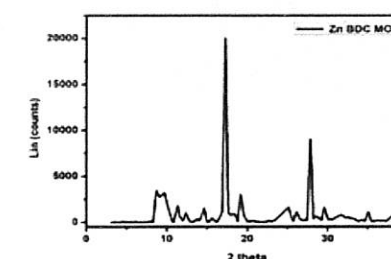


Fig.1. XRD analysis of HP-Zn-BDC MOF

The crystal morphologies of the MOFs were understood from scanning electron microscopy (Fig.2). As clear from the SEM image, the synthesised Zn-BDC MOF crystals exhibit regular and smooth surfaces.

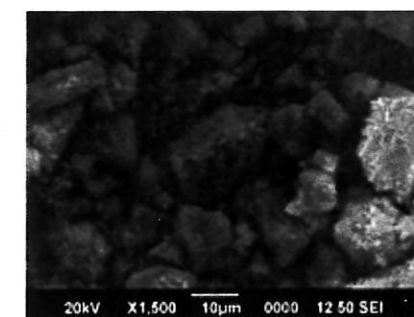


Fig.2. SEM analysis of HP-Zn-BDC MOF

The Energy Dispersive X-Ray spectroscopy (Fig. 3) of Zinc MOFs revealed that the sample is composed of C, O and Zn in appreciable amounts.

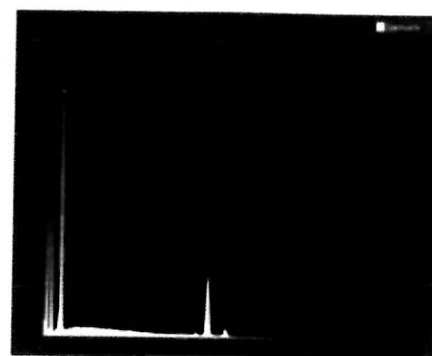


Fig. 3. EDAX analysis of HP-Zn-BDC MOF

The TEM image (Fig. 4) shows that the synthesized material is highly porous with highly ordered micropores as well as mesopores which enable them to entrap micro as well as meso-particles.

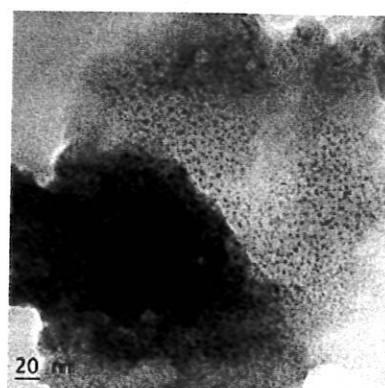


Fig. 4. TEM analysis of HP-Zn-BDC MOF

The thermal stability of the sample was examined with thermogravimetric analysis (Fig. 5). The initial weight loss around 100°C is attributed to the loss of moisture and solvent molecules and the complete decomposition of MOF occur around 400°C which indicates that the synthesised MOFs have good thermal stability and the presence of extended pores on the MOF structures does not decrease their thermal stability.

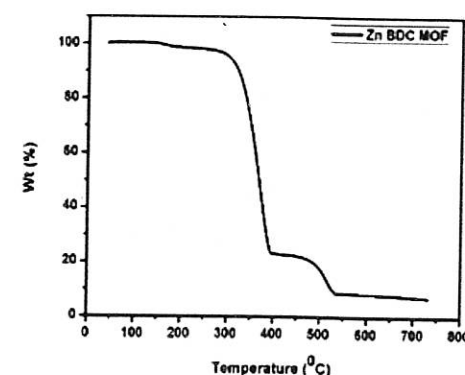


Fig. 5. TGA analysis of HP-Zn-BDC MOF

The UV-Visible spectra of the photocatalytic degradation of Rhodamine-B in visible light by the HP-Zn-BDCMOF is represented in the Fig.6. The synthesized MOF has proved to be efficient catalyst for the photodegradation of Rhodamine B which is clear from comparison of the UV Visible spectra of the blank dye solution with that of MOF-added dye solution.

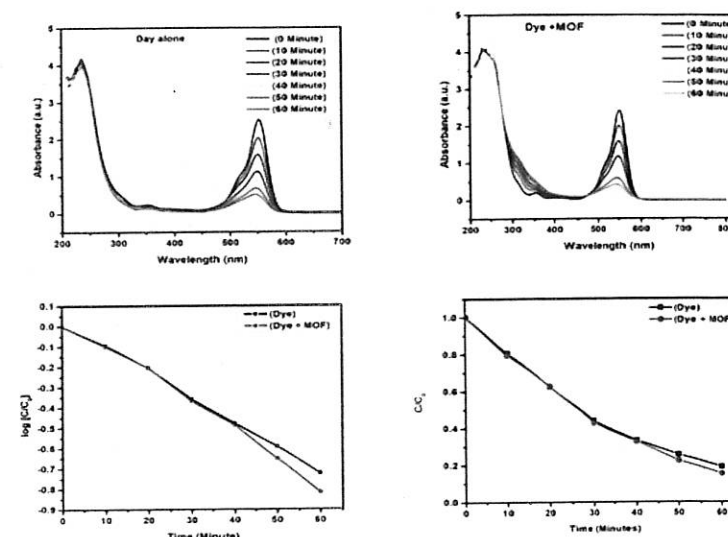


Fig.6. The UV-Visible spectra of the photocatalytic degradation of Rhodamine-B in visible light by the Zn-BDC HP-MOF

Conclusions

In summary, the present work demonstrates a simple and ultrafast method for the synthesis of a hierarchically porous MOF (Zn-BDC MOF). Here, a cooperative template strategy was used in which ZnO was employed to accelerate the construction of the framework to form the hydroxy double salt (HDS) layers whereas CTAB was introduced as surfactant for the formation of template micelles which guide the formation of micro- and mesopores through a synergistic effect with the HDS. The synthesised product was found to be highly porous with micro- and mesopores in it and have proved to be a good photocatalyst for dye degradation. This could open a new avenue for waste water treatment in a large scale in future.

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അന്തഃസംഘർഷം സാമൂഹിക മനുഷാസ്ത്രത്തിൽ

ഡോ. ജോഷി വർഗീസ്

ഒരു വ്യക്തിയുടെ മാനസികാരോഗ്യം ജൈവ-സാമൂഹിക-സാംസ്കാരിക പരിതോവനമകളുമായും, വ്യക്തിക്ക് ചുറ്റുമുള്ള ഭൗതിക പരിസരവുമായും ബന്ധപ്പെട്ടാണിരിക്കുന്നതെന്ന ആധുനിക സാമൂഹികമനുഷാസ്ത്രജ്ഞന്മാരുടെ സിദ്ധാന്തങ്ങളും ആധുനിക നരവംശ ശാസ്ത്രത്തിന്റെ സംഭാവനകളും അന്തഃസംഘർഷത്തെക്കുറിച്ചുള്ള പഠനത്തിൽ ഒരു വഴിത്തിരിവ് സൃഷ്ടിച്ചിരിക്കുകയാണ്. മനുഷ്യമനസ്സിലെ സംഘർഷങ്ങൾക്കു സമൂഹത്തിന്റെ താളക്കേടുകൾ കാരണങ്ങളായിത്തീരുന്നുവെന്ന നിഗമനത്തിലാണിപ്പോൾ മനുഷാസ്ത്രം എത്തിനിൽക്കുന്നത്. കരുത്തുറ്റ വ്യക്തിത്വത്തിന്റെ ഭിന്നമുഖങ്ങൾ തമ്മിലുള്ള ഏറ്റുമുട്ടലിനെയാണ് അന്തഃസംഘർഷം എന്നതുകൊണ്ട് വിവക്ഷിക്കുന്നത്.

മനുഷ്യവ്യക്തികളെപ്പോലെതന്നെ പരിതഃസ്ഥിതികൾക്കും അതുല്യമായ വ്യക്തിത്വങ്ങളും ചില പരിതഃസ്ഥിതികൾ മനുഷ്യനെ വളർത്തുമ്പോൾ മറ്റു ചിലതു മനുഷ്യനെ തളർത്തുന്നു. മനോരോഗമെന്നത് ഒരു സാമൂഹിക കലാശിപ്തമാണെന്ന് ആർ.ഡി. ലെയിബ് പറഞ്ഞു. ഓരോ സമൂഹത്തിനും ഓരോ ജാതിക്കും അതിന്റേതായ രോഗമാതൃകകളുണ്ട്. അസ്തിത്വബോധമുള്ള ഒരു വ്യക്തിക്ക് അയാളുടെ മതത്തിന്റെയും, സമൂഹത്തിന്റെയും നിയമങ്ങളോടും വിലക്കുകളോടും പലപ്പോഴും ഏറ്റുമുട്ടേണ്ടിവരുന്നു. ഈ അവസ്ഥ വ്യക്തിയിൽ അന്തഃസംഘർഷം സൃഷ്ടിക്കുന്നു. സാമൂഹികമായ അംഗീകാരം ലഭിക്കാത്ത വികാരങ്ങളും വിചാരങ്ങളും ബോധമനസ്സിലേക്കു കടന്നുവരികയില്ലെന്നും ബോധമനസ്സും അബോധമനസ്സും മനുഷ്യനായിരിക്കുന്നത് സാമൂഹികമായ ഉപാധികൾ മുഖേനയാണെന്നും അഭിപ്രായപ്പെടുന്നവരുണ്ട്. മാനുഷിക പെരുമാറ്റങ്ങളിൽ ഏറ്റവുമധികം സ്വാധീനം ചെലുത്തുന്നത് സമൂഹമാണ്. ഓരോരുത്തിന്റെ ജീവിതത്തിൽ മറ്റൊരാളുടെ സാന്നിധ്യത്തിനു പോലും അനുകൂലമായോ പ്രതികൂലമായോ സ്വാധീനമുളവാക്കാൻ സാധിക്കും. പ്രേഷക സ്വാധീനം (audience effect), സഹപ്രവർത്തക സ്വാധീനം (coaction effect) എന്നീ പേരുകളിലാണ് ഈ ചിന്താഗതിക്കാരായ മനുഷാസ്ത്രജ്ഞന്മാരുടെ പരീക്ഷണങ്ങൾ അറിയപ്പെടുന്നത്. ക്രൂരതയും ലക്ഷ്യരഹിതമായ ആക്രമണവാസനയും മറ്റ് ഒട്ടേറെ പെരുമാറ്റവൈകല്യങ്ങളും ഇടുങ്ങിയ സ്ഥലങ്ങളിൽ ജീവിക്കുന്നവരിൽ കണ്ടുവരുന്നു. ജനത്തിരക്കും (crowding) ജനസാന്ദ്രതയും (density) ഓരോരുത്തിലും ഉളവാക്കുന്ന മാനസികസംഘർഷങ്ങൾ ആ വ്യക്തികളുടെ മനോഭാവത്തെക്കുറിച്ച് ആശ്രയിച്ചിരിക്കുന്നു. മിക്കവാറും നാമെല്ലാവരും അബോധമായിട്ട് മറ്റുള്ളവരുടെ മരണം ആഗ്രഹിക്കുന്നവരാണെന്ന് ഫ്രേഡ്ഡ് പറയുന്നു. മറ്റുള്ളവർ മരിച്ചുകഴിഞ്ഞാൽ നമുക്ക് സ്വന്തമായൊരു ലോകത്തിൽ ജീവിക്കാൻ കഴിയും എന്ന ചിന്തയാണത്രേ ഇതിന് മനുഷ്യനെ പ്രേരിപ്പിക്കുന്നത്.

സമൂഹത്തിന്റെ വിവേചനങ്ങളും പിന്നോക്കാവസ്ഥകളുമാണ് വ്യക്തിയിൽ അന്തഃസംഘർഷം സൃഷ്ടിക്കുന്നതെന്ന് സാമൂഹികകാരണ സിദ്ധാന്തം (Social Causation Theory) സമർത്ഥിക്കുന്നു. മാനസികമായി ദുർബലരായവർ നഗരത്തിന്റെ താഴ്ന്നനിലവാരം പുലർത്തുന്ന സ്ഥലങ്ങളിൽ ജീവിക്കേണ്ടിവന്നാൽ അവരുടെ മനസ്സിന്റെ ആരോഗ്യം ക്ഷയിക്കുകയും കടുത്ത മാനസിക സംഘർഷത്തിനടിമകളായിത്തീരുകയും ചെയ്യുമെന്ന് സാമൂഹിക തെരഞ്ഞെടുപ്പ് സിദ്ധാന്തം (Social Selection Theory) അനുശാസിക്കുന്നു.

ശാസ്ത്രം നൽകിയിട്ടുള്ള വലിയ ശക്തിയുപയോഗിച്ച് മനുഷ്യനെ അടിമയാക്കാൻ കഴിയുന്ന ഒരു വ്യവസ്ഥ ഇന്ന് നിലവിൽ വന്നിരിക്കുന്നു. നഗരവത്കരണം, വ്യവസായവത്കരണം, സാങ്കേതികപുരോഗതി എന്നിവ പ്രാധാന്യമർഹിക്കുന്ന സാമൂഹികമാറ്റങ്ങളാണ്. സമൂഹത്തിലെ സാമ്പത്തികവും സാമൂഹികവുമായ ശീമിലീകരണങ്ങളും യന്ത്രസാധനമായ ജീവിതവും വ്യക്തിയെ ഏകാന്തപഥികനാക്കുകയും അവനിൽ സംഘർഷം നിറയ്ക്കുകയും ചെയ്തു. ലോകമഹായുദ്ധങ്ങളും വ്യാവസായികവിപ്ലവങ്ങളും ജനജീവിതത്തിലും സാഹിത്യത്തിലും ജീവിതദർശനത്തിലും വരുത്തിയ മാറ്റങ്ങൾക്കു മനുഷാസ്ത്രപഠനങ്ങൾ നല്കുന്ന വ്യാഖ്യാനങ്ങൾ സ്വീകാര്യങ്ങളാണ്. വിവിധ രാജ്യങ്ങളിലെ യുദ്ധങ്ങളും കലാപങ്ങളും ദുരന്തങ്ങളും അവിടെയുള്ള ശിശുക്കളിലും മുതിർന്നവരിലും സൃഷ്ടിച്ച സംഘർഷത്തെപ്പറ്റിയുള്ള വിവിധതലത്തിലുള്ള പഠനങ്ങൾ ശ്രദ്ധേയമാണ്. മാനസികമായി വ്യക്തി അനുഭവിച്ചിരുന്ന സുരക്ഷിതത്വബോധം ആധുനിക മനുഷ്യന് നഷ്ടപ്പെട്ടിട്ടുണ്ട്. കോൾമാന്റെ വീക്ഷണത്തിൽ,⁽¹⁾ ടെലിവിഷൻ സെറ്റുകളും സദാസമയവും നിറഞ്ഞിരിക്കുന്ന ഫ്രീഡ്ജുകളും ആധുനികജീവിതത്തിലെ മറ്റെല്ലാ സുഖസൗകര്യങ്ങളുമായിട്ടും ജീവിതത്തിന്റെ അർത്ഥം തങ്ങളിൽനിന്ന് കൈവിട്ടുപോകുന്നതായി ആധുനിക മനുഷ്യന് തോന്നുന്നു. മുരളി ദൈയോറയുടെ⁽²⁾ വീക്ഷണത്തിൽ എല്ലാവരും പിടിച്ചുപറി (operation grab)യിൽ ഏർപ്പെട്ടിരിക്കുകയാണ്. ജോലി, വീട്, വെള്ളം, ഭക്ഷണം, ബസ്സിലും ട്രെയിനിലും നിൽക്കാനിടം, പുറംപോക്കുകൾ എന്നിവേ ഭാര്യാഭർത്താക്കന്മാർക്കു വേണ്ടിപ്പോലും പിടിച്ചുപറിയായാണ്. ഒരു വ്യക്തിയുടെ ആത്മസംഘർഷത്തിന്റെ കാരണം അവന്റെ അബോധമനസ്സിൽ മാത്രം അന്വേഷിച്ചാൽ പോരെന്നും അവന്റെ നിയന്ത്രണപരിധിക്കപ്പുറം നിൽക്കുന്ന അനവധി ബാഹ്യഘടകങ്ങളെക്കുറിച്ച് ആശ്രയിച്ചാണ് വ്യക്തിയിൽ മാനസികസംഘർഷം ജന്മമെടുക്കുന്നതെന്നുള്ള വസ്തുതയിലേക്കാണ് ഈ പഠനം നമ്മെ നയിക്കുന്നത്.

തൊഴിൽ മനുഷ്യന്റെ ആത്മാവിഷ്കാരമാണ്. മനുഷ്യന്റെ സർഗ്ഗശക്തികളാണ് തൊഴിലിലൂടെ ഒരു രൂപമാർജ്ജിക്കുന്നത്. ഉത്പാദനപ്രക്രിയയിൽ തൊഴിലാളിക്ക് അനുഭവപ്പെടുന്ന അനൃതാബോധം ആത്മസംതൃപ്തിയുടെ മേഖലയാകേ തൊഴിലിനെ ആത്മനിന്ദയുടെ ഗർഭത്തിൽ എത്തിച്ചു. മുതലാളിത്ത വ്യവസ്ഥിതിയിൽ പരസ്പരം മത്സരിക്കുന്നവരെയും സഹപ്രവർത്തകന്റെ ആത്മാഭിമാനത്തെ ചോദ്യം ചെയ്യാൻ ശ്രമിക്കുന്നവരെയുമാണ് നാം കാണുന്നത്. ബന്ധങ്ങൾ യാന്ത്രികനാട്ടുങ്ങളായി മാറി. ഇന്നത്തെ

വൻകിട വ്യവസായശാലകളിലും മറ്റും യന്ത്രസമാനമായ രീതിയിൽ ജോലിയെടുക്കാൻ നിർബന്ധിതരായിത്തീരുന്നവർക്ക് അകൽച്ചാബോധവും അർത്ഥശൂന്യതയും അനുഭവപ്പെടുന്നതിനു കാരണം ജോലിയിലെ അസംതൃപ്തിയും മനുഷ്യത്വരഹിതമായ സാമൂഹികാന്തരീക്ഷവുമാണ്. ഈ അവസ്ഥ വ്യക്തിയെ കനത്ത നിസ്സംഗതയുടെയും അപരിചിതത്വത്തിന്റെയും അന്യതാബോധത്തിന്റെയും നടുവിലേക്കാണ് തള്ളിവിടുന്നത്. മാനസികമായ വിഭ്രാന്തികളും വികലമായ ജീവിതശൈലികളും കാലാന്തരത്തിൽ വ്യക്തിയിൽ വേരുപിടിക്കുന്നു. സമൂഹത്തിൽനിന്നും സ്വജനങ്ങളിൽ നിന്നും ഒറ്റപ്പെട്ടുപോകുന്നതായി (alienated) വ്യക്തിക്ക് അനുഭവപ്പെടുമ്പോൾ അവന്റെ മനസ്സിലാകുന്ന സംഘർഷത്തിൽനിന്നാണ് അനോമി ഉടക്കുന്നത്. ആധുനികസംസ്കാരം വ്യക്തിമനസ്സിൽ സൃഷ്ടിക്കുന്ന അവസ്ഥാവിശേഷമാണിതെന്നും വ്യക്തിയുടെ വ്യക്തിപരമായ നിലപാടല്ല ഇതിനുകാരണമെന്നും പ്രശസ്ത മനുഷാന്ത്രജ്ഞനായ കാരൺ ഹോർണി (Karen Horney)⁽⁴⁾ അഭിപ്രായപ്പെടുന്നു. താൻ സമൂഹത്തിൽ നിന്ന് ഒറ്റപ്പെട്ടുപോകുമെന്ന ഭയത്തെ കാസ്‌ട്രേഷൻ ഫിയർ (castration fear) എന്നാണ് സൈക്കോ അനാലിസിസിൽ വിളിക്കുന്നത്. മദ്യപാനത്തിലും മയക്കുമരുന്നിലും ആത്മഹത്യയിലും അഭയം കെത്തി സമൂഹത്തിന്റെ ഒറ്റപ്പെടുത്തലിൽ നിന്നും രക്ഷപ്പെടാൻ വ്യക്തികൾ ശ്രമിക്കുന്നതായി മനുഷാന്ത്രപഠനങ്ങൾ തെളിയിക്കുന്നു. സമൂഹത്തിൽനിന്നും ഒറ്റപ്പെട്ടുപോകാൻ ഒരുതരം നിരാകരണവ്യഥ വ്യക്തിയെ കടന്നുപിടിച്ചെന്നുവരാം. ഈ നിരാകരണവ്യഥയിൽനിന്നും അപമാനവികരണത്തിൽ നിന്നും ഉറവെടുക്കുന്ന രോഷമാണ് സാമൂഹ്യവിരുദ്ധരെയും കുറ്റവാളികളെയും മനോരോഗികളെയും സൃഷ്ടിക്കുന്നത്.

കലാകാരന്മാരിൽ അനോമി തീവ്രമായിരിക്കും. എമിലിസോള, ബോർലയർ, റിംബോ, വെർലെയർ എന്നിവർ തങ്ങളുടെ മാനസികനില ശരിയല്ലെന്ന് സ്വയം വിശ്വസിച്ചിരുന്നവരാണ്. ജീവിച്ചുപോന്ന സമൂഹത്തിന്റെ മുഖ്യധാരയിൽ നിന്നും തിരസ്കരിക്കപ്പെട്ടുകൊണ്ടിരുന്ന കഠിനവ്യഥയാണ് അവരെ ഇതിന് പ്രേരിപ്പിച്ചത്. ഒരു സമൂഹം സ്വീകരിച്ചിരിക്കുന്ന മുഖ്യബോധവും സാംസ്കാരികാന്തരീക്ഷവും സദാചാരനിയമങ്ങളും എത്രത്തോളം മനുഷ്യത്വത്തിന് നിരക്കുന്നതാണോ, അത്രത്തോളം വ്യക്തിക്കു പ്രതിസന്ധികളെ നേരിടാതെ സ്വസ്ഥമായ ജീവിതം നയിക്കാൻ സാധിക്കുന്നു.

സമൂഹത്തിന്റെ ഭദ്രതക്കുവേണ്ടി ദാമ്പത്യത്തിനും കുടുംബത്തിനും സമൂഹം രൂപം നൽകി. പുരുഷനും സ്ത്രീയും തമ്മിലുള്ള സവിശേഷമായ ഒരു കരാറാണ് കുടുംബത്തിന്റെ അടിസ്ഥാനം. ഈ കരാർ വിശ്വസ്തതയോടെ പാലിച്ചുപോകാൻ പലപ്പോഴും ദമ്പതികൾക്ക് കഴിയാറില്ല. “മനുഷ്യന്റെ വൈകാരികമായ ആവശ്യമെന്ന സൂക്ഷ്മത്തിൽ നിന്നുയരയാണ് ദാമ്പത്യവും തറവാടും സംബന്ധവും എല്ലാം. അംഗീകൃതസ്ഥാപനങ്ങളായിക്കഴിയവേ അവയുടെ സൂക്ഷ്മതം നഷ്ടപ്പെടുന്നു. വെറും സ്ഥൂലമായി അവശേഷിക്കുന്നു”⁽⁴⁾. ദാമ്പത്യവിശ്വസ്തതയെപ്പറ്റി പരസ്പരം വച്ചുപുലർത്തുന്ന സംശയങ്ങളും സദാചാര-സാമൂഹിക സങ്കല്പങ്ങൾ സൃഷ്ടിക്കുന്ന ഉത്കണ്ഠകളും വ്യക്തികളിൽ മാനസികസംഘർഷമുളവാക്കുന്നു. വ്യക്തിപരമായ സവിശേഷതകളിലും അഭിപ്രായങ്ങളിലും കാഴ്ചപ്പാടുകളിലും പൂർണ്ണമായ ഏകീകരണമുള്ള രൂപം വ്യക്തികളെ കെന്താൻ പ്രയാസമാണ് അതുകൊണ്ടുതന്നെ ദാമ്പത്യബന്ധത്തിൽ അന്തഃസംഘർഷം തീവ്രമാകുന്ന സന്ദർഭങ്ങൾ ഉണ്ടാകും.

നീൽഷേ, സ്ട്രിൻബർഗ്, ഷോപ്പൻ തുടങ്ങി ഒട്ടനേകം കലാകാരന്മാർ കുടുംബജീവിതത്തിൽ കടുത്ത ആത്മസംഘർഷം അനുഭവിച്ചവരാണ്. വ്യക്തിസ്വാതന്ത്ര്യവാദികളായ കലാകാരന്മാരുടെ ദാമ്പത്യജീവിതത്തിൽ സംഘർഷം സ്വാഭാവികമാണ്. വിവാഹമെന്നത് മനുഷ്യപ്രകൃതിയുടെ ഒരു ഭാഗമല്ല. മറിച്ച് മനുഷ്യനിർമ്മിതമായ ഒരാചാരവും സമ്പ്രദായവുമാണ്. അപ്പോൾ ജന്മവാസനകളിൽ സമൂഹം ഏർപ്പെടുത്തുന്ന കർശനനിയന്ത്രണങ്ങൾ വ്യക്തി മനസ്സിൽ സംഘർഷം സൃഷ്ടിക്കും. കരുത്തുറ്റ വ്യക്തിത്വങ്ങൾ വിധേയത്വസ്വഭാവം കാണിക്കുകയില്ല. വ്യക്തികളുടെ സാമൂഹികജീവിതത്തിലെ സ്വാർത്ഥതാത്പര്യങ്ങളും കുടുംബജീവിതത്തിൽ സംഘർഷം സൃഷ്ടിക്കാറില്ല. ഒരു വ്യക്തിയിലെ സ്വകാര്യവ്യക്തിത്വത്തെയും സാമൂഹിക വ്യക്തിത്വത്തെയും സമരസപ്പെടുത്താനുള്ള തീവ്രശ്രമവും അതിന്റെ ഫലമായാകുന്ന തീവ്രമായ അന്തഃസംഘർഷവും കുടുംബവേദികളിലാണു്കുന്നത്. ലൈംഗികവീക്ഷണം, മുഖ്യങ്ങൾ, ജീവിതരീതി, സാമൂഹിക സാംസ്കാരികപരിതോപസ്ഥകൾ, ശാസ്ത്രസാങ്കേതികപുരോഗതി, ഗർഭിണിയോടനുബന്ധിച്ച് എത്തിവരുന്നവർ എന്നിവയിലെല്ലാം ദ്രുതഗതിയിലായിക്കൊണ്ടിരിക്കുന്ന മാറ്റവും കാർഷികജീവിതത്തിൽ നിന്നും വ്യാവസായിക ജീവിതത്തിലേക്കുള്ള മാറ്റവും കുടുംബബന്ധങ്ങളിലും വ്യക്തികളുടെ കാഴ്ചപ്പാടുകളിലും മാറ്റമുണ്ടാകും.

ജൈവമായ സ്വഭാവസവിശേഷതകളെ നശിപ്പിക്കാനാവില്ല. തിരിച്ചുവിടാം. ജന്മവാസനകളുടെ സാമൂഹികവൽക്കരണം (Socialization of Instincts), വ്യക്തിയിൽ മാനസികസംഘർഷം സൃഷ്ടിക്കുന്നു. മനുഷ്യൻ സ്വതന്ത്രനായി ജനിക്കുന്നു. എന്നാൽ അവനെയെല്ലാം ചങ്ങലകെട്ടിയാണ് എന്ന റൂസ്സോയുടെ വാക്യം വ്യക്തിയിൽ സമൂഹം സൃഷ്ടിക്കുന്ന സംഘർഷത്തിലേക്കാണ് വിരൽ ചൂണ്ടുന്നത്. ഒരാളുടെ വ്യക്തിത്വത്തിന് രൂപം കൊടുക്കുന്നതിൽ സമൂഹം നിർണായകമായ പങ്കുവഹിക്കുന്നു. സമൂഹത്തിന്റെ ആചാരങ്ങൾ, ജീവിതശൈലികൾ, മുഖ്യങ്ങൾ, നിയമങ്ങൾ, പ്രത്യയശാസ്ത്രങ്ങൾ, സാമൂഹികവീക്ഷണങ്ങൾ, അന്ധവിശ്വാസങ്ങൾ, ശിഥിലീകരണങ്ങൾ എന്നിവയെല്ലാം സാമൂഹികജീവിതമായ മനുഷ്യനെ സ്വാധീനിക്കുകയും തത്ഫലമായി പുതിയൊരു വ്യക്തിത്വം രൂപപ്പെടുകയും ചെയ്യും. വ്യക്തിയിൽ നിന്നും സാമൂഹ്യജീവിതത്തിലേക്കുള്ള മാറ്റത്തിന്റെ ഓരോ ഘട്ടത്തിലും വ്യക്തിയും സമൂഹവും തമ്മിൽ ഏറ്റുമുട്ടേണ്ടിവരും. സമൂഹത്തിനു നല്ലതായി തോന്നുന്നത് വ്യക്തിക്കു നല്ലതായി തോന്നണമെന്നില്ല. അപ്പോൾ വ്യക്തിയുടേയും സമൂഹത്തിന്റെയും താല്പര്യങ്ങൾ തമ്മിലുള്ള നിരന്തര സംഘർഷത്തിലൂടെയാണ് വ്യക്തിയിൽ വ്യക്തിത്വപരിണാമം നടക്കുന്നത്. ഓരോ സമൂഹവും ഓരോ നിമിഷവും മാറ്റത്തിലേക്കുള്ള യാത്രയിലാണ്. മാറ്റങ്ങളിലൂടെയാണ് സമൂഹം പുരോഗതിയിലേക്കു നീങ്ങുന്നത്.

വ്യക്തിയിലുള്ള വെറുപ്പ്, അസൂയ, ഉത്കർഷേച്ഛ തുടങ്ങിയ ഭാവങ്ങളെ സമൂഹം കൂടുതൽ പ്രകോപിപ്പിച്ചേക്കാം. ഇതും വ്യക്തിയിൽ അന്തഃസംഘർഷം സൃഷ്ടിക്കും.

ലെവിസ് കോസർ (Lewis Coser) സാമൂഹികജീവിതത്തിൽ വ്യക്തി അനുഭവിക്കുന്ന മാനസികസംഘർഷത്തെ യഥാർത്ഥവും അയഥാർത്ഥവും എന്ന് രായി വിഭജിച്ച് വിശദീകരിക്കുന്നു. പൊതുസമ്മതമായ രീതിയിൽ സ്ഥാപനങ്ങളെയും പ്രസ്ഥാനങ്ങളെയും സംഘടനകളെയും നയിക്കാൻ സാധിക്കില്ല. പൊതുതീരുമാനങ്ങളോട് വിരോധിച്ചു നിൽക്കേ സന്ദർഭങ്ങളും സംഘർഷാത്മകമായ മറ്റു സാഹചര്യങ്ങളും സാമൂഹിക ജീവിതത്തിൽ വ്യക്തിക്ക് അഭിമുഖീകരിക്കേണ്ടിവരും. സമൂഹത്തിന്റെ ഘടന തന്നെ വ്യക്തിയിൽ അന്തഃസംഘർഷമുണ്ടാക്കുന്ന വിധത്തിലാണ്. സമൂഹത്തിൽ സംഘർഷം അനിവാര്യമാണെന്ന് കാറൽമാക്സ്സും വ്യക്തമാക്കുന്നു. വാസ്തവത്തിൽ വ്യക്തികളിൽ എന്നതിനേക്കാൾ സമൂഹത്തിലാണ് ആരോഗ്യകരവും അനാരോഗ്യകരവുമായ പ്രവണതകളും ധാരണകളും അടിഞ്ഞുകൂടിയിരിക്കുന്നത്. ഒരു വ്യക്തിയെ സംബന്ധിച്ചിടത്തോളം അവന്റെ പെരുമാറ്റങ്ങളോ സ്വയംധാരണകളോ, പ്രതിരോധതന്ത്രങ്ങളോ ഒന്നുമല്ല, മറിച്ച് സമൂഹവും സാമൂഹിക സാംസ്കാരിക നിലവാരങ്ങളുമാണ് ഇനി മുതൽ കേന്ദ്രബിന്ദുവായി മാറുന്നത്. ശാസ്ത്ര-സാങ്കേതിക വളർച്ചയുടെ ഫലമായാകുന്ന മാറ്റങ്ങൾക്കനുസരിച്ച് സാമൂഹിക സ്ഥാപനങ്ങളിലും മുഖ്യങ്ങളിലും യാതൊരു വ്യതിയാനവുമുണ്ടാകാത്തത് വ്യക്തികളിൽ മാനസികസംഘർഷമുളവാക്കുന്നു. മാറ്റത്തിന്റെ വേഗത സാമൂഹിക സ്ഥാപനങ്ങളെയും മതനിയമങ്ങളെയും സദാചാര-സാമൂഹിക നിലപാടുകളെയും ചോദ്യം ചെയ്യേ അവസ്ഥയിലേക്കു വ്യക്തിയെ നയിച്ചു.

വ്യക്തിത്വം പല ഘടകങ്ങൾ കൊണ്ട് നിർമ്മിക്കപ്പെടുകയും ഉദ്ഗ്രഥിക്കപ്പെടുകയും ചെയ്യുന്നത്. ജീവിതത്തിന്റെ ബാലപാഠങ്ങൾ ഒരുവൻ പഠിക്കുന്നത് മാതാപിതാക്കളിൽനിന്നാണ്. മാതാപിതാക്കളിൽ നിന്നാകുന്ന സ്വാധീനവും സമൂഹം വെളിപ്പെടുത്തിത്തന്ന സദാചാര സാമൂഹികതത്വങ്ങളും ചേർന്ന് വ്യക്തിയുടെ ബോധതലത്തിൽ സൃഷ്ടിക്കുന്ന മുഖ്യസങ്കല്പമാണ് സൂപ്പർ ഈഗോ (super ego) എന്ന ഫ്രോയ്ഡിന്റെ കാഴ്ചപ്പാടും ഇവിടെ പ്രസക്തമാണ്. തന്റെ രോഗികളിലധികവും ജീർണ്ണമായ കുടുംബ-സാമൂഹാന്തരീക്ഷങ്ങളുടെ ഇരകളായിരുന്നുവെന്ന് ഫ്രോയ്ഡ് കെത്തി. കുടുംബ-സാമൂഹികാന്തരീക്ഷങ്ങൾ ആരോഗ്യകരമല്ലാതാകുമ്പോൾ അത് വ്യക്തിത്വരൂപവൽക്കരണത്തെ പ്രതികൂലമായി ബാധിക്കുമെന്നും വ്യക്തിയിൽ തീവ്രമായ അന്തഃസംഘർഷം സൃഷ്ടിക്കുമെന്നും സാമൂഹികമനുഷാന്ത്രജ്ഞന്മാർ തെളിയിച്ചിട്ടുണ്ട്. ഒരു വ്യക്തിയിലെ മാനസികഭ്രമം, അക്രമാസക്തി, വിധേയത്വസ്വഭാവം, വൈകാരികനിയന്ത്രണമില്ലായ്മ എന്നിവയുടെ അടിസ്ഥാനകാരണം മാതാപിതാക്കളും ശിശുവും തമ്മിൽ ഉണ്ടായിരുന്നതായ ബന്ധത്തിലെ പോരായ്മകളാണെന്ന് പ്രശസ്ത മനുഷാന്ത്രജ്ഞനായ ഹിൽഗാർഡ് (Hilgard) അഭിപ്രായപ്പെടുന്നു. കുട്ടിക്കാലത്തേൽക്കേവരുന്ന പീഡനം തലച്ചോറിലെ രാസപ്രവർത്തനങ്ങളിൽ കാര്യമായ വ്യതിയാനം വരുത്തുന്നു. ഇങ്ങനെയുള്ള കുട്ടികളിൽ ആക്രമണ സ്വഭാവമേറിയരിക്കും. ഡോ. കാതിസ്പാട്സ്വിഡം നടത്തിയ പഠനത്തിൽ ക്രിമിനൽ കുറ്റങ്ങൾക്ക് പിടിക്കപ്പെട്ടവരിൽ ആയിരത്തോളം പേർ ശൈശവത്തിൽ ശാരീരികപീഡനവും അവഗണനയും സഹിക്കേ വന്നവരാണെന്ന് വ്യക്തമായി.⁽⁵⁾ അമ്മയുടെ വാത്സല്യമാണ് അക്രമവാസനയെ തടുക്കാൻ നല്ല മരുന്നെന്നും വിദഗ്ധർ കെത്തി. ഒരു വ്യക്തിയുടെ മാനസികസംഘർഷം അയാളുടെ ശാരീരികമാനസികവ്യാപാരങ്ങളെ മാത്രമല്ല അയാൾ ജീവിക്കുന്ന കുടുംബത്തിന്റെയും സമൂഹത്തിന്റെയും അന്തരീക്ഷത്തെക്കൂടി ആശ്രയിച്ചാണിരിക്കുന്നതെന്ന് വ്യക്തമാകുന്നു. “സമൂഹമാണ് വ്യക്തിമനസ്സിൽ സംഘർഷം ഉണ്ടാക്കുന്നത്. വ്യക്തിത്വത്തിലാകുന്ന പിളർപ്പ് ഐഡിയോളജിയിലും പ്രവൃത്തിയിലും ഉണ്ടാകും. ഒരു പരിധിവരെ ഈഗോ സഹിക്കും. കാര്യങ്ങൾ അസഹനീയമായിത്തീരുമ്പോൾ ഈഗോയുടെ ഉദ്ഗ്രഥിതാവസ്ഥ നഷ്ടമാകുകയും ഒന്നിലധികം വ്യക്തിത്വങ്ങൾ ഉണ്ടാകുകയും ചെയ്യുന്നു. സമൂഹത്തിന്റെ ഉദ്ഗ്രഥനം തകരുമ്പോൾ വ്യക്തിത്വത്തിന്റെ ഉദ്ഗ്രഥനം അസാധ്യമാകും”⁽⁶⁾. ഓരോ സംസ്കാരത്തിനും അതിന്റെതായ വൈരുദ്ധ്യങ്ങൾ ഉണ്ട്. റൂത്ത് ബനഡിക്ടിന്റെ നരവംശശാസ്ത്രസംബന്ധമായ വിവരണങ്ങളിൽ അസാധാരണങ്ങളായി കണക്കാക്കപ്പെടുന്ന കാര്യങ്ങൾ ഓരോ സംസ്കാരത്തിലും വ്യത്യസ്തങ്ങളാണെന്നു കണ്ടുകയായി. ഏതാണ് സ്വീകരിക്കേ തീർ, ഏതാണ് നിരസിക്കേ തീർ എന്ന് ഓരോ സംസ്കാരവും അതാതിന്റെതായ പശ്ചാത്തലത്തിലാണ് നിർണയിക്കുന്നത്. അമേരിക്കയിലെയും ഇന്ത്യയിലെയും സാമൂഹികനിലപാടുകൾ താരതമ്യം ചെയ്താൽ ഈ വസ്തുത മനസ്സിലാകും. വ്യക്തിയുടെ അന്തഃസംഘർഷം വ്യത്യസ്ത സമൂഹങ്ങളിൽ വ്യത്യസ്ത തോതിലായിരിക്കുമെന്നു കെന്താം.

ഓരോ വ്യക്തിയുടെയും പെരുമാറ്റത്തെപ്പറ്റി അയാൾക്കു ചുറ്റുമുള്ള സമൂഹത്തിന് ചില പ്രതീക്ഷകളുണ്ട്. സമൂഹം അയാളിൽ നിന്ന് ഒരു പ്രത്യേക രീതിയിലുള്ള പെരുമാറ്റം ആവശ്യപ്പെടുന്നു. പലപ്പോഴും സമൂഹം തന്നിൽനിന്ന് പ്രതീക്ഷിക്കുന്ന രീതിയിലുള്ള പെരുമാറ്റം കാഴ്ച വയ്ക്കുവാൻ ഒരു വ്യക്തിക്ക് കഴിഞ്ഞെന്നു വരില്ല. അപ്പോൾ സമൂഹവും വ്യക്തിയും തമ്മിൽ സംഘർഷത്തിലാകുന്നു. ഒരു സമൂഹം രൂപപ്പെടുത്തിയിട്ടുള്ള പെരുമാറ്റച്ചട്ടങ്ങളുമായി ബന്ധപ്പെട്ട് വ്യക്തി അനുഭവിക്കുന്ന അന്തഃസംഘർഷത്തെ മുന്നായി വിഭജിക്കാം. 1. പ്രതീക്ഷിതം 2. ഗൃഹീതം, 3. യഥാർത്ഥം.

1. പ്രതീക്ഷിതമുഖം (Expected Role)

ഒരു വ്യക്തിയിൽനിന്ന് സമൂഹം പ്രതീക്ഷിക്കുന്ന പെരുമാറ്റസംഹിതയാണ് പ്രതീക്ഷിത റോളിലുള്ളത്.

2. ഗൃഹീതമൂലം (Perceived Role)

തന്റെ പെരുമാറ്റം എങ്ങനെയായിരിക്കണമെന്നതിനെപ്പറ്റി വ്യക്തിയിൽ സമൂഹം സൃഷ്ടിച്ചിട്ടുള്ള അവബോധമാണ് ഗൃഹീതരോളിലുള്ളത്.

3. യഥാർത്ഥമൂലം

സമൂഹം തന്നിൽനിന്നു പ്രതീക്ഷിക്കുന്ന രീതിയിലോ തന്റെ തന്നെ ആദർശ സങ്കല്പങ്ങൾക്കനുസരിച്ചോ വ്യക്തിക്ക് പെരുമാറ്റം സാധിച്ചില്ലെന്നു വരാം. വ്യക്തി യഥാർത്ഥത്തിൽ പെരുമാറ്റുന്ന രീതിയെയാണ് ഇവിടെ അർത്ഥമാക്കുന്നത്. പ്രതീക്ഷിതരോളും ഗൃഹീതരോളും തമ്മിലും ഗൃഹീതരോളും യഥാർത്ഥരോളും തമ്മിലും, യഥാർത്ഥരോളും പ്രതീക്ഷിതരോളും തമ്മിലും വ്യക്തിമനസ്സിൽ തീവ്രമായ ആത്മസംഘർഷമുണ്ടാകാം.

വ്യക്തിയിൽ മാനസികസംഘർഷം രൂപമെടുക്കുന്ന അവസ്ഥയെ അടിസ്ഥാനമാക്കി അന്തഃസംഘർഷത്തെ മൂന്നായി വിഭജിക്കാം.

1. സമീപന-സമീപന സംഘർഷം (Approach-Approach Conflict)

ഒരു വ്യക്തിയുടെ ജീവിതത്തിൽ ഒരേപോലെ ആകർഷകങ്ങളായ രു കാര്യങ്ങളിൽ ഏതെങ്കിലുമൊന്ന് തിരഞ്ഞെടുക്കേണ്ടതു വന്നേക്കാം. അപ്പോൾ ഏത് നിരാകരിക്കണം ഏത് സ്വീകരിക്കണം എന്നറിയാതെ വ്യക്തി അന്തഃസംഘർഷത്തിലാകുന്നു. ഒന്ന് ഉപേക്ഷിച്ചു മതിയാകൂ. ആകർഷകമായതിൽ ഏത് ഉപേക്ഷിക്കണം എന്നു തീരുമാനിക്കേണ്ടിവരുമ്പോൾ വ്യക്തിയിൽ തീവ്രമായ അന്തഃസംഘർഷം ഉണ്ടാകുന്നു.

2. സമീപന-നിരാകരണസംഘർഷം (Approach-Avoidance Conflict)

ഒരേ ലക്ഷ്യത്തെ സ്വീകരിക്കാനും തിരസ്കരിക്കാനുമുള്ള പ്രവണത വ്യക്തിയിൽ ശക്തമാണ്. ഉദാഹരണമായി, ഒരു സ്ത്രീ ലൈംഗികവും സാമൂഹികവും സുരക്ഷാപരവുമായ കാരണങ്ങളാൽ വിവാഹിതയാകാൻ ആഗ്രഹിച്ചേക്കാം. അപ്പോൾത്തന്നെ ദാമ്പത്യജീവിതത്തിന്റെ ഉത്തരവാദിത്തങ്ങളും ഭർത്താവിന്റെ സ്വഭാവത്തെപ്പറ്റിയുള്ള ആശങ്കകളും വ്യക്തിസ്വാതന്ത്ര്യം നഷ്ടപ്പെടുമോ എന്നുള്ള ഭയവുമൊക്കെ അവളെ വിവാഹത്തിൽനിന്നും പിന്തിരിപ്പിക്കാനും ശ്രമിച്ചേക്കാം. എന്തു ചെയ്യണമെന്നറിയാതെ, ഒരു തീരുമാനമെടുക്കാനാവാതെ വ്യക്തി ആത്മസംഘർഷത്തിലാകുന്നു.

3. നിരാകരണ-നിരാകരണ സംഘർഷം (Avoidance-Avoidance Conflict)

പൂർണ്ണമായും ഉപദ്രവകാരികളായ രുകാര്യങ്ങളിൽ ഏതെങ്കിലുമൊന്ന് ഒഴിവാക്കാൻ സന്ദർഭം കിട്ടുമ്പോൾ ഏത് ഒഴിവാക്കും എന്നുള്ള പ്രശ്നമാണ് ഇവിടെ വ്യക്തിയിൽ അന്തഃസംഘർഷം ഉണ്ടാകുന്നത്. ഇഷ്ടമില്ലാത്ത ജോലി ഉപേക്ഷിക്കാൻ വ്യക്തിക്ക് ആഗ്രഹമുണ്ട്. പക്ഷേ, ഈ ജോലിയിൽ താൻ ഒരു പരാജയമാണെന്ന് ജനം പറയുമോ എന്നുള്ള ഉത്കണ്ഠ വ്യക്തിയെ ഒരു തീരുമാനമെടുക്കാനാവാത്ത പ്രതിസന്ധിയിലാക്കുന്നു. ഈ അവസ്ഥയിൽ വ്യക്തി തീവ്രമായ അന്തഃസംഘർഷം അനുഭവിക്കുന്നു. ചെങ്കുത്താനും കടലിനും മദ്ധ്യേ എന്ന അവസ്ഥയാണിവിടെ.

അന്തഃസംഘർഷത്തിന്റെ ഈ വിഭജനം വ്യക്തിയുടെ സ്വേച്ഛാപരതയെ ആശ്രയിച്ചാണിരിക്കുന്നത്. വ്യക്തിയുടെ സ്വേച്ഛാപരതയിൽ നിന്നാണല്ലോ അന്തഃസംഘർഷത്തിന്റെ ആരംഭവും.

ക്രമരാഹിത്യം പ്രപഞ്ചത്തിന്റെ സ്ഥായിഭാവമല്ല. ക്രമീകരണത്തിലേക്ക് എത്തിച്ചേരാനുള്ള വൈബൽ എപ്പോഴും പ്രപഞ്ചത്തിന് മനുഷ്യമനസ്സിന്റെ അവസ്ഥയും ഇതുതന്നെ. തനിക്കിഷ്ടമില്ലാത്ത ഓരോ സാഹചര്യത്തിലും, പ്രശ്നത്തിലും മനസ്സിനെ ക്രമീകരിക്കാനുള്ള പൊരുത്തപ്പെടുത്താനുള്ള തീവ്രശ്രമമായി മാനസികസംഘർഷത്തെ കാണാവുന്നതാണ്. ആത്മസംഘർഷത്തിനുശേഷം ക്രമീകരണത്തിലേക്കാണ് മനസ്സ് നീങ്ങുന്നത്.

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'ഒരു നല്ല അപ്പന്റെ ചാവറുളം' കുടുംബനവോത്ഥാനവും

ജിയോ തോമസ്, ഗവേഷകൻ

ഗാന്ധിഗ്രാം ഡീംഡ് യൂണിവേഴ്സിറ്റി, ഡിണ്ടിഗൽ

ആമുഖം

ഒരു നല്ല അപ്പന്റെ ചാവറുൾ എന്നത് ചാവറ കുര്യാക്കോസ് ഏലിയാസച്ചൻ¹ മരണത്തിനുമുമ്പായി നൽകിയ കുടുംബനവീകരണചട്ടമാണ്. "എന്റെ കൈയെഴുത്താൽ ഇതിനെ ഞാൻ നിങ്ങൾക്കു തരുന്നു. ഞാൻ മരിച്ചാലും ഈ കടലാസ് മരിക്കുകയില്ല. ആകയാൽ ഇത് എന്റെ നിക്ഷേപമായി സൂക്ഷിപ്പാൻ എന്റെ മക്കളായ കൈനകരി കുരിശുപള്ളിക്കാരായ നിങ്ങളെ ഞാൻ ഇത് ഏല്പിക്കുന്നു."² 19-ാം നൂറ്റാണ്ടിൽത്തന്നെ³ കുടുംബങ്ങൾ സാമൂഹിക, സാംസ്കാരിക, ആത്മീയമേഖലകളിൽ നവീകരിക്കപ്പെടേണ്ടതുണ്ട് എന്ന ബോധ്യത്തോടെ, അതിനുവേണ്ട സുവ്യക്തമായ മാർഗ്ഗനിർദ്ദേശങ്ങൾ മരണത്തിനുമുമ്പായി ചാവറയച്ചൻ നൽകി. "എന്റെ തറവാട്ടുകാരും കുടുംബപ്പിറപ്പുകളും⁴ രണ്ടുപ്രകാരത്തിലും മക്കളുമായിരിക്കുന്ന നിങ്ങൾക്ക് ഇത് എന്റെ ദൈവമെന്ത് (മരണശാസനം) ആകുന്നു."⁵ ഈ ലഘുകൃതിയിലെ കുടുംബ-സാമൂഹിക നവോത്ഥാനതലത്തിന്റെ വിശദമായ വായനയാണ് ഈ പ്രബന്ധം.

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കേരളസാമൂഹ്യ-രാഷ്ട്രീയപശ്ചാത്തലത്തിൽ നവോത്ഥാനം എന്നത് കാലികമായി ഏറെ ചർച്ചകൾക്ക് വഴിതെളിച്ച ആശയസംഹിതയും പ്രക്രിയയുമാണ്. ഇംഗ്ലീഷിലെ Renaissance എന്ന പദത്തിനു തത്തുല്യമായ മലയാളപദമായിട്ടാണ് നവോത്ഥാനം എന്നത് ഉപയോഗിക്കുന്നത്. പുനർജന്മം, പുനഃസൃഷ്ടി എന്നീ അർത്ഥങ്ങൾ വരുന്ന Renaissance എന്ന പദം പതിനാലാം ശതകത്തിൽ യൂറോപ്പിലുണ്ടായ സാമൂഹികവും സാംസ്കാരികവും ഔദ്യോഗികവുമായ പുത്തൻ ഉണർവിനെ സൂചിപ്പിക്കുവാൻ ഉപയോഗിച്ചതോടുകൂടി അതിന്റെ അർത്ഥതലങ്ങൾ വിശാലമായി. പതിനാലാം ശതകത്തിൽ ഇറ്റലിയിലാണ് നവോത്ഥാനത്തിന്റെ ആരംഭം എന്നും സമൂഹത്തിന്റെ സമസ്ത മേഖലകളിലും സംഭവിച്ച പുത്തൻ ഉണർവ് ആദ്യം പ്രകടമാകുന്നത് കലയിലും സാഹിത്യത്തിലും ആയിരുന്നു എന്നും നവോത്ഥാനനിർവചനങ്ങൾ⁶ വ്യക്തമാക്കുന്നു. യൂറോപ്യൻ ചിന്താമണ്ഡലത്തിൽ സംഭവിച്ച നവീകരണപ്രക്രിയ പുതിയ കണ്ടുപിടുത്തങ്ങൾക്കു കാരണമായി. അച്ചടിയാന്ത്രം, കടലാസ്, വെടിമരുന്ന്, വടക്കുനോക്കിയന്ത്രം എന്നിവയുടെ കണ്ടുപിടുത്തങ്ങളായിരുന്നു യൂറോപ്യൻ നവോത്ഥാനത്തിനു പ്രധാനമായും വഴിതെളിച്ചതെന്ന് ഡോ.എൻ.സാം അഭിപ്രായപ്പെടുന്നു.⁷ യാന്ത്രികമായ മറ്റു കണ്ടുപിടുത്തങ്ങളേക്കാൾ കടലാസിന്റെയും അച്ചടിയുടെയും ആരംഭവും തത്ഫലമായി എഴുതപ്പെട്ട സാഹിത്യരചനകളുമാണ് യൂറോപ്പിന്റെ സമസ്തമേഖലകളിലും സംഭവിച്ച പുത്തൻ ഉണർവിനു തുടക്കം കുറിച്ചത് എന്നത് വ്യക്തം. മനുഷ്യസമൂഹത്തിൽ നന്മയും ധർമ്മവും പ്രചരിപ്പിക്കുകയും അതുവഴി ഉത്കൃഷ്ടമായ ഒരു സമൂഹത്തെ സൃഷ്ടിക്കുകയുമാണ് സാഹിത്യത്തിന്റെ ലക്ഷ്യമെന്ന പ്രാചീന യവനസാഹിത്യചിന്തകൾ ലോകനവോത്ഥാനത്തിനുതന്നെ കാരണമാകുന്നതായി ചരിത്ര-സാഹിത്യപഠനങ്ങളിലൂടെ മനസ്സിലാക്കാം.

പതിനാലാം ശതകത്തിൽ ഇറ്റലിയിൽ ആരംഭിച്ച നവോത്ഥാനം, പത്തൊമ്പതാം ശതകമാകുമ്പോഴേക്കും പാശ്ചാത്യസമ്പർക്കത്തിന്റെ ഫലമായി ഇന്ത്യയിലും എത്തുന്നതായി കാണാം. സമൂഹത്തിന്റെ സമസ്തമേഖലകളിലും സംഭവിച്ച ഈ പുത്തൻ ഉണർവിന് പശ്ചാത്യദേശത്തെത്തുപോലെ ഇന്ത്യയിലും സാഹിത്യവുമായി അഭേദമായ ബന്ധമാണുള്ളത്. രാജാറാം മോഹൻ റോയ്, സ്വാമി ദയാനന്ദ സരസ്വതി, സർ സത്യൻ അഹമ്മദ് ഖാൻ എന്നിവരുടെ സാഹിത്യ സാംസ്കാരിക ഇടപെടലുകൾ ഇന്ത്യൻ നവോത്ഥാനമൂലത്തെ ഏതാനും ചില ഉദാഹരണങ്ങൾ മാത്രം.

പത്തൊമ്പതാം നൂറ്റാണ്ടിന്റെ രണ്ടാം പാതി മുതൽ ഇരുപതാം നൂറ്റാണ്ടിന്റെ ആദ്യപാതി വരെയെന്ന് കേരളനവോത്ഥാനത്തിന്റെ പ്രസക്തകാലഘട്ടമായി ചരിത്രം അടയാളപ്പെടുത്തുന്നത്. അതോടെ കേരളനവോത്ഥാനം പൂർണ്ണമായെന്നോ അതിനുശേഷം നവോത്ഥാനം സമൂഹത്തിലും സമുദായത്തിലും സംഭവിച്ചിട്ടില്ലെന്നോ ഇതിനർത്ഥമില്ല. ചട്ടമ്പിസ്വാമിയെയും ശ്രീനാരായണഗുരുവിനെയും തുടർന്നുവന്ന ഒരു വലിയഗണം സാമൂഹ്യ- സാമുദായികനേതാക്കളെയും കേരളനവോത്ഥാനത്തിന്റെ അവിഭാജ്യനേതൃത്വനിരയിൽ ചരിത്രം ആദരവോടെ പ്രതിഷ്ഠിക്കുന്നുണ്ടെങ്കിലും, ഇവർക്കെല്ലാം മുമ്പേ കളമൊരുക്കി പ്രാരംഭശ്രമങ്ങൾ വിജയകരമായി ചെയ്തുവച്ച പ്രതിഭയാണ് ചാവറ കുര്യാക്കോസ് ഏലിയാസച്ചൻ. അദ്ദേഹത്തിന്റെ കേരളനവോത്ഥാനസംഭാവനകൾ ഇന്ന് ഏറെ പഠനവിഷയമാകുകയും പ്രസിദ്ധീകൃതമാകുകയും ചെയ്തിട്ടുണ്ട്.

ചാവറയച്ചനും കുടുംബനവോത്ഥാനവും

നവോത്ഥാനം എന്ന സംജ്ഞ സാമൂഹത്തിനും രാഷ്ട്രത്തിനും സമുദായത്തിനും മാത്രമല്ല, കുടുംബത്തിനും അനുയോജ്യമാണെന്ന് ഒരു നല്ല അപ്പന്റെ ചാവറുൾ എന്ന ലഘുകൃതി സാക്ഷ്യപ്പെടുത്തുന്നു. വീക്ഷണങ്ങളിലും ദർശനങ്ങളിലുമുള്ള നവോത്ഥാനതലത്തിലൂടെ കുടുംബങ്ങളുടെ നവീകരണമാണ് ചാവറയച്ചൻ ലക്ഷ്യം വച്ചത്. കുടുംബങ്ങളാണ് സമൂഹസൃഷ്ടിയുടെ ഘടകം എന്നതിനാൽ കുടുംബങ്ങളെ

നവീകരിച്ച് നവസമൂഹസൃഷ്ടിക്കുള്ള കളമൊരുക്കുന്ന ഒരു നല്ല അപ്പന്റെ ചാവരുളിലൂടെയുള്ള ചാവറയച്ചന്റെ ശ്രമങ്ങൾക്ക് കുടുംബനവോത്ഥാനം എന്ന പ്രയോഗം അനുയോജ്യമാണ്.

കൃതിയുടെ ഒന്നാം ഭാഗത്തിനു നൽകിയിരിക്കുന്ന തലക്കെട്ട് *കുടുംബചട്ടം* എന്നാണ്. ക്രമശുദ്ധിയുള്ള ഒരു കുടുംബശൈലി രൂപീകൃതമാകുവാൻ അവശ്യം വേണ്ട ഘടകങ്ങളെയാണ് ചാവറയച്ചൻ അവതരിപ്പിക്കുന്നത്. അതിലെ, ആദ്യഭാഗം കുടുംബങ്ങളും അതിനുള്ളിൽ വ്യക്തികളും തമ്മിലുള്ള സ്നേഹശൈലിയെക്കുറിച്ചാണ്. “നിങ്ങൾ തമ്മിൽത്തമ്മിൽ ഉപവിധായിരിപ്പിൻ; സ്നേഹമായിരിപ്പിൻ. ഓരോരുത്തന്റെ കുറവുകളും പോരായ്മകളും നിങ്ങൾ തമ്മിൽത്തമ്മിൽ ക്ഷമിപ്പിൻ.”¹⁸ കുടുംബങ്ങൾ സ്നേഹബന്ധത്തിൽ കെട്ടപ്പെട്ടിരിക്കണം എന്നുള്ള നിബന്ധന മതാതീതമായി വായിക്കപ്പെടേണ്ടതാണ്. “ഒരു വീട്ടിൽത്തന്നെ ജ്യേഷ്ഠാനുജന്മാരും സ്ത്രീജനങ്ങളും തമ്മിൽത്തമ്മിൽ സ്നേഹമില്ലാതെ എല്ലയ്പ്പോഴും വഴക്കും സംസാരവുമായിരിക്കുന്നത് എത്രയോ ദുഃഖകാരണമാകുന്നു.. .. ഇപ്രകാരം വഴക്കുള്ള തറവാട് വേഗത്തിൽ നശിച്ചുപോകും.”¹⁹ 1868-ൽ നൽകിയ കുടുംബചട്ടം 150 വർഷങ്ങൾക്കിപ്പുറവും അത്രമേൽ പ്രാധാന്യമുള്ളതായി നിലകൊള്ളുന്നുവെങ്കിൽ, അത്തരം കാര്യങ്ങൾ പറയുന്നവരെയാണ് ദീർഘദർശി എന്നു വിളിക്കേണ്ടത്. കാലഘട്ടങ്ങൾക്കിപ്പുറം ദർശിക്കാൻ കഴിഞ്ഞ ചാവറയച്ചന്റെ കുടുംബദർശനം സാമൂഹികനവോത്ഥാനത്തിലേയ്ക്കുള്ള പാതയൊരുക്കലായിരുന്നു.

“ഒരു തറവാടിന്റെ ബഹുമാനവും ഭാഗ്യവും യാതൊരു വഴക്കുമില്ലാതെ എല്ലാവരോടും സമാധാനമായിരിക്കുന്നതത്രേ.”²⁰ തറവാട് എന്ന പ്രയോഗം പലതവണ ചാവറയച്ചൻ ഉപയോഗിച്ചിരിക്കുന്നത് തലമുറകളായി അന്യംനിന്നു പോകാൻ പാടില്ലാത്ത കുടുംബബന്ധങ്ങളെ ചാവറയച്ചൻ വിലമതിക്കുന്നു എന്നതുകൊണ്ടാണ്. “സർക്കാർ വഴക്കുകൾ കുടുംബങ്ങളെ സശിപ്പിക്കുന്നു. എത്ര ന്യായമുള്ള സംഗതികളേക്കുറിച്ചായിരുന്നാലും സർക്കാരിൽ പോകാതിരിക്കുകയായിരുന്നു നന് എന്ന് അവസാനം പറയുവാൻ ഇടയാകുകയും ചെയ്യും.”²¹ അടിസ്ഥാനപരമായി കുടുംബങ്ങൾ നവീകരിക്കപ്പെടുന്നതിന് സ്നേഹവും വിട്ടുവീഴ്ചയും അത്യന്താപേക്ഷിതമാണ് എന്ന് ചാവറമൊഴികളെ ക്രോഡീകരിക്കാം.

ഒരു സമുദായത്തിനുവേണ്ടിമാത്രമുള്ള നിർദ്ദേശങ്ങളല്ല ഇവയൊന്നും. മറിച്ച്, മതാതീതമായി ഓരോ കുടുംബങ്ങളിലും നിലനിന്നു കാണേണ്ട നല്ല ശൈലികളാണ് നല്ല അപ്പന്റെ ചാവരുളിന്റെ ചാര്യത. കുടുംബപശ്ചാത്തലത്തിൽ സാമ്പത്തികക്രമവിക്രമങ്ങളെ ഒഴിവാക്കാൻ കഴിയുകയില്ല. “പ്രത്യേകമായ ആവശ്യങ്ങൾക്കല്ലാതെ പണം വായ്പ വാങ്ങിക്കേണ്ട. മുമ്പിൽ വാങ്ങിച്ചിട്ടുണ്ടായിരുന്നാൽ കഴിയുന്നതും വേഗം തിരിച്ചുകൊടുക്കാൻ ശ്രമിക്കുക. സമ്പത്തുള്ള കുടുംബം എന്നത് കടമില്ലാത്ത കുടുംബമാകുന്നു.”²² “സൂത്രം കൊണ്ടും കളവുകൊണ്ടും ഉണ്ടാക്കപ്പെട്ട ദ്രവ്യം മഞ്ഞുപോലെ വേഗമലിഞ്ഞുപോകും.”²³ “അതിധാരാളിത്തവും ലുബ്ധും തിന്മയാകുന്നു. ലുബ്ധന്റെ വസ്തുക്കൾ പൂഴുതിന്നും; ധാരാളിയുടെ സന്തോഷം പുകപോലെ കടന്നുപോകും.”²⁴ ചാവറയച്ചൻ അഭിസംബോധന ചെയ്തത് സാധാരണമായ കുടുംബങ്ങളെ ആയിരുന്നു. അതുകൊണ്ടുതന്നെ അത്തരം കുടുംബങ്ങൾ പത്തൊമ്പതാം നൂറ്റാണ്ടിന്റെ പശ്ചാത്തലത്തിൽ സാമ്പത്തികമായ കൊടുക്കൽവാങ്ങലുകൾ കടമായിത്തന്നെ ധാരാളം ചെയ്തിരുന്നു എന്നു വേണം മനസ്സിലാക്കാൻ. ഭാവിയിൽ സംഭവിക്കാൻ സാധ്യതയുള്ള കുടുംബങ്ങളുടെ നാശത്തെയാണ് ഈ നിർദ്ദേശത്തിലൂടെ ചാവറയച്ചൻ സൂചിപ്പിക്കുന്നത്. പണം ഭദ്രമായി ഉപയോഗിക്കാനുള്ള പക്ഷത കുടുംബങ്ങൾ അഭിവൃദ്ധി പ്രാപിക്കുന്നതിന് അത്യന്താപേക്ഷിതമാണെന്ന ചാവറവീക്ഷണം പ്രസക്തമാണ്. നാശത്തിലേയ്ക്കല്ല നവീകരണത്തിലേക്കാണ് കുടുംബങ്ങൾ വളരേണ്ടത് എന്നാണ് ചാവരുളിലെ നവോത്ഥാനദർശനം.

അയൽബന്ധങ്ങളിൽ സ്വാഭാവികമായി സംഭവിക്കാൻ സാധ്യതയുള്ള ഒരപകടത്തെക്കുടി ചാവറയച്ചൻ വ്യക്തമാക്കുന്നുണ്ട്. “അനൂരുടെ വീടുകളിൽ സഞ്ചരിക്കുകയും മറ്റുള്ളവരുടെ വിശേഷങ്ങൾ അന്വേഷിക്കുകയും വേണ്ട. എന്തുകൊണ്ടെന്നാൽ, സ്വന്തം കാര്യങ്ങളെ നല്ലതിൻവണ്ണം ക്രമീകരിക്കുമെങ്കിൽ കാര്യമില്ലാത്ത കാര്യങ്ങളിൽ ഉൾപ്പെടുവാൻ നേരമുണ്ടാകയില്ല.”²⁵ “മറ്റൊരുവന്റെ ദോഷവർത്തമാനം നിന്റെ വീട്ടിൽ പറയപ്പെടുമ്പോൾ ആ ദോഷത്തിനുള്ള ശിക്ഷ നിന്റെ വീടിന്മേൽ വരികയും ചെയ്യും.”²⁶ ഇതോടുചേർത്ത് മറ്റൊരിടത്ത് ചാവറയച്ചൻ ആവർത്തിക്കുന്നു: “ദുഷണങ്ങളും ദുർവാക്കുകളും കാർമ്മേഘംപോലെ നല്ല കുടുംബത്തിന്റെ വെളിച്ചത്തെ ഇരുട്ടാക്കുകയും ചെയ്യും.”²⁷ നിസ്സാരമെന്നു തോന്നുന്നതും എന്നാൽ വലിയ വീഴ്ചകളിലേക്ക് നയിക്കപ്പെടാൻ സാധ്യതയുള്ളതുമായ സാധാരണകാര്യങ്ങളാണ് ചാവരുളിന് സ്വീകാര്യത വർദ്ധിപ്പിക്കുന്നത്. ശാസ്ത്രീയവീക്ഷണങ്ങളെക്കാൾ പ്രായോഗികമായ കാഴ്ചപ്പാടുകൾ ചാവരുളിലെ കുടുംബനവോത്ഥാനവീക്ഷണത്തെ സമ്പന്നമാക്കുന്നു.

ഉത്തരാധുനിക സമൂഹത്തിൽ പൊതുവേ വളർന്നു വന്ന ശൈലിയെ 150 വർഷങ്ങൾക്കുമുമ്പേ ചാവറയച്ചൻ ദർശിച്ചു തിരുത്തുന്നതു ഇപ്രകാരമാണ്. “എപ്പോഴും പുതിയ വസ്തുക്കളെ ഉണ്ടാക്കുന്നതിനേക്കാൾ ഉള്ള വസ്തുക്കളെ നന്നാക്കുവാൻ പരിശ്രമിക്കുക.”²⁸ കമ്പോളസംസ്കാരം നൽകിയ ശൈലിയെയാണ് ഒരു നൂറ്റാണ്ടിനുമുമ്പേ ചാവറയച്ചൻ എടുത്തുപറയുന്നത്. വസ്തുക്കൾ വാങ്ങിക്കൂട്ടുവാനുള്ള ആധുനികമനുഷ്യതാരയും ശൈലിയും കുടുംബങ്ങളുടെ തകർച്ചയിലേക്കുള്ള പടികളാണെന്ന് ചാവറയച്ചൻ മനസ്സിലാക്കിയിരുന്നു. കുടുംബങ്ങളിൽ നടക്കേണ്ട നവോത്ഥാനമെന്നത് ഇത്തരത്തിലുള്ള ശൈലികളുടെ തിരുത്തലിലൂടെയും പകരമായി നന്മ വളർത്തിയെടുക്കുന്നതിലൂടെയുമാണ് സംഭവിക്കേണ്ടതെന്ന് ചാവരുൾ പഠിപ്പിക്കുന്നു.

കുടുംബങ്ങളിലെ സമ്പത്തിന് ധാർമ്മികമായ സൗന്ദര്യമുണ്ടായിരിക്കണമെന്നത് ആത്മീയവീക്ഷണത്തോടെമാത്രം പറയുന്നതായി കരുതേണ്ടതില്ല. “കുട്ട വസ്തു ഒരു നാഴികനേരത്തേക്കെങ്കിലും നിന്റെ വീട്ടിൽ സൂക്ഷിക്കാൻ നീ സമ്മതിക്കേണ്ട. കട്ടവസ്തു ഇരിക്കുന്ന

വീട് കത്തിപ്പോകും.”²⁹ ഇവിടെ വീട് കത്തിപ്പോകുമെന്നു പറഞ്ഞിരിക്കുന്നത് ഭാവാത്മകമായ അവതരണമാണ്; അർത്ഥം നശിച്ചുപോകും എന്നുതന്നെ. തിന്മയിൽ അടിഞ്ഞായിട്ടിരിക്കുന്നത് നന്മയിലേക്ക് വളരില്ല എന്ന സാമാന്യതത്വംതന്നെ ഇതിന് ഉപോത്ബലകമാണ്.

ഒരു പഴയകാല കൃതിയായിട്ടല്ല, കാലികപ്രസക്തിയോടെമാത്രമേ നല്ല അപ്പന്റെ ചാവരുൾ വായിക്കാൻ കഴിയൂ. ഇന്നും ചുറ്റുംപാടും സംഭവിച്ചുകൊണ്ടിരിക്കുന്ന കാര്യങ്ങളെയാണ് ചാവറയച്ചൻ മറയില്ലാതെ പറഞ്ഞുവയ്ക്കുന്നത്. “വേലയ്ക്കും ശുശ്രൂഷയ്ക്കും നിർത്തുന്ന ആളുകൾ പ്രത്യേകമായി ദൈവപേടിയുള്ളവരായിരിക്കണം. എത്രയോ വീടുകളിൽ വേലക്കാർ മൂലമായി പിശാച് അവന്റെ ഇഷ്ടംപോലെ കാര്യങ്ങൾ നടത്തുന്നു.”³⁰ ഒന്നര നൂറ്റാണ്ടിനുമുമ്പ് കേരളത്തിലെ സാധാരണകുടുംബങ്ങൾ വീട്ടുവേലക്ക് ആളുകളെ നിർത്തിയിരുന്നു എന്നത് സാധാരണകാര്യമല്ല. വേലയ്ക്കുപോയി കുടുംബം പുലർത്തിയിരുന്നവരുടെ എണ്ണമായിരുന്നു അന്ന് കൂടുതൽ. എന്നിരുന്നിട്ടും ഇത്തരമൊരു നിർദ്ദേശം മുൻകൂട്ടി പറഞ്ഞത് ചാവരുളിന്റെ കാലികപ്രാധാന്യം എടുത്തുകാട്ടുന്നു.

തലമുറകളിലേക്കുള്ള സമ്മാനങ്ങളാണ് കുടുംബങ്ങളിലെ കുഞ്ഞുങ്ങൾ. അതുകൊണ്ട് കുഞ്ഞുങ്ങളെ വളർത്തുന്നതിലും പരിശീലിപ്പിക്കുന്നതിലും മാതാപിതാക്കൾ കാണിക്കേണ്ട ശ്രദ്ധ എന്നത് കുടുംബനവീകരണയജ്ഞത്തിൽ പ്രധാനമായി ചാവറയച്ചൻ കാണുന്നു. “മാതാപിതാക്കളെ, നിങ്ങളുടെ മക്കളെ വളർത്തുന്ന കാര്യം നിങ്ങളുടെ എത്രയും പ്രധാനപ്പെട്ട കാര്യവും കടമയും ആകുന്നു എന്നത് നന്നായി അറിഞ്ഞുകൊള്ളുക.”³¹ രണ്ടുമക്കൾ മാത്രമുള്ള ഇന്നത്തെ കുടുംബസാഹചര്യത്തിൽനിന്നും മാറി, സാധാരണ കുടുംബങ്ങളിൽ പോലും പത്തും പന്ത്രണ്ടും മക്കളുണ്ടായിരുന്ന ഒരു കാലത്തെ മുൻനിർത്തി വായിക്കുമ്പോൾ ഈ വരികൾക്ക് അല്പംകൂടി പ്രാധാന്യം കൈവരുന്നു. എന്നാൽ മക്കളെ വളർത്തുന്ന രീതികളെപ്പറ്റിയുള്ള കാര്യങ്ങൾക്ക് കാലവ്യത്യാസം കല്പിക്കേണ്ടതില്ലാത്ത സ്വഭാവമാണുള്ളത്. “കൊച്ചുകുഞ്ഞുങ്ങളെ ഉടുപ്പുകൂടാതെ വീട്ടിനകത്തുകൂടെയും നടത്തരുത്. അവർക്കു മനസ്സിലാകുന്നില്ല എന്നുവെച്ച് ക്രമമല്ലാത്ത വചനങ്ങളും ദുഷണങ്ങളും അവരുടെ മുമ്പാകെ പറയരുത്.” “അച്ഛനമ്മമാരുടെ മുറിയിൽ മക്കളെ കിടത്തരുത്. ഇളം പ്രായത്തിൽ കാരണവന്മാരുടെ കാഴ്ചയിൽനിന്നും അകന്ന് കൂട്ടുകാരോടൊപ്പം കൂട്ടികൾ പുറത്തു കളിക്കാൻ പോകാൻ അനുവദിക്കരുത്.”³² “കൂട്ടികളെ സംബന്ധക്കാര്യം വീടുകളിൽ താമസിപ്പിക്കരുത്. ചെറുപ്പത്തിൽ തന്നെ ലോകനടപ്പെന്നു പറഞ്ഞുകൊണ്ട് നുണയും സുത്രങ്ങളും തട്ടിപ്പുകളും ചതിയും അവരെ അഭ്യസിപ്പിക്കേണ്ട.”³³ കാലമോ മതമോ സമുദായമോ നോക്കാതെ എല്ലാവരും വായിച്ചിരിക്കേണ്ടതും, കുടുംബരൂപീകരണത്തിൽ ശ്രദ്ധിക്കേണ്ടതുമായ പൊതുക്കാര്യങ്ങളാണ് ചാവറയച്ചന്റെ കുടുംബചട്ടങ്ങളിലെ ഈ രണ്ടാം ഭാഗം.

പൊതുസമൂഹത്തിൽ പൊതുവേ സംഭവിക്കാറുള്ള ഒരു വീഴ്ചയെപ്പറ്റി ചാവറയച്ചൻ എഴുതുന്നു: “മാതാപിതാക്കൾ മരിക്കുന്നതിനുമുമ്പുതന്നെ അവരെ വേറെ വീടുകളിലേയ്ക്ക് മാറ്റി താമസിപ്പിക്കുക. ബോധത്തിനു ബലക്ഷയം വരുന്നതിനുമുമ്പ് അവർക്ക് വസ്തുക്കൾ ഭാഗം ചെയ്തു കൊടുക്കുക.”³⁴ “അവസാനമായി മക്കളേ, നിങ്ങൾ നിങ്ങളുടെ കാരണവന്മാരെ ബഹുമാനിക്കാനും അവരുടെ മനസ്സിനെ നൊമ്പരപ്പെടുത്താതിരിക്കാനും ദൈവപ്രമാണത്താൽ തന്നെ എത്രയോ കടപ്പെട്ടിരിക്കുന്നു.”³⁵ കുടുംബവുമായി ബന്ധപ്പെട്ട എല്ലാ മേഖലകളെയും പ്രതിപാദിക്കുന്നതാണ് ചാവറയച്ചന്റെ ഒരു നല്ല അപ്പന്റെ ചാവരുൾ എന്ന കൃതി. സമ്പത്തിന്റെ ക്രമമുള്ള വിനിമയവും കഠിനാധ്വാനവും കുടുംബബന്ധങ്ങളും അയൽബന്ധങ്ങളും മക്കളും മാതാപിതാക്കളുമെല്ലാം ഇതിൽ വിഷയങ്ങളായി വരുന്നു.

കുടുംബദർശനത്തിലെ മാനവികത

ഏതൊരു നവോത്ഥാനചിന്തയും പൊതുധാരയിലേയ്ക്ക് സ്വീകരിക്കപ്പെടുന്നത് അത് മാനവികദർശനങ്ങളാൽ ഭദ്രമായിരിക്കുമ്പോഴാണ്. മാനവികത എന്നത് മതാതീതമായി, മനുഷ്യർ എന്ന ഒരേ തലത്തിൽ സമൂഹത്തെ ഒന്നായി നോക്കിക്കാണുന്ന വീക്ഷണമാണ്. അവിടെ എല്ലാവർക്കും സ്വീകാര്യതയുണ്ട്. ആരും- ഉന്നതശ്രേണിയിലുള്ളവരോ സമൂഹം കല്പിച്ചിരിക്കുന്ന താഴെത്തട്ടിലുള്ളവരോ- മാറ്റി നിർത്തപ്പെടുന്നില്ല. നിമ്നോന്നതികൾ നിറഞ്ഞ സാമൂഹികകാഴ്ചപ്പാടല്ല, മനുഷ്യകുലം എന്ന സമാനചിന്താഗതിയാണ് മാനവികതയുടെ അടിസ്ഥാനം. സാമൂഹിക-കുടുംബ നവീകരണചിന്തകളിൽ മത-സാമുദായികചിന്തകൾ മാറ്റി, ഈ മനോഭാവം പ്രകടമാകുന്നിടത്താണ് സാമൂഹികനവോത്ഥാനപ്രക്രിയ ആരംഭിക്കുന്നത്. കേരളനവോത്ഥാനപശ്ചാത്തലത്തിൽ ഓരോരുത്തരുടെയും പ്രവർത്തനങ്ങളെ പരിശോധിക്കുമ്പോൾ വ്യക്തമാകുന്നത്, എല്ലാ പ്രവർത്തനങ്ങളും അതിന്റെ പ്രാരംഭദശയിൽ സാമുദായികനവീകരണം ലക്ഷ്യം വയ്ക്കുന്നതോ ഒരു സമുദായപായ്വ് കാത്തുസൂക്ഷിക്കുന്നതോ ആണ് എന്നാണ്. അതിനുകാരണം ജാതീയമായ അസമത്വങ്ങളാൽ നിറഞ്ഞ ഒരു സമൂഹമായിരുന്നു അന്നു കേരളം എന്നതുതന്നെയാണ്. സമുദായങ്ങൾ സമൂഹത്തിന്റെ ഭാഗമാണ് എന്നതുകൊണ്ടും സമുദായങ്ങൾ മനുഷ്യാനുബന്ധമായി നവീകരിക്കപ്പെട്ടാൽ അതിലൂടെ സമൂഹത്തിന്റെ നവീകരണം തന്നെയാണ് നടക്കുന്നത് എന്നതിനാലും സാമുദായിക നവീകരണശ്രമങ്ങളെ ചരിത്രം നവോത്ഥാനപ്രവർത്തനങ്ങളായി അംഗീകരിക്കുന്നു.

ഒരു നല്ല അപ്പന്റെ ചാവരുൾ എന്ന കൃതിയിലെ ആശയധാരകൾ ഒരു മതത്തിന്റെ പരിധിയിൽ ഒതുങ്ങിനിൽക്കുന്നതല്ല; സമൂഹത്തിലെ ഏതൊരു കുടുംബത്തോടും ചേർത്തുവയ്ക്കാവുന്നതാണ്. രചനയുടെ പ്രാരംഭലക്ഷ്യം കത്തോലിക്കാകുടുംബങ്ങളാണ് എന്നത് മുഖവുരയുടെ³⁶ ആദ്യവരിയിൽത്തന്നെ പ്രകടമാണ്. ക്രൈസ്തവകുടുംബങ്ങളുടെ നവീകരണമാണ് ചാവറയച്ചൻ ഇതിലൂടെ ലക്ഷ്യമാക്കിയിരിക്കുന്നത് എന്നത് കൃതിയുടെ പൂർണ്ണവായനയിൽ കൂടുതൽ വ്യക്തമാകുകയും ചെയ്യും. ഒരു ക്രൈസ്തവപുരോഹിതനായിരുന്നതിനാലും, നിരന്തരം ബന്ധപ്പെട്ടിരുന്നത് അത്തരം കുടുംബങ്ങളോടായിരുന്നതിനാലും, ക്രൈസ്തവകുടുംബങ്ങളോട് സംസാരിക്കുവാൻ അദ്ദേഹത്തിന് കൂടുതൽ സാഹചര്യവും സ്വാതന്ത്ര്യവുമുണ്ടായിരുന്നതിനാലും

മായിരിക്കണം കുടുംബനവോത്ഥാനദർശനത്തിൽ ക്രൈസ്തവചിന്ത കൂടുതലായി കടന്നുവന്നത്. എന്നിരിക്കിലും, മതത്തിന്റെ ചുവരുകൾക്കു പുറത്തുള്ള ഏതൊരു കുടുംബത്തിന്റെയും നവോത്ഥാനവഴികൾക്ക് ഊർജ്ജം പകരുന്ന ചിന്തകളാണ് ഒരു നല്ല അപ്പന്റെ ചാവരുളിൽ പ്രതിപാദിക്കുന്നത് എന്നത് ചാവരുളിനെ പൊതുസമൂഹത്തിൽ പ്രതിഷ്ഠിക്കാനുള്ള മതിയായ കാരണമാണ്.

ഉപസംഹാരം

ഒരു സമൂഹത്തെ ലക്ഷ്യമാക്കി എഴുതിയ വരികൾക്ക് സാമൂഹികവും മാനവികവുമായ സ്ഥാനം ലഭിക്കുക, അത് നീണ്ട കാലഘട്ടത്തെ അതിജീവിച്ച് ഏറെ പ്രസക്തമായ വരികളായി വായിക്കപ്പെടുക എന്നതെല്ലാം ഒരു കൃതിയുടെ അതിമൂല്യം അളക്കുവാനുള്ള ഉപാധികളാണ്. ഒരു നല്ല അപ്പന്റെ ചാവരുൾ നൽകിയത് ഒന്നരനൂറ്റാണ്ടിനിപ്പുറവുമുള്ള കുടുംബനവോത്ഥാനചട്ടങ്ങളാണ്. ചട്ടങ്ങൾ പാലിച്ചു മുന്നേറിയാൽ അപകടങ്ങൾ കുറയ്ക്കാം എന്നതും അതിലൂടെ വളർച്ച സുഗമമാകും എന്നതും പ്രധാനമാണ്. സാമൂഹികനവോത്ഥാനം സാധ്യമാകുന്നത് വ്യക്തികളുടെയും കുടുംബങ്ങളുടെയും നവോത്ഥാനത്തിലൂടെയാണ് എന്നതിനാൽ, സാമൂഹിക നവോത്ഥാനത്തിലേയ്ക്കുള്ള പടികൾ എന്ന നിലയിൽ ഒരു നല്ല അപ്പന്റെ ചാവരുൾ വായിക്കപ്പെടുന്നു.

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'Ecosophy' of the 'American Adam': The Archetypal Mould of Melville's Mythical Characters and Situations

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2019, the bicentennial year of the birth anniversary of Herman Melville one of the herculean figures in American nautical fiction, revives the psyche of Melville who penned the parable of a monomaniac who ventures into the deep to annihilate evil from the face of the earth. *Moby Dick*, the magnum opus of Melville, undoubtedly depicts the archetypal quest of an archetypal hero for an archetypal antagonist. *Typee* which preceded *Moby Dick* drives home the archetypal state of Eden which human beings lost but always longed for. *Moby Dick* with multiple quests at its core; the quest of Captain Ahab "heading towards disaster" and the quest of Ishmael "heading towards survival" (Jenkins 5) sheds light into the roots of our ecological crisis. Lynn White Jr. remarks, "Our "environmental crisis" is often held to have its roots in early patriarchal myths, the *Genesis* myth, and a compounding mythology of a god-given supremacy of man over woman and nature." (White 1203)

Herman Melville's narratives are set in a frame of voyage which is technically part of whaling. Whaling, one of the most lucrative enterprises in the nineteenth century, offered umpteen possibilities to incorporate any number of archetypes in its compass. Herman Melville's *Moby Dick*, with which he made an indelible mark in the history of American literature, and other works which preceded *Moby Dick* like *Typee* and *Omoo* share the common structure as that of a voyage. The frame tale is that of whaling from which various narrative patterns are created. The journey through the sea entails uncertainty, encountering the unknown, expecting the unexpected, proving the prowess of masculinity and exploring the exotic shores and a courageous mind to risk everything for renown and reward. Herman Melville who was forced to find a living in the sea at an early age was initially fascinated by this life in the watery part of the earth.

The lessons which his life taught him during his childhood and later as a harpooner in whaling ships and while doing some odd jobs ignited a longing for the distant past in which he lived as Adam in the Garden of Eden. *Typee* obviously recreates the Eden in him. To quote the phrase of Arne Naess, it is an 'ecosophic quest'. Jenkins remarks, "In ecosophy there is a kind of primitivism which, rather than seeking progress by the domination and use of nature, seeks harmony with nature, but with it goes a realization that it is no longer possible to live as we did in the prepatriarchal, distant past. (6)

Because of the historical dominance of nautical culture by men, Melville's central characters are usually men. It focally includes distinctive themes such as masculinity and heroism, investigations of social hierarchies and the psychological struggles of the individual in the hostile environment of the sea. The archetypal mould of an adventurous nautical story demands its parts as: introduce the characters and setting in and around the sea, introduce a problem or unexpected difficulty during the voyage, solve the problem by having an adventure and the resolution which in the dramatic tradition can be catastrophe or denouement. Melville, the admirer of William Shakespeare, moulded Ahab in the guise of a Shakespearean tragic hero with the archetypal tragic flaw as hubris. The antagonist in this tragic tale is the mythical leviathan that figures in the book of *Job*. Infuriated by the ill-treatment of God, Job questions God and in return God asks Job about leviathan as,

⁷Can you fill its hide with harpoons
or its head with fishing spears?

⁸If you lay a hand on it,
you will remember the struggle and never do it again!

⁹Any hope of subduing it is false;
the mere sight of it is overpowering. (Job 41: 7-9)

In his pride of place Ahab determined to harpoon the leviathan which for Ahab is an eternal symbol of all that is evil in nature.

Melville's works namely *Moby Dick* and *Typee* reenact the biblical narratives which begin in *Genesis* and passing through *Exodus*, the book of *Job*, the story of Jonah, the story of great flood and the book of prophets. Many a character in his voluminous *Moby Dick* takes after the biblical character with similar names. While *Moby Dick* delineates the fall of man and the

desire to get back to the Garden of Eden, *Typee* delineates the Garden of Eden in the Typee valley as Guerin remarks, "mythic yearning for a return to paradise" (212). Frederick I. Carpenter also remarks that, "Edenic dream itself was as old as the mind of man". (212) In *Omoo* Melville describes the valley as:

It is no exaggeration to say that, to a European of any sensibility, who for the first time, wanders back into these valleys – away from the haunts of the natives – the ineffable repose and beauty of the landscape is such that every object strikes him like something seen in a dream... I thought I was walking in the Garden of Eden (102)

When Tommo describes the Typee valley in *Typee* through his reflective and comparative tone as, "no destitute widows with their children starving on the cold charities of the world; no beggars; no debtors' prisons; no proud and hard-hearted nabobs in Typee; or to sum up all in one word – no Money! 'That root of all evil' was not to be found in the valley" (79), Melville questions the civilized American society which is uprooted from the primitive simplicity which prevailed in the Garden of Eden.

Ahab in *Moby Dick* cements the ideals of American Adam, the mythic world hero. In *The American Adam* R.W.B Lewis describes the type as:

a radically new personality, the hero of the new adventure: an individual emancipated from history, happily bereft of ancestry, untouched and undefiled by the usual inheritances of family and race; an individual standing alone, self-reliant and self-propelling, ready to confront with whatever awaited him with the aid of his own unique and inherent resources" (Lewis 5)

In the context of Ahab, he perceives the white whale as an enemy. Ishmael rightly remarks, "He piled upon the whale's white hump the sum of all the general rage and hate felt by his whole race from Adam down". (153) Ahab is a prototype of every man who sets out to bridle the vices in him. He is presented as a monomaniac captain who is in par with the traits of a neurotic individual. Guerin, with the insight of Jung opines, "Instead of assimilating this unconscious element into their consciousness, neurotic individuals persist in projecting it upon some other person or object" (205). In Jung's words projection is an "unconscious, automatic process whereby a content that is unconscious to the subject transfers itself to an object, so that it seems to belong to that object. The projection ceases the moment it becomes conscious, that is to say when it is seen as belonging to the subject". (Jung 60) Ahab projects his evil on to the white whale and ventures to hunt it down. For Ahab the white whale is the evil that exists in the world while Ishmael wonders at the magnitude and might of the whale. Ishmael never hunts the whale but rather accepts the existence of evil in the world as equally mighty as the good. Hence he is saved at the end.

Ahab like the American Adam hunts the evil in his own way. The serpent that appeared in the Book of *Genesis* and tempted Eve which culminated in the expulsion of Adam and Eve from the mythical paradise took multifarious entries in many a mythical story. It became leviathan, dragon, monster and the like suiting to the cultural contexts. Tracing and annihilating the evil which is the subtext of the quest myth, the archetype of archetypes, is prevalent across the globe in various forms. Mythical and historical characters who fill the pages of literary texts and oral traditions like Beowulf who fought with Grendel, a monster that had been terrorizing the Scyldings; St. George who slew a dragon that demanded human sacrifices and whereby saving the princess; Perseus the son of Zeus petrified the Kraken are the variant forms of the myth of taking revenge upon evil.

The American myth of avenging the evil which had its advent in Ahab who ventured to hunt down the unfathomable mystery has its leniency in the twentieth century American Presidents. George Bush was instrumental in the assassination of Saddam Hussain, the Iraqi President, in 2004, about which Edward Said remarked as, "Bush has treated Saddam as his personal Moby Dick, to be punished and destroyed- the war plan was designed for that". The year 2011 witnessed the murder of Osama bin Laden, the founder of Al-Qaeda during the tenure of President Barack Obama. The mythical hunt for evil is again repeated when the present American President Donald Trump announced the murder of AbuBakar al- Baghdadi, the founder and leader of ISIS in 2019. Moby Dick in the above mentioned contexts was evil in the guise of terrorism. The avengers are admired and praised for the heroic deeds.

Carl G Jung propounds the presence of collective unconscious in human beings which unite human beings in their response to certain occurring. Quest for a just society with peace and prosperity is obviously a dream always placed in the corner of one's mind. Anything which thwarts justice provokes immediate anger in human beings. Anyone who brings justice is ascribed with the traits of the mythical hero Robinhood. In the parlance of India, Police chief V.C Sajjanar, who killed the four accused in the

Disharape-murder case in Hyderabad shot into fame with his Ahab like stature to hunt for denied or delayed justice. People in mass applauded him for justice in India is a Moby Dick for the common man, who form majority of the population. All the efforts of the Ahab like men are directed towards regaining Eden where the first parents lived in union with God and nature.

In the general space of literature archetypes fall into two categories as character archetypes and situation archetypes. Characters of a story perform various specific functions and these functions determine which archetype they fit into. In the similar fashion situation archetypes describe how certain situations play out in the story. In addition to that the character archetypes are placed within the situation archetypes and together they create a story.

The classical requisites which brought Herman Melville's stories like *Moby Dick*, *Typee* and *Omoo* into limelight are evidently the archetypal patterns inherent in them to which perennial responses from the readers are evoked. As the obvious connection exists between mythology and psychology, its roots are spread across religion, philosophy, anthropology and cultural history. The archetypal narrative patterns inclusive of quest for an Eden and rebellion against the adverse forces easily associate with a reader's world. In the realm of 'collective unconscious' every individual possesses a mould which suitably shapes the dreams and aspirations in it. As Guerin remarks, "just as dreams reflect the unconscious desires and anxieties of the individual, so myths are the symbolic projections of a people's hopes, values, fears, and aspirations." (Guerin 183) What Melville recounted in his narratives was what already existed in the readers' psyche in multifarious forms shaped and reshaped with the change of time. But at the root the primordial images and patterns remained the same in everyone. Mark Schorer remarks in *William Blake: The Politics of Vision*, "Myth is fundamental, the dramatic representation of our deepest instinctual life, of a primary awareness of man in the universe, capable of many configurations, upon which all particular opinions and attitudes depend". (Schorer 29) Myths form the rubrics of archetypes. Guerin in her book *A Handbook of Critical Approaches to Literature* remarks:

Moreover, like Melville's famous white whale (itself an archetypal image), myth is ubiquitous in time as well as place. It is a dynamic factor everywhere in human society; it transcends time, uniting the past (traditional modes of belief) with the present (current values) and reaching towards the future (spiritual and cultural aspirations) (184)

Melville's heroes in the nautical fiction share similar archetypal traits, viz, they are directed towards some kinds of adventure. They leave their family or their homeland to live life with others. They prove themselves during their quest. Besides, all the major characters are wanderers with sea lust. In short his mythical characters are the fundamental masculine seafarers. In the similar fashion Ishmael in *Moby Dick* is fashioned in the mould of the 'innocent'. Fayaway in the same text is the 'mother figure' who resembles Eve in the Garden of Eden. She is in the cast of a compassionate woman who assists the hero. While characters like Stubb form the archetype of 'mentor', the archetypes of 'sidekick' are formed by Queequeg who assists Ishmael; and Toby and Kory-Kory who assist Tommo in *Typee*.

The archetypal villain can be a human being, animal or a monster. In *Moby Dick* the antagonist is in the guise of a monster like animal, human beings form the antagonist in *Typee* and *Omoo*. The situational archetypes are equally directed to a journey which can either be physical or mental. The journey incorporates a war between good and evil. In the parlance of American mythical traits the war matters. The result is least important but the genuine effort put in by the hero imparts heroic stature to him. It is perceptible in the result of *Old Man and the Sea* and *Moby Dick*. The archetypal flaw as 'hubris' is writ large in the story of Ahab. This flaw is embedded in all the rebellious god figures in the mythology like Lucifer, Prometheus, etc.

Melville was quite particular about offering room for Christian archetypes in his narratives. While Ahab, a proud biblical ruler but perished, Ishmael occupies the place of an outcast. Leviathan, the might of God's creation entails anything beyond the reach of and incomprehensible to human beings. Fayway, the Eve like figure in *Typee* shares the duality of Mother Mary and Eve in the Garden of Eden.

Herman Melville, who immortalized his name in the sea of literature, sowed the seed of everlasting adventure in the vessel of archetypes which form the characters and situations inherent in the mind of man through the Jungian analysis of collective unconscious. The desire for justice, the longing for a savior and wanting for a return to the Garden of Eden connect the humanity across the globe. The searching for the white whale in the four oceans links the continents in such a way that Melville's mythical world becomes the compendium of the global space.

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The Mirage of Progress Depriving Life in Sarah Joseph's *Gift in Green*

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Abstract

Though nature is all powerful and perennial, man transmogrifies it to fit his selfish needs which ultimately perpetrate irredeemable damage to our ecosystem. Ecocriticism examines the various ways literature treats the subject of nature. There are debates within Ecocriticism concerning the crucial matter of the relationship between nature and culture. When cultural dominance is perpetuated without sensitivity to, and respect for, indigenous ways of life, it is imperialistic and expansionist. Cultural invasion tends to have a negative effect on cultural diversity. The novel *Gift in Green* by Sarah Joseph points fingers at various kinds of invasions and ecological destructions and laments the departed rustic fertility and glory of the simple pure land of 'Athi' at the wake of the 'so called' progress. It is high time to rethink the idea of progress as a cultural practice.

Key Words: Nature, Invasion, Ecocriticism, Progress

Introduction

Nature functions as a synonym for life. Nature is also defined against artifice and technology. Culture is a term that refers to a large and diverse set of mostly intangible aspects of social life. Culture can be a force for oppression and domination when subscribing to mainstream values and norms which benefit only to the powerful minority. Material culture is composed of things that humans make and use. This aspect of culture includes a wide variety of things from buildings, technological gadgets, and clothing to film, music, literature, and art among others. Material culture emerges from and is shaped by the non-material aspects of culture – knowledge, values, beliefs etc. It is in the realm of non-material culture that a minority is able to maintain unjust power over the majority.

Ecocriticism is the study of literature and the environment from an interdisciplinary point of view where literary scholars analyze texts that illustrate environmental concerns. The term ecocriticism is first used by William Rueckert in his essay "Literature and Ecology: An Experiment in Ecocriticism" in 1978. Ecocriticism starts developing as a school of literary criticism in the 1990s. Ecocriticism is a response to the need for humanistic understanding of our relationships with the natural world in an age of environmental destruction. Ecocritical writers evaluate the texts which exemplify the environmental issues. The Writers in India also showed a great concern towards nature and natural objects. Sarah Joseph, a leading novelist and short story writer in Malayalam, is one such writer who explores the theme of ecocriticism in her works through different ways. All her works are well received and have won prestigious awards as well as the Sahitya Academy Award. Her novel *Gift in Green* assumes particular significance in the context of the rising stridency of a global culture. The novel pivots on the decay, death and degeneration of Athi. The atrocities inflicted on nature by the modern, 'cultured' man disrupt the harmonious relationship between the land and the simple folks living there. Sarah Joseph questions the irredeemable damage done to the body of nature in the name of progress. The novel significantly touches important environmental issues emerging at the time, such as environmental pollution, deforestation, endangered species, water contamination and so forth.

Man Vs Nature

The novel *Gift in Green* depicts how the greed for material wealth, prosperity, and progress assisted by technology and power disrupts the harmonious relationship between man and nature. Athidesam, an imaginary location provides the ambience for *Gift in Green*. This unravished island with its natural beauty and primitive purity depicts the sublime existence of nature. The peace-loving, farm-loving people there live a life inseparable from the land and water. The land provides everything to meet their daily needs. "Fish or mussels: enough to meet one's daily needs. Add to this the two Pokkali harvests from the paddy fields . . . Everyone cultivated pumpkin, white gourd, spinach and beans for their own use. Every household had a cow, buffalo, hens and

ducks.” (Joseph, 21) Athi has an ecofriendly culture and life practices are based on mutual love and care, respecting mother earth. Story-telling nights in Athi, selling and buying land strictly to the inmates of the place, preservation and sustainable use of natural resources etc. are the channels of independence and empowerment for the people. Athi has successfully withstood the invasion of modernization, urbanization and commercialization until Kumaran an earlier resident of Athi returns with a malicious intention to market its natural resources. He represents all the global capitalist powers which exploit even the pure water and air of the so called ‘uncultured’, underdeveloped lands for profit. The innocent and straight forward villagers like Dinakaran, Ponmany, and a group of young and old men and women who fight against the destruction of their land is set against the greed stricken outsiders with materialistic and mercenary motives.

Nature and culture are often seen as opposite ideas. What belongs to nature cannot be the result of human intervention. Scholars in ecocriticism engage in questions regarding anthropocentrism and the mainstream assumption that the natural world be seen primarily as a resource for human beings. Athidesam is in all sense an island with its natural beauty and primitive purity. Green bangle, the mangrove forest encircling the island, creates an enchanted world, self-sufficient in its natural resources of paddy and fish. The inhabitants of the land are adhered to the laws of nature. Cultural development is always achieved against nature. Development is a peculiar word and that in the contemporary global scenario is closely associated with market and consumerism. The emergence of the developmental exploits, a mark of global culture, threatens the ecological balance of Athi and degrades it to contaminated debris where natural inhabitants cannot survive anymore.

The geographical invasion of the land is definitely the brutal deprivation of the villagers of their social, economic, political and cultural existence. Deprived of their ancestral lands, and with their way of life disrupted, the people of Athi lose hope; unable to adjust to changed economic conditions, they fall into poverty. “Hunger and destitution stalked the place. No fish. No oysters. Their livelihood had dried up.” (174) The sinister force of developmental works deprives the villagers of the shoots and buds of their existence. Komban joy’s mixing of endosulfan in Kunjimathu’s paddy field to grab the whole of the fish harvest, kills each and every living organism that took it as their habitat. Many innocent children fall victim to developmental monstrosity that spread nothing but death and degradation. The jaundiced vision of progress shakes the very foundation of life in Athi. Those who leave Athi could not survive in the materialistic world outside. Expecting a royal welcome, Unnimon and kunjikkali reaches city, only to find them in the twentieth floor of a flat and to realize how the ground falls out from beneath their feet.

Material invasion transforms everything. Athi’s god Thampuran too could not survive the onslaught of modernity. When kumaran decides to redeem the shrine, the land is denied of their own god as it was replaced with a superior deity bedecked with exotic ornaments. The disharmonious existence of the extravagant temple is seen as “. . . a grandiose temple spire made of pure gold . . . in jarring disharmony with everything else there. (133)” The conversion of thampuran’s thatched shrine to a glittering edifice of gold blinds many young men who starts dreaming of a land beyond farming, fishing and water life.

Sarah Joseph questions the unsystematic methods of development and technology that give no consideration to the ecological impacts and ‘natural’ values. Water, which is natural and fundamental to life, is polluted beyond repair. Athi’s serene water life in the beginning of the novel is found collapsed towards the end of the novel. The once beautiful and entrancing water in Athi, later resembles a filthy sewage. Shailaja who runs away from her husband’s house at chakkamkandam for the filthy water chokes at the sight of garbage filled water in Athi. Athi thus becomes a symbol of the resourceful and natural idyllic spaces of the underdeveloped worlds that are exploited by the corporate power structures.

Conclusion

The ecological concerns in the novel exhibit how the reshaping of the world to fit man’s individual needs threatens the survival of a million species and man himself. For the novelist, it is high time to realize the profit that the globalization claims is diminutive compared to irrevocable damages it imposes upon the universe. The flood at the end of the novel is promising enough to proclaim the power of the nature to purify itself. Nature has a powerful transformative power which is responsible for the functioning of life on earth. Sarah Joseph presents a sustainable environment against the hazardous impact of environmental capitalism. Nature is closely associated with human life but claims of (global) culture may endanger the environment.

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Electronic Resources: a study with special reference to UGC INFLIBNET N-LIST Consortium

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Abstract

The present information seeking behavior of users changed to Electronic Resources than Print Resources for gathering information. But one should not forget that both print and electronic resources are inevitable in the procedure of information gathering. Many electronic resources have been made available in Academic and Public Libraries. Speaking of the academic Community, one of the important sources providing electronic sources is "National Library and Information Services Infrastructure for Scholarly Content" (N- LIST). . Consortium for Higher Education Electronic Resources, e – content for PG Courses etc. are part of this. This paper intends to study different types of electronic resources and how they help academic community with special reference to UGC INFLIBNET N-LIST Programme.

Key words: Electronic Resources, UGC, INFLIBNET N-LIST programme, Academic Community, Academic Publishing.

Introduction

The present era is an era of Information and Knowledge revolution. Cambridge English dictionary defines Information as an uncountable noun meaning "facts about someone/something." And knowledge as "understanding of or information about a subject they you get by experience or study, either known by one person or by person generally. (dictionary.cambridge.org). Information has always been a part of growth and improvement. As the father of Library & Information Science, Dr. S.R.Ranganathan explains through his "Five Laws", Users demand the most relevant, accurate and current information without loss of time since information gets obsolete within no time. Due to the complexity and varied interpretation of the concept of users' needs and requirements, it is unanimously accepted opinion that user needs cannot be predicted. In the modern society, the types of information and the media which present them have become manifold and multifarious, offering users a wide spectrum of vast selection.

The arrival and proliferation of electronic resources and digital libraries have a number of significant impacts on the use of print resources and traditional libraries. Reading preferences and the use of print and electronic resources vary among different disciplines. They desire to meet their information needs through online. The new age readers' insist on the use of online resources to cater to their needs.

Electronic Resources

Electronic resources (or e- resources) are materials in digital format accessible electronically. Examples of e – resources are electronic journals (e- journals), electronic books (e – books), online data bases in digital formats, Adobe Acrobat documents (.pdf), webpages (.htm, .html) etc. (www.libfaq.smu.edu.sg>fag).

Electronic Resources are defined as resources which require computer access or any electronic product that delivers a collection of data, be it text referring to full text databases, electronic journals and image collections, other multimedia products, and numerical, graphical or time based, as a commercially available title that has been published with an aim to be marketed.(lisbdnet.com)

To some extent, Electronic Resources solve storage problems. It also enables multiple users to access information simultaneously. The users can find out information easily and collection and organization of electronic resources can be done quickly. Also it offers efficient delivery of information economically to all users.

Types of Electronic Resources

Electronic Resources are divided into two major types. They are

1. Online Electronic Resources
 - a. Electronic Journals

- b. Electronic Books
- c. Online data bases(Indexing, abstracting, reference, statistical and full text)
- d. Web sites
- e. Electronic Newspapers
- f. Electronic Thesis
- g. Electronic Magazines
- h. Electronic Patents & Standards

2. Others

- a. CD ROM
- b. Disk
- c. Other Portable Computer storage databases

Issues of Electronic resources

Following are the main problems while accessing Electronic resources.

1. Licensing
2. IPR
3. Standards of metadata
4. Low budget
5. Lack of Infrastructure & Manpower

UGC INFLIBNET N-LIST Programme

In the perspective of Academic Library, and Academic Community, one of the important source for Electronic Resources is N-LIST. An initiative of the Ministry of Human Resource Development under the NME-ICT and now funded by UGC. The project entitled "National Library and Information Services Infrastructure for Scholarly Content" (N- LIST) being jointly executed by the e- ShodhSindhu Consortium, UGC – INFONET Digital Library Consortium, INFLIBNET Centre, and the INDEST-AICTE Consortium, IIT Delhi provides for i) cross – subscription to e- resources, subscribed by two consortia, ie, subscription to INDEST – AICTE resources for Universities and UGC INFONET resources for technical institutions and ii) access to selected e – resources to colleges. (nlist.inflibnet.ac.in).

N-LIST provides access to e – resources to the users by installing a server at its headquarters. As on December6, 2019 a total of 3372 Govt. / Govt. aided colleges covered under the section of 12 (B) and 2(f) of UGC took membership in it. Rs.5900/- for 12 (B) & 2 (f) colleges for a period from April to March of every financial year.

E – Resources under N-LIST

Registered institutions under this consortium will get 6,000+ e – journals and 31,35,000+ e books. A Total of 146 Subjects covered in Journals of N-LIST Programme. Electronic Resources available under N-LIST programme can be divided in to 3 categories - Full Text E- Resources, E- books, and Bibliographic database. Following table shows the list of e Resources.

Full text E Resources

Full text electronic resources are resources that contain complete articles along with their bibliographic details. Following table gives an outline in this.

Sl.No.	E Resources	Publishing Country	No. of Titles	Back files from
1	American Institute of Physics	USA	18	5 years
2	American Physical Society	USA	10	5 years
3	Annual Reviews	USA	33	10
4	Cambridge University Press	UK	224 (2010-2016)	5 years
5	EPW	India	1	1996+
6	Indian Journal.Com	India	180+	2007+
7	Institute of Physics	UK	46	Vol.1+
8	Oxford University Press	UK	206+	1996+
9	Royal Society of Chemistry	UK	29	10 Years
10	H.W.Wilson Journals	USA	3000+	1982+
11	JSTOR	USA	2500+	5 Years

(nlist.inflibnet.ac.in)

Electronic Books

Sl.No.	E Resource / Publisher	Publishing Country	No. of Titles
1	Cambridge books online	UK	1800
2	Ebray	USA	125000+
3	Net Library	USA	936
4	Oxford scholarship online	UK	1402+
5	Hindustan Book Agency	INDIA	65+
6	Institute of South East Asian Studies	INDIA	382+
7	Mc Graw Hill	USA	1124
8	Springer		23000
9	Sage		1000
10	Taylor & Francis	UK	1800
11	World e book		30,00,000
12	South Asia Archive		Through NDL

Bibliographic database

Bibliographic databases contain references to articles published in conference proceedings, journals and chapters in books. Bibliographic data bases contain abstract of the articles and link to full text. N- LIST provides access to Maths SciNet (American mathematical Society) and it covers reviews of articles in Mathematics from 1994 onwards

Registration & Accessing E resources Under N-LIST Programme

Academic Community ie, students, teachers, research scholars and staff of registered institutions are provided individual User Id & Password to access N-LIST Programme. After login to it, there is "search" option to move on to individual resources. Simple Search, Quick Search, Cite Search and Advanced Search Options help them to retrieve the specified resources effortlessly. One can also apply search techniques like Boolean Logic, Truncation search, and Proximity Search. For deriving maximum benefits from these E – Resources, there is E-mail alert facility. Different publishers provide different types of e – mail alerts. Types of e-mail alerts offered mentioned below.

1. Table of contents Alerts
2. New Issue Alerts

3. Citation Alerts
4. Publication Alerts
5. E book Series Alerts
6. Database Alerts
7. Reference Work Alerts
8. Search Alerts

Conclusion

Electronic resources are helpful for exhaustive and pinpointed information. The Specialty of N-LIST and Electronic Resources is that it is 24*7 accessible formats. Academic Community can easily access it from anywhere through the username and password provided to them. N-LIST is a major provider of e-books & e- journals. So this paper didn't discuss the other electronic resources. It's a major limitation. Along with N-LIST, users can access e pg pathasala, and e ShodhSindhu. It's very much helpful for Post Graduate students. E pgpathasala and eShodhSindhu do not require any username and passwords. With the help of a Library & information specialist, Academic community can easily gain access to these domains.

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Quality of life and stress tolerance of ASHA workers

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Abstract

An **accredited social health activist (ASHA)** is a community health worker instituted by the government of India's Ministry of Health and Family Welfare as a part of the National Rural Health Mission (NRHM) since 2005 onwards. Today the ASHA workers play significant and defined role in individual families of our society irrespective of their caste, creed and economic status. ASHAs are also meant to serve as a key communication mechanism between the public healthcare system and local communities. Thus the ASHA workers are vital part of our social support system and making sense of gender equality. The present study scrutinized influence of age, education and experience ASHA workers upon their quality of life and stress tolerance. A sample of 100 ASHA workers was selected through convenient sampling technique. 'T test and ANOVA were used to test the hypothesis. The result showed significant deference in the level of stress tolerance on the basis of age whereas no statistically significant deference showed in quality of life. Further, no significant deference was observed in quality of life and stress tolerance of ASHA workers grouped on the basis of education, experience and number of children.

Key Words: Quality of life, Stress tolerance, ASHA worker.

Introduction

The National Rural Health Mission (NRHM) (2005-12), is a government flagship programme, launched on the 12th April, 2005 in 18 states across the country, including eight Empowered Action Group (EAG) states, the North-Eastern states, Jammu & Kashmir and Himachal Pradesh, that seeks to provide effective health care to the rural population, especially the disadvantaged groups, by improving access, enabling community ownership and demand for services and strengthening public health systems for efficient service delivery.

In April, 2005, as a key component of efforts to expand access to health services by National Rural Health Mission (NRHM) introduced the Accredited Social Health Activists (ASHA) in each village within the identified States to act as an interface between the community and the public health system. ASHA must primarily be a woman resident of the village married/ widowed/ divorced, preferably in the age group of 25 to 45 years. She should be a literate woman with due preference in selection to those who are qualified up to 10 standard wherever they are interested and available in good numbers. This may be relaxed only if no suitable person with this qualification is available. ASHAs are seen as be health activists in the community who will create awareness on health and its social determinants, counsel mothers on key health behaviors and mobilize the community towards local health planning and increased utilization and accountability of the existing health services.

The present study focuses to assess quality of life and stress tolerance of ASHA workers with reference to their environs. The concept of quality of life broadly encompasses how an individual measures the 'goodness' of multiple aspects of their life. These evaluations include one's emotional reactions to life occurrences, disposition, sense of life fulfillment and satisfaction, and satisfaction with work and personal relationships (Diner, such, Lucas, & Smith, 1999). Social acceptance and job satisfaction of ASHA workers in the Garo Hills Division of Meghalaya: a cross-sectional study, revealed that social acceptance of ASHAs was rather to some extent for 36.4%. Almost 52% of ASHAs were dissatisfied with job and 61% were unhappy with their performance-based remuneration. This is a mere example of diminished quality of life of ASHA workers with reference to their sphere of work.

Today ASHA workers are facing tremendous stress due to their heavy work load and lack of sufficient honorarium. A study conducted by Saxena, V., Kakkar, R., and Semwal, V.D - *Indian J Community Heal.* 2012 illustrated that the most important

demand of the ASHA workers were monthly salary in the place of activity based financial incentives and also reported that activity based incentives was one of the demotivating factors for them to perform in a longer run. The ASHAs outlined problems encountered in dispensing duties into categories, such as, economic (no fixed economic incentives), logistical (lack of transportation) and workload (serving large population). Despite facing problems, ASHAs developed logistical (contact list of auto rickshaws) and economic (loaning money during emergency) strategies to address these hurdles (Roy 2013).

Methods

Descriptive research design was used by the researcher to conduct this study. Through convenience sampling method 100 ASHA workers were selected from various government hospitals in Idukki District. Questionnaire method was implemented for data collection. The world health organization Quality of Life (WHOQOL), Stress tolerance scale developed by Resmy and Sanada Raj (1999) and Demographical data sheet prepared by the researcher administered respectively to collect data.

Objectives

- To find out whether there is any difference in quality of life and stress tolerance of ASHA workers based on their age
- To find out whether there is any difference in quality of life and stress tolerance of ASHA workers based on their education
- To find out whether there is any difference in quality of life and stress tolerance of ASHA workers based on their experience

Hypothesis

- § There will be a significant difference in quality of life and stress tolerance of ASHA workers on the basis of age group
- § There will be a significant difference in quality of life and stress tolerance of ASHA workers on the basis of educational qualification
- § There will be a significant difference in quality of life and stress tolerance of ASHA workers on the basis of experience

Results and Discussions

The result showed significant deference in the level of stress tolerance on the basis of age whereas no statistically significant deference showed in quality of life. Further, no significant deference was observed in quality of life and stress tolerance of ASHA workers grouped on the basis of education and experience.

Table 1
ANOVA of ASHA workers with respect to the age

Variables	df	F
Quality of life	2	.904
	98	
	100	
Stress tolerance	2	4.450*
	98	
	100	

The above table indicates that the quality of life ASHA workers do not differ with respect to this age. The calculated 'F' value (.904) is lower than the table value (3.07). So it is statistically not significant. The calculated 'F' value of the stress tolerance (4.450) is higher than the table value (3.07) and it is statistically significant at 0.05 levels. The results of group mean analysis are given below.

Table 2
Post hoc test

Age groups	N	Subset of alpha=0.05	
		1	2
Up to 40 years	28	66.5714	
41-50 years	19	71.3684	71.3684
Above 51	54		72.8889
Sig.		.150	.824

The above table indicates that, the age category up to 40 keeps a difference with age above 50 years in stress tolerance. The level of stress tolerance is higher in the age group above 51. Age group 41-50 did not keep difference with other group. Ultimately the result proves that the age is not significant factor in designing the quality of life of ASHAs but like any other profession it increases the stress tolerance as they are being experienced. This statement also can be supported with the result of previous study done by Department of Psychiatry, Icahn School of Medicine, USA, which denotes that ASHA workers display basic knowledge of the etiology and treatment of various mental illness. And when we think from today's context it is obvious that they become more tactful since they have opportunities to deal with all categories of society including children, pregnant ladies, adolescents, widows and senior citizens.

Table - 3
ANOVA of quality of life and stress tolerance of ASHA workers with respect to the education

Variables	df	F
Quality of life	2 98 100	.659
Stress tolerance	2 98 100	1.214

The above table indicates that the quality of life and stress tolerance are not statistically differed according to the educational qualification. The 'F' values are .659 and 1.214 respectively and it is not statistically significant. The study establishes that ASHA workers consider their work as service or responsibility instead a profession. Thus they abstain from professional competency and rivalry. As per the regulation of government of India's Ministry of Health and Family Welfare ASHAs must have qualified up to the tenth grade, which is considered as customary educational qualification in current scenario. A study conducted by Mampi Bora Das and Papori Baruah on 'competency of asha workers and their work effectiveness' revealed that ASHA workers have medium level of knowledge regarding their work. The majority of ASHAs have a positive attitude but they do not have complete mastery over their work and the institutional training provided to them is insufficient. This study can be a reference to our finding that ASHAs educational status does not affect their psychological aspects. They simply find joy and solace in interacting with common people linking them with public health system.

Table 4
ANOVA of quality of life and stress tolerance of ASHA workers with respect to their experience

Variables	df	F
Quality of life	2 98 100 2	.861
Stress tolerance	98 100	1.363

The above table indicates that the quality of life and stress tolerance are not related according to the experience of ASHA worker. The 'F' are .861 and 1.363 respectively and it is lower than the table value. The result again points to the fact that ASHAs are able to handle their challenges irrespective of duration of experience. In fact experience in the field does not contribute anything to their psychological or social dimensions. A study on assessment of ASHA's work profile in the context of Udupi Taluk came with a similar establishment that the overall knowledge of ASHA workers was sufficient but there is a need for mitigation of few key challenges, which would significantly contribute to improvement of ASHA's work profile.

Conclusion

The study revealed that , there is a significant difference in quality of life of ASHA workers on the basis of age. The demographic details like experience and education remain without any significant relationship with both variables.

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The role of magnetic properties of Metal Organic Frameworks towards clean energy storage application

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Abstract

Metal Organic Framework based gas absorptive system are of wide interest in today's scenario due to their fascinating properties such as high porosity and surface area, tunable nature, diversity in metal functional groups and make them attractive candidate for various application such as catalysis, sensing, gas separation and storage. Though various studies have been done to improve the efficiency of MOFs, the role of magnetic properties of MOFs are less studied. Paramagnetic MOFs offer much attention as they offer flexible ground state and the nature of magnetic coupling will give idea towards tuning the ground state properties. Here in this review, various modifications of MOFs to improve their magnetic properties and thereby gas adsorption properties are explained.

Introduction

Development of safe and effective gas storage system is critical for the implementation of fuel cell economy. Among the various approaches to improve the performance of such systems, Metal Organic Frameworks (MOFs) based adsorptive gas storage system is envisaged as a long-term solution as a replace of carbon based fuels.¹ Metal-organic frameworks (MOFs) are crystalline porous materials made by linking metal ions and clusters with organic ligands. Their application in clean energy is most significantly as storage media for various gases such as hydrogen and methane and carbon dioxide.² The fascinating properties of MOFs such as porous nature, size tunability and the surface area³ make them an attractive candidate for potential applications in gas storage^{4a, 4b}, molecular separation^{5a-5c}, and catalysis.^{6a-6c} The coordinatively unsaturated sites of frameworks allow selective and adsorptive separation of various gases.^{7a-7c} Though zeolites, COFs and complex hydrides are available for gas adsorption applications⁸, the balance between the high gravimetric and volumetric adsorptive capacity of MOF make them a promising class of material for adsorptive gas storage application and clean energy purpose.

Why magnetic MOFs?

MOFs can be considered as porous network possessing metal clusters and organic ligands as linkers. Apart from the applications of MOF as molecular sieves, sensors and storage devices it has also been widely studied as a molecular magnetic material due to their peculiar responsive nature of changing the magnetic features under the influence of external agents such as temperature, pressure and guest molecules. Their magnetic properties offer wide application as switches and sensors.^{9a-9c} The slow magnetic relaxation of single chain magnet (SCM) allows them potential candidate for spintronic devices, high-density information storage, quantum computing etc. The reason for these characteristic properties of SCM arise from the weak inters chain interactions and large single-ion anisotropy and intrachain interactions. Such switchable SCMs provide an additional and independent way to control the magnetic states. Thus the diversity of MOFs and their potentially interdependent properties due to organic inorganic components ensure them as magnetically responsive materials.^{10a-10c} Also, paramagnetic MOFs offer additional flexibility to ground state by switching of spin state as well as magnetic coupling interactions in their ground state. Theoretical insight into the gas adsorptive nature of MOF seeks high impact because the prediction of magnetic properties and the coupling data provide much input towards the synthesis procedures of MOFs.

The effective manipulation of the magnetic properties of the framework through physical or chemical responses is a major challenge in bridging molecular magnetism and responsive MOFs.^{11a-11c} The solution to connect these two is to introduce suitable motifs that are responsive for external stimuli and causes a switching the magnetic state and influencing the coupling interactions in a fruitful manner. Thus the target of MOFs as a tunable magnetic material with external responses such as pressure or temperature can be achieved. The magnetically tuned MOFs offer wide application in molecular magnetism due to their reversible nature of gas binding due to physisorption or chemisorption interactions.

The porous nature of MOFs allows the tuning of magnetism via the sorption and desorption of guest molecules. The stabilizing exchange interactions and the change in the structural features can account for these magnetic properties. The changes associated with the structure of the frameworks can be due to the metal ions and their electronic environment as well as the nature of ligands coordinated. The nature of the coordination sphere and the dehydration processes can significantly affect the magnetic nature.^{12a-12c} However, this can be irreversible in nature upon the removal of coordinated solvent molecule thus leading to a loss of the structure of the system.^{13a-13b} The MOFs serve as a solution to this and offer reversibility of framework in an efficient way. The tuning of magnetic properties and spin cross over can be achieved in several ways such as modifying the bridging ligand, coordination environment, change of oxidation state of central metal etc. which are briefly discussed in the following paragraphs.

Modifications of MOF

Slight modification of the geometry of bridging ligand around the central metal atom can cause a change in the magnetic properties of MOFs. Miyasaka and co-workers¹⁴ have reported such kind of observation in the charge-transfer compound $[\{Ru_2(O_2CPh-o-Cl)_4\}_2TCNQ(MeO)_2]CH_2Cl_2$ (o-ClPhCO₂ = o-chlorobenzoate; TCNQ(MeO)₂ = 2,5-dimethoxy-7,7,8,8-tetracyanoquinodimethane) as a result of removal or addition of the solvent molecule (Fig. 1)

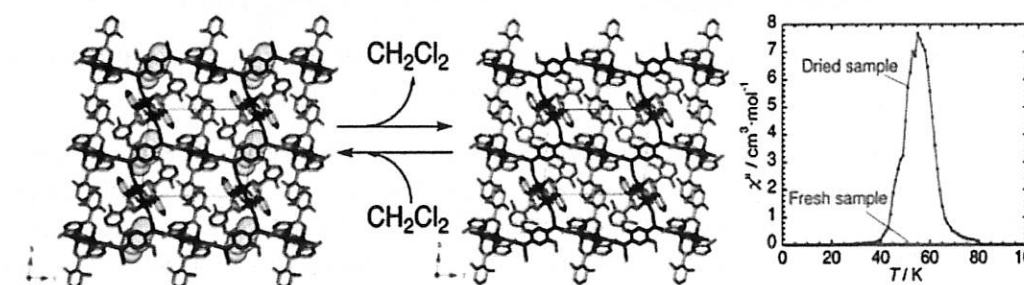


Fig. 1 (a) The effect of CH₂Cl₂ extrusion/uptake in $[\{Ru_2(O_2CPh-o-Cl)_4\}_2TCNQ(MeO)_2]CH_2Cl_2$ complex Reprinted with permission from J. Am. Chem. Soc. 2010, 132, 11943–11951. Copyright 2010 American Chemical Society.

The figure summarises the effect of chloroform removal or uptake and the corresponding changes which occur in the pendant ligand. The magnetic features of the ruthenium centre are affected by the solvation and desolvation processes (Fig. 1). The regeneration of the framework is obtained by long exposure to CH₂Cl₂ vapours. The reason for the changes occurred in magnetic ground state can be due to the structural modification of the pendant ligand. Thus there exist some factors which can tune the magnetic behaviour of the MOFs.

Another important phenomenon which affects the magnetic nature of MOFs is the spin crossover behaviour. It is the transition in spin state in metal complexes due to external stimuli. This has been found in MOFs due to several reasons like the binding of guest molecule or change in oxidation state of metal etc. There are several porous coordination network based on spin-crossover complexes.¹⁵ The spin cross over will lead to a change in the lattice parameters thereby it is considered as these complexes are dynamic in nature. The dynamic behaviour is the effect of transition of electrons from bonding to antibonding levels which leads to change in the geometry of the framework. Both physical as well as chemical stimulus can cause change in the magnetic behaviour.

The modification of the coordination environment of MOF can influence the spin crossover phenomenon. Aromi, Gamez and co-workers have synthesized a linear coordination polymer of formula $[Fe_3(dpyatriz)_2(CH_3CH_2CN)_4(BF_4)_2](BF_4)_4 \cdot 4CH_3CH_2CN$ with one-dimensional channels.¹⁶ The coordinated propionitrile ligands got exchanged by these channels. This exchange causes spin switching in the system. Hence it is clear that the change in magnetic properties through various tools such as spin cross over phenomenon can influence the gas storage adsorption properties of MOFs.

Guest modulated spin cross over in porous materials was reported by Kepert and co-workers.^{17a} Then ananoporous metal-organic framework $Fe_2(azpy)_4(NCS)_4$ -(guest) (azpy = trans-4,4'-azopyridine) shows reversible uptake and release of guest molecules such as methanol, ethanol and there is hydrogen bonding interactions with the framework. The guest uptake and release leads to

reasonable flexibility to framework structure (Fig. 2). So it is clear that the geometry around Fe (II) centres got changed substantially by this interaction.

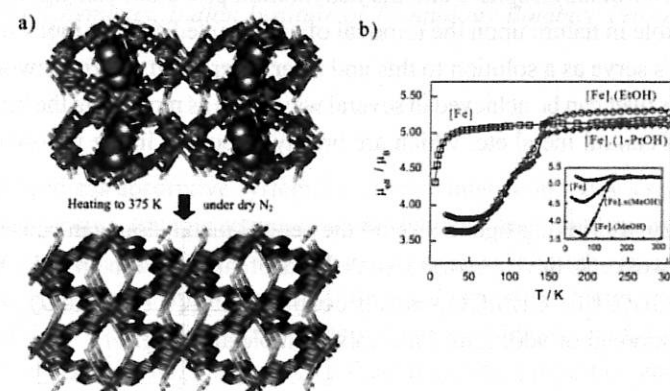


Fig. 2 (a) Reversible guest extrusion/uptake in $\text{Fe}_2(\text{azpy})_4(\text{NCS})_4(\text{guest})$ provokes subtle changes that affect the network; (b) effects of the guest extrusion/uptake on the magnetic moment.^{17b}

Change in the oxidation state of the metal can also lead to spin-crossover phenomenon. The layered compound $[\text{Co}^{\text{III}}\text{La}^{\text{III}}(\text{notp})(\text{H}_2\text{O})_4] \cdot n\text{H}_2\text{O}$ [where $(\text{notp})_6$ is the hexaanion of the 1,4,7-triazacyclononane-1,4,7-triyl-tris(methylenephosphonic acid)] is an interesting example for the same. A change in the oxidation state of the metal is induced upon the thermal treatment of the MOF. Bao et al has reported about this heterometallic coordination polymer.¹⁸ The diamagnetic compound is formed by binding an octahedral $\text{Co}^{\text{III}}(\text{notp})_3$ unit to $\text{La}(\text{H}_2\text{O})_9^{3+}$ through phosphonate oxygen atoms. The loss of the coordinated and non-coordinated water molecules upon heating causes an oxidation state change from Co (III) to Co (II). This causes a spin state change from low spin Co (III) to high spin Co (II) paramagnetic state. The electron transfer is caused by the gradual release of the coordinated water molecules around the La atom. A combination of UV/Vis and EXAFS spectroscopy and DFT calculations was used to elucidate the origin of the change of the electronic structure of the cobalt centre. It was observed that the four vacant sites of the lanthanide ion upon removal of the water molecules are refilled by the neighbouring oxygen atoms of the adjacent Co (notp) moieties, thereby causing an increase in Co-O bond lengths and a decrease in the Co-N bond lengths. It shows that the spin state of the Co ions is mediated by changing ligand-field strength.

The preparation of crystalline materials with diverse structures and tunable properties contribute much towards the clean energy purpose. It has been seen that the majority of the coordination polymers are mostly rigid, although MOFs are flexible network with modular nature and they allow facile incorporation of entities without loss of the structure.^{19a-19b} Thus the magnetic properties of the crystalline solid can be tuned by chemical and physical stimuli in a reversible manner and offers application as sensors and magnetic switches etc.

DFT Studies on gas adsorption properties of MOFs

Various DFT studies have also been done to understand the gas binding properties of MOF. Jeffrey B. Neaton et al has reported the binding enthalpy of small molecule such as methane, ethane, propane etc in a series of isostructural MOFs M-MOF-74 with $M = \text{Mg}, \text{Ti}, \text{V}, \text{Cr}, \text{Mn}, \text{Fe}, \text{Co}, \text{Ni}, \text{Cu},$ and Zn . The computational studies have suggested the selectivity of various gases towards particular M-MOF-74 series.^{19c} The first principle studies have also showed that M-MOF-74s ($M = \text{Mn}, \text{Fe}, \text{Co}, \text{Ni},$ and Zn) are better capturing agent for toxic gas such as H_2S and flue-gas impurities such as SO_2 and NH_3 .

Scandium decoration on MOF-5

Recent studies done by Pal et al.^{19d} have shown that the scandium decoration on the MOF can improve its efficiency in case of room temperature hydrogen storage. Figure 16 shows the scandium and titanium decoration of MOF-5. Scandium decoration on MOFs can function as a solution of the clustering problem. The study on scandium based MOF system was targeted to solve the clustering problem as well as to check the effect of boron substitution on the clustering problem of MOFs. 1, 4 disubstituted boron

based MOFs were also studied with this. The MOF-5 was modified by incorporating 12 scandium metal atoms inside the pore. The geometry optimization was done and the molecule was analysed and confirmed the improved efficiency of binding. As a part of this study the group has also studied the bare metal atom and its individual interactions. They have also studied the effect of these metal atoms in the MOF-5. The interaction energy was reasonably high for both the metal atoms scandium and titanium and was reported in the range -240 to -280 kJ/mol.^{19d}

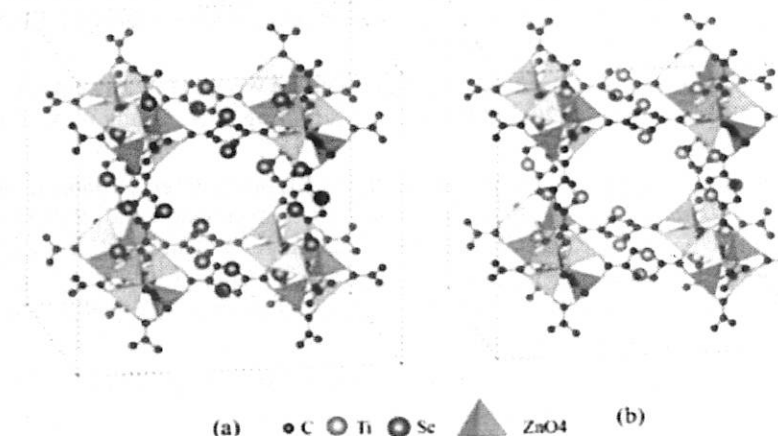


Fig 3: Scandium and Titanium decoration on MOF

The optimization studies were done by fixing the metal atoms close to the MOF aromatic ring centre. Introduction of metal ions showed several changes in the optimized geometry of the MOFs. The C-C bond length of the organic linker part was modified by the incorporation of metal ions. Some C-C bond length got shortened whereas some got lengthened indicating a charge transfer throughout the MOF network, i.e. occurrence of charge transfer interaction from the metal atoms to the MOF network. The computational details have also reported a change in the bond stretching behaviour upon changing the number of hydrogen atoms getting adsorbed. The difference in electro negativity between MOF network and the metal atoms give rise to an overall electronic charge in the entire MOF framework and which leads to an improved affinity for hydrogen binding.

Conclusion

So far various experimental and computational studies have been done to modify MOFs as discussed above. All the studies have clearly shown that the MOFs can serve as an attractive candidate for potential applications in various fields such as gas adsorption and storage, catalysis, sensing application etc. Tuning the properties of MOFs based on various aspects such as modification of linker part, introduction of various functional moieties to the framework, can improve the efficiency of MOF towards application such as gas binding and storage.

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Synthesis of the sensing part of Perylene Mono-Imide based fluorophore probe for sensing applications

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Abstract

Fluorescent based chemo sensors are potential candidates for sensing applications such as detection of cations and anions, environmental pollutants and biologically active species due to their peculiar properties such as high sensitivity and selectivity, low cost etc. This article focuses on the synthesis and analysis of photophysical properties of the sensing part of a perylene monoimide (PMI) based fluorophore probe for cation sensing application. PMI substituted with ethylhexyl amine was selected as the sensing part of the fluorescent probe. Mono brominated PMI derivative was synthesized and the normalised absorbance and emission spectra of reactant PMI gives $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$) and that of mono brominated PMI was found to be $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$).

Introduction

Fluorescent sensors have attracted much research interest in various fields such as pharmacology, biology, and environmental sciences as it offers wide application such as detection of pollutants in water, environmentally important species, biologically important anions and cations¹, small neutral molecule etc. Fluorescent sensors comprise of a sensing site and binding site to which the substrate molecule binds and the binding site is capable of transferring the substrate interaction to sensing site through charge transfer interaction. The peculiar properties of fluorescent molecule such high sensitivity, high selectivity², cost effective nature and sub nanometre spatial resolution with submicron visualisation³⁻⁴ make them potential candidates for sensing applications. The detection of analyte molecule is achieved by photo physical mechanism such as chelation induced enhanced fluorescence, intramolecular charge transfer, photo induced electron transfer and so on. Hence, fluorescent chemosensors have attracted much attention in past decades for gas sensing applications.

In light of this, we designed several precursors for fluorescent sensor which can serve as a linker for the binding site to which the metal binds and is called sensing part or fluorophore. We have developed several sensing site for the sensor based on the Perylene Mono-Imide dye (PMI), which is a polycyclic aromatic hydrocarbon with excellent electron acceptor ability. It also possesses diverse and fascinating properties such as high molar extinction coefficient in the visible region, high fluorescence quantum yield and high thermal stability which makes it a suitable acceptor moiety in the fluorescent probe.⁵⁻⁶ The structure of the PMI is shown in fig 1 with bay and peri positions marked in the diagram. Modification of peri position of PMI derivative give rise to enhanced photo physical properties of the system.

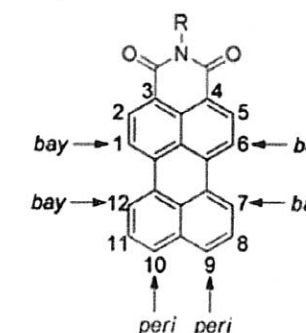


Fig 1: Structure of Perylene Mono-Imide (PMI) derivative showing peri positions and bay positions of the compound

Recently, the design and synthesis of advanced materials with the perylene chromophore has been an active area of research.⁷ Unique light-harvesting and redox properties combined with high thermal stabilities of perylene dyes offer potential applications in organic field-effect transistors⁸, xerography⁹, organic light-emitting diodes¹⁰ and photovoltaic devices.¹¹ It have been widely applied in various optical devices, light-harvesting arrays¹², and photosynthetic systems.¹³ They are inexpensive and easily accessible, attractive materials owing to intense, high fluorescence quantum yield and general photostability. Perylene dyes have been also used for DSSCs with overall conversion efficiency of 1.61%⁹ and 2.6%.¹⁴ Compared with metal complexes, these dyes have higher absorption coefficients, high fluorescence quantum yield, easier to prepare and also of low cost. Perylene dyes represent one of the most widely studied classes of organic semiconductors with this possible application.

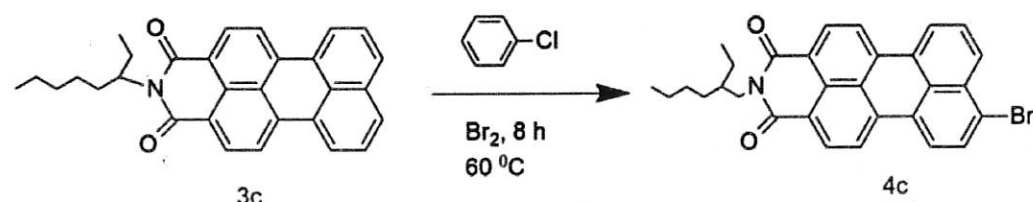
Perylene dyes are key chromophores in dye chemistry.¹³ The rylene series can cover the broad region of visible (400–760) and NIR (760–1200 nm) absorption. It offers wide possibilities for chemical functionalisation via the introduction of hydrophobic or hydrophilic substituents, electron donors or acceptors, and functional groups for attachment to polymers or biomolecules. In the past decade, novel homologues of perylene containing additional naphthalene units and bearing additional aromatic rings have been reported.¹⁴ Due to their outstanding chemical and photochemical stabilities as well as their high fluorescence quantum yields and molar absorbance perylene dyes have been established as key chromophores for single molecule spectroscopy (SMS).¹⁴ This provides photo physical processes, such as energy and electron transfer, to be studied on the single molecule level over extended periods of time.¹⁶

The design of push-pull system has proved one of the excellent way to attain large bathochromic shift and thus extended electronic absorption window. The aim of my project is to achieve near infrared (NIR) absorbing fluorophore with perylene core for sensing applications. This can be achieved through several ways; 1. extension of the p-conjugation in a longitudinal or lateral manner. (2). introduction of donor units into the perylene core to enhance the intramolecular charge transfer effect. (3) formation of stable quinoidal structures. (4) covalent linkage with multiple rylene imides to build up a multichromophore system. (5). fusion with other large p-conjugated systems (e.g. porphyrin).

The synthetic chemistry of Perylene-Mono-Imide dyes has developed rapidly over the past few years. Langhals developed a method for converting the commercially available perylene-dianhydride into Perylene-Mono-Imide¹⁵ which provides the starting point in most routes to substituted Perylene-Mono-Imide dyes. Mullen has developed methods for halogenation and substitution of Perylene-Mono-Imide dyes^{16–18} and has incorporated Perylene-Mono-Imide dyes in dendrimeric architectures.¹⁹ Wasielewski has developed a variety of Perylene-Mono-Imide dyes for use in molecular photonic switches.^{20–24} For light-harvesting studies, Lindsey et al. have prepared several Perylene-Mono-Imide-porphyrin dyads.^{25–26}

The absorption and emission characteristics of peryleneimide dyes are little affected by the presence of solubilizing substituents at the imide positions because of the nodes present at the imide nitrogen in both the HOMO and LUMO.²⁷ The same tactic of using alkylated N-aryl groups has been carried over to the perylene-monoimide dyes, but additional solubilizing features also have been sought by introducing aryloxy substituents at the perimeter of the perylene.²⁸ The aryloxy substituents cause a bathochromic shift of the absorption and emission spectra and alter the electrochemical properties as well. The idea of introduction of a donor group such as an amine substituted ligand attached to the *peri* position of PMI can result in an extended conjugated system. This probe will absorb effectively with a bathochromic shift compared to PMI. When the metal will attach to the probe, the photo induced electron transfer to the metal from donor will reduce the electron donation to the acceptor moiety. The reduction in conjugation now brings a blue shift in the absorption spectra.

Experimental section



Scheme 2: Synthesis of Mono brominated PMI

My approach towards the building of core of fluorophore (PMI-Br) was with the use of 3c (Scheme 2). The mono-bromination of 3c was carried out in chlorobenzene at 55°C for 7h and which resulted in the 9-bromoderivative (4c), the precursor of target fluorophore in 35% yield. The monobromination reaction was monitored by proper refluxing conditions as well as temperature maintenance. The product was obtained in pure form after the precipitation with methanol.

Results and Discussion

The photo physical properties of the PMI derivatives were studied (Fig. 3). The normalised absorbance and emission spectra of PMI 3c gives $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$) and PMI 4c gives $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$). The λ_{ex} value of all compound was exactly matching with the λ_{abs} value indicated the purity of each compound. The value of λ_{abs} and λ_{em} was same for all the three PMI derivatives. It has been found that the introduction of electron donating group in the perylene core leads to extended conjugation throughout the ring and thereby red shift in the absorption spectra.

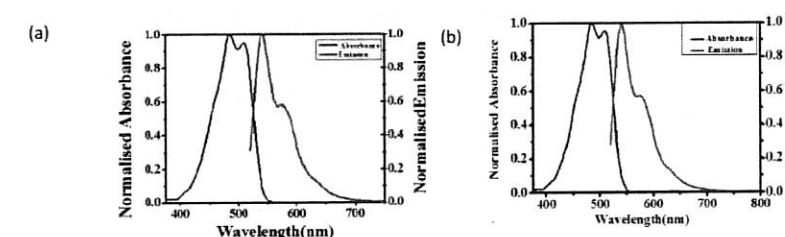


Fig 3: a) Normalized absorbance and emission spectra of a) PMI 3 c. b) PMI 4c in HCl₃ at room temperature

The substitution of R group in 3c and 4c was ethyl hexyl amine. The change of R group doesn't make difference on absorbance or emission properties whereas the introduction of conjugative group/s at the *peri* position can cause a change in the spectral properties whereas bay position was not influencing the spectra as it is not contributing to the delocalization. The spectral analysis has been done with respect to the known standard derivatives of perylene.

Fig 4 explains the NMR spectra of reactant 3c; ¹H NMR (500 MHz, CDCl₃) δ 8.52 (d, J = 8.0 Hz, 2H), 8.35 (dd, J = 7.76 Hz, 2H), 4.13 (m, J=7.36,12.86,19.62, 2H), 1.97 (m, 2H), 1.37 (m, 1H), 1.25 (s, 2H) 0.95 (t, J=7.39, 2H), 0.89 (t, J=6.93, 2H); Fig 5 explains the NMR spectra of product 4c; ¹H NMR (500 MHz, CDCl₃) δ 8.53 (t, J = 8.03 Hz, 1H), 8.47 (d, J = 7.13 Hz, 1H), 8.42 (d, J=8.15, 1H), 8.37 (d, J=8.14, 1H), 8.31 (m, 1H), 8.22 (d, J=8.25, 1H) 7.91 (d, J=8.14, 1H), 7.73 (dd, J=7.69, 8.29, 1H) 4.16 (ddd, J=7.33, 12.9, 19.74) 1.99 (dd, J=6.5, 12.88, 2H) 1.48 (m, 2H), 1.30 (m, 2H) 0.97 (d, 2H), 0.91 (J=4.4, 9.81, 3H). Fig 6 shows the mass spectra of compound 3c with molecular Formula-C₃₀H₂₆NO₂ and mol wt- 511.1 g/mol and fig 7 shows the mass spectra of compound 4c with mass spectra of 4c; mol Formula-C₃₀H₂₆NO₂ ; Mol wt- 511.1 g/mol.

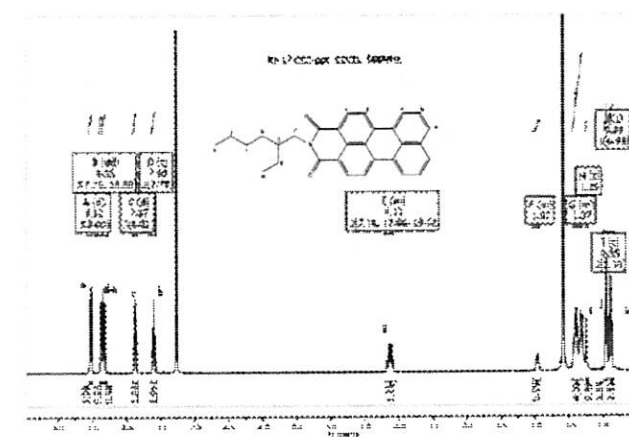
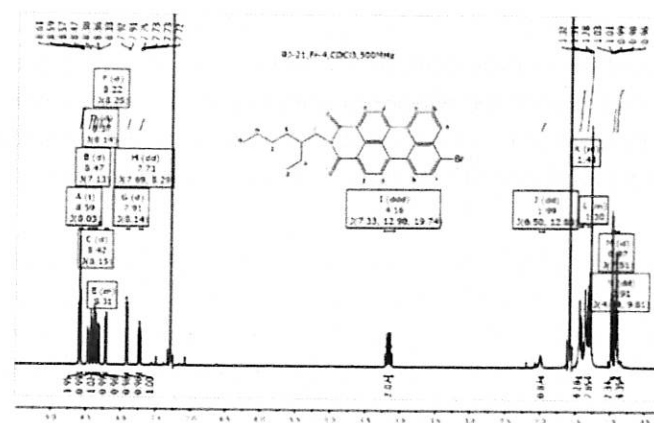
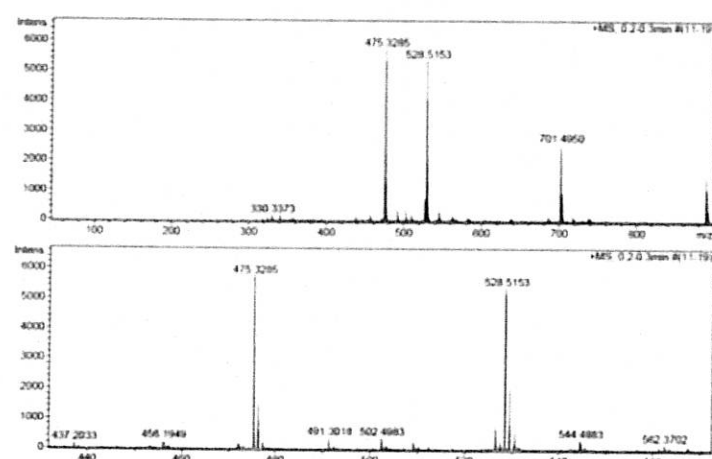
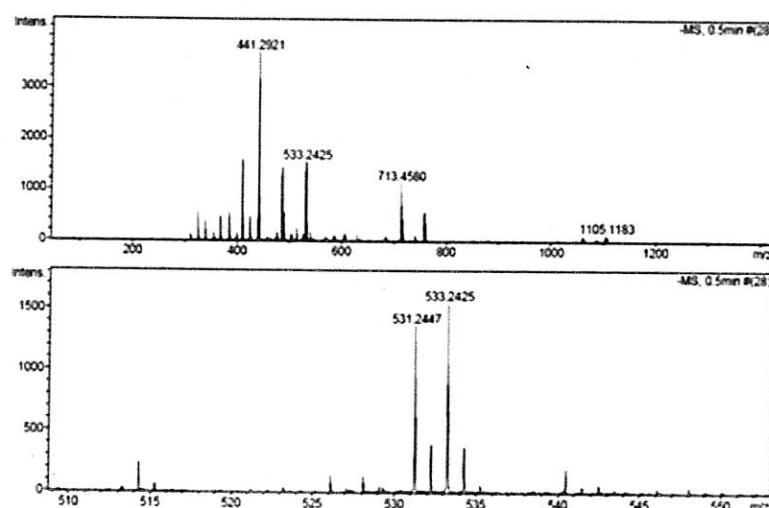


Fig 4: ¹H NMR Spectra of 3c in 500MHz spectrometer using CDCl₃ solvent

Fig 5: ¹H NMR Spectra of 4c in 500MHz spectrometer using CDCl₃ solventFig 6: Mass spectra of 3c; Mol Formula-C₃₀H₂₆NO₂; Mol wt- 511.1 g/molFig 7: Mass spectra of 4c; Mol Formula-C₃₀H₂₆NO₂; Mol wt- 511.1 g/mol

Conclusion

In this project, we focused to develop a suitable sensing site for a fluorescent sensor by the use of functionalised Perylene Mono-imide (PMI) derivatives. PMI substituted with ethylhexyl amine was selected as the sensing part of the fluorescent probe. The photophysical properties of the PMI derivatives were investigated. The normalised absorbance and emission spectra of reactant PMI gives $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$) and that of mono brominated PMI was found to be $\lambda_{abs} = 485(\text{nm})$; $\lambda_{em} = 541(\text{nm})$; ($\lambda_{ex} = 541\text{nm}$). The studies have shown that the introduction of electron donating group in the molecule gives a red shift in the absorption spectra but modification of bay position is not affecting the absorption properties as it does not contribute much to the delocalization. Hence, this can be inferred from the studies that the modification of the *peri* position of the PMI derivative will give rise to a better electronic absorption window for sensing applications. Thus, the photophysical properties of perylene derivatives can be made useful for the development of cost effective, highly specific fluorescent sensors.

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Catalytic Degradation of Organic Dye Using Biosynthesized Silver Nanoparticles

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Abstract

Nanotechnology which is an emerging field in research and nanoparticles are considered to be its basic for the development of several nanostructured devices or materials. Metal nanoparticles exhibit unique properties due to its magnetic activity, chemical reduction, sensing, biomedical application and others. It has been widely reported that in green synthesis using plant extracts, the plant medium act as a good reducing and capping agent for the synthesis of metal nano particles. The present study reports an environmentally gentle and unexploited method for the synthesis of silver nanocatalysts using *Salvinia molesta*. The synthesised AgNPs were characterized using Ultraviolet-Visible (UV-Vis) spectroscopy, X-ray diffraction (XRD), and High resolution transmission electron microscopy (HR-TEM). High resolution transmission electron microscopy images revealed that the synthesized objects were predominantly of spherical shape with its average diameter ranges between 19-25nm. The XRD and HR-TEM studies clearly demonstrate the crystalline nature of the nanoparticles. Further, the Ag NPs has an effective catalytic activity in the reduction of highly environmentally polluted organic dyes like Methylene blue.

Introduction

The development of biological inspired experimental process for the synthesis of nanoparticles is evolving into an important branch of nanotechnology[1]. Biologically synthesized silver Nano particles could have many applications such as they might be used as spectrally selective coating for solar energy absorption and intercalation material for electrical batteries as optical receptors, for bio labelling, and as antimicrobials[2]. Silver compounds were shows to be effective against both aerobic and anaerobic bacteria by precipitating bacterial cellular proteins and by blocking the microbial respiratory chain system[3][4]. Before the advent of silver nanoparticle, silver nitrate was an effective antibacterial agent used clinically[5]. The possible mechanisms of actions includes better contact with the microorganism nanometre scale, silver provided an extremely large surface for contact with bacteria. The nanoparticles get attached to the cell membrane and also penetrate inside the bacteria. Silver nanoparticle immobilized on silica spheres have been tested for their ability to catalyst the reduction of dyes by sodium borohydride (NaBH_4)[6]. In the absence of silver nanoparticles the sample was almost stationary showing very little or no reduction of the dyes. When silver nanoparticles where added to the solution, rate of reduction increases. The reaction time showed to be strongly. When the concentration was doubled, the reaction time was reduced to less than one third. Here silver nanoparticle aids the transfer of electrons from the BH_4 ion to the dyes, and thereby causing a reduction of the dyes. BNH_4 ions are nucleophile while dyes are electrophilic[7]. SEM pictures of the nanoparticles showed that they were intact after the reaction and still immobilized on the silica spheres[8]. This proves that the particles act as a catalyst because they are not consumed in the reaction

Materials and methods

Silver nitrate (99.99%), methylene blue and sodium borohydride were purchased from sigma Aldrich. All glassware's were cleaned with aqua regia and rinsed several times with deionized water.

Synthesis of silver nanoparticles

Silver nanoparticles have been synthesized by adding 2 mL extract to preheated 30 mL 3.1×10^{-4} M silver nitrate solution and subjected to microwave irradiation for 4 min. The formation of silver nanoparticles is indicated by the appearance of yellowish brown colour within 5 min.

Catalysis

1 mL 100 mM sodium borohydride solution is added to 1 mL 10^{-3} M methylene blue. The solution are then made up to 10

mL using deionised water and vigorously stirred for 5 min. Then 0.5 mL, 2 mL and 2 mL of silver colloid is added to the solutions, respectively, and stirred for five more minutes. The degradation of dyes is indicated by the decolourisation of the solution. Methylene blue initially blue in colour in an oxidizing environment became colourless in the presence of reducing agent (NaBH_4) indicating the reduction of methylene blue to leucomethylene blue (LMB). The reaction unsupported by the catalyst is a studied as a reference. All the degradation process was monitored using UV-visible absorption spectrophotometer.

Characterization

UV-visible spectra analysis was performed for all samples and the absorption maxima were analyzed at a wavelength of 200–700 nm. 2 ml of 0.06×10^{-3} M solution of the dye (6×10^{-5} M, 2 mL) and freshly prepared NaBH_4 solution (0.05 M, 0.5 mL), and the synthesized noble metal nanoparticles (0.02 mg/mL, 0.5 mL), were taken in the quartz cell. Complete disappearance of the colour of the reaction medium was the direct indication of taking off of the dye. The kinetics of the reaction was studied by noting the variation in the concentration of methylene blue with time using the UV-vis. spectrophotometer by following the changes in the absorbance of the peak at 664 nm. A control experiment was also conducted without using nanoparticles. XRD pattern was recorded by XPERT-PRO diffractometer using Cu-K α ($\lambda=1.54 \text{ \AA}$) radiation. The scanning was performed in the region of 2θ from 20 degrees to 90 degree. The morphology of the silver nanoparticles was examined using Tecnai G2 30Transmission Electron Microscope.

Results and discussion

UV- Visible spectra Analysis

As a result of the strong interaction of metal nanoparticles with light leads to the collective oscillation of the conduction electrons on the metal surface, known as a surface plasmon resonance (SPR)[9]. The unusually strong scattering and absorption properties can be obtained from SPR results. Due to the unique optical properties of silver nanoparticles, a great deal of information about the physical state can be obtained by analysing the spectra. As the diameter increases, the peak plasmon resonance shifts to longer wavelengths and broadens[10]. The secondary band may be due to a quadrupole resonance that has a different electron oscillation pattern than the primary dipole resonance[11]. The effect of secondary resonances yield a unique spectral fingerprint for a plasmonic nanoparticle with a specific size and shape is obtained from the band wavelength, the band width. An intense peak at 432nm (Fig 1) confirms the formation of silver nanoparticles[12][13].

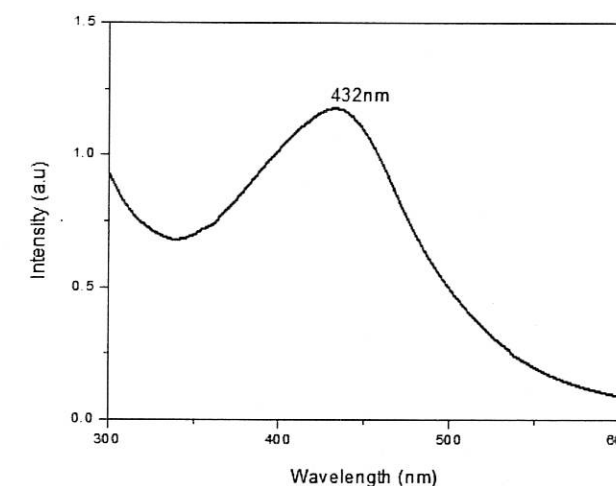


Fig 1- UV-Vis absorption spectrum of AgNp

XRD Analysis

XRD analysis showed that the biosynthesised product is partially crystalline (Fig 2) and the intense peaks at 2θ values of 27.83, 32.20, 46.17 corresponding to XRD planes (210), (113), (200) which indicates the fcc structure of silver[9][14].

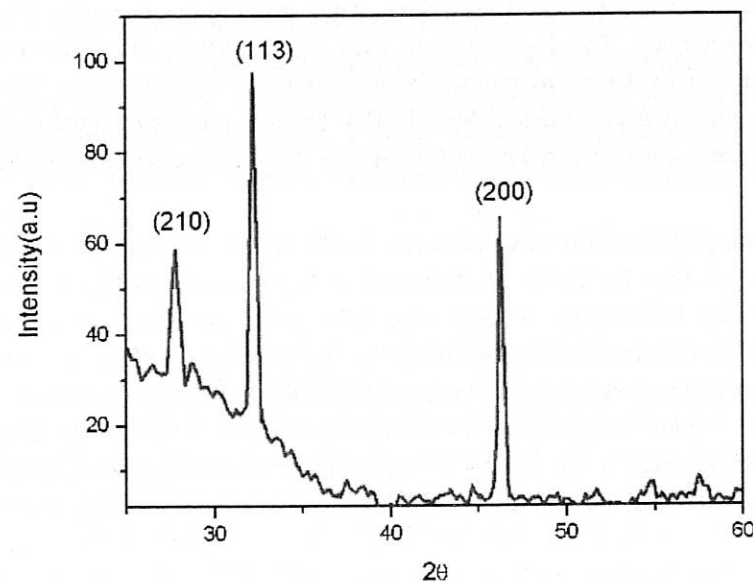


Fig 2- XRD patterns of silver nanoparticles.

TEM Analysis

The result obtained from the TEM study clearly indicates the shape and size of the nanoparticles (Fig. 3) and illustrates the individual nanoparticles as well as the clusters[15]. The silver nanoparticles obtained were fairly dispersed with an average size of 19-25nm. The TEM image shows smaller particles in form of spheres, while the larger particles tend to form disks[16].

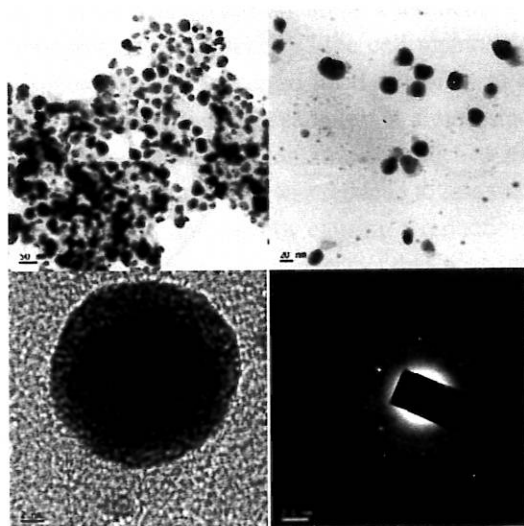


Fig 3- TEM images of Silver Nanoparticles at different magnification

Degradation of Organic Dyes

The catalytic activity of AgNP-molesta was investigated using the degradation reactions of methylene blue using NaBH_4 [12]. The absorption maximum of this dye also does not overlap with the SPR band of silver nanoparticles. The UV-Vis absorption spectrum of an aqueous solution of methylene blue shows peaks at 665nm. The reduction of methylene blue to leucomethylene blue (LMB) can be followed spectrophotometrically by monitoring the absorption maximum at 665 nm. Comparing fig 4(a) and 4(b) it is clear that when AgNP was added to the reaction mixture containing both methylene blue and NaBH_4 , the intensity of the peak at 665 nm began to decrease continuously with time.

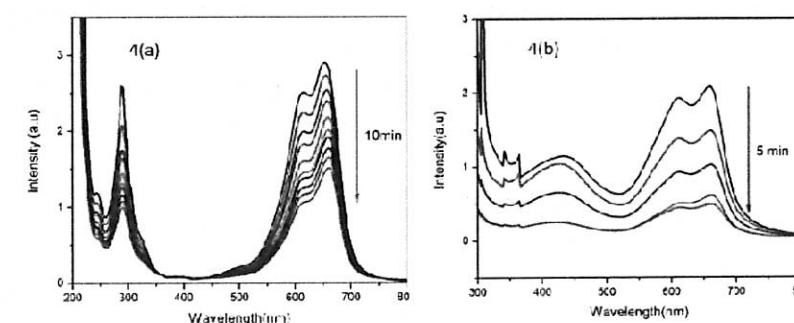


Fig 4- UV-vis absorption spectra measured at 1 min intervals for the degradation of Methylene blue (a) In the absence AgNP-molesta and (b) In presence of AgNP-molesta

The degradation of an organic dye Fuchine can be analysed using the UV-Vis absorption spectrum of an aqueous solution of fuchine which shows peaks at 292 nm and 532nm. The reduction of fuchine into leuco fuchine can be monitored from the absorption maximum at 532 nm. Comparing fig 5(a) and 5(b) it is clear that when AgNP was added to the reaction mixture containing both fuchine and NaBH_4 , the intensity of the peak at 532 nm began to decrease continuously with time[9].

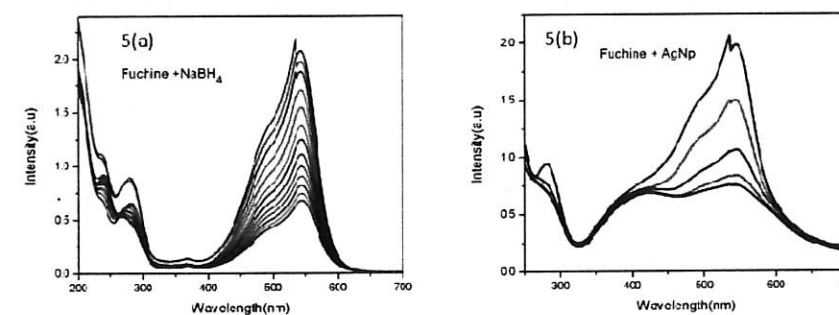


Fig 5- UV-vis absorption spectra measured at 1 min intervals for the degradation of Fuchine(a) In the absence AgNP-molesta and (b) In presence of AgNP-molesta

Conclusion

In summary, we demonstrated a bio reductive approach to silver nanoparticles using *Salvinia molesta*. This approach is time consuming, low in energy and resources cost and environmentally friendly. The components of plant responsible for reduction and stabilization of silver nanoparticles. Silver nanoparticles have excellent antioxidant characteristics, making them useful as therapeutic agents in future. The prepared silver nanometals functioned as heterogeneous catalysts in different dye degradation perspectives. They offer new avenues for the perennial issues pertinent to waste water purification by degrading toxic contaminants.

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Protein Designs With D- Amino Acids Expand Current Protein Topology

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Abstract

De novo protein design is a powerful tool that plays an important role in understanding the sequence-to-structure and structure-function relationships in proteins and polypeptides. The successful protein designs have tremendously advanced our understanding of protein folding problem, by providing structurally and functionally enhanced novel polypeptides or miniproteins with appreciable thermostability and bioavailability. Use of advanced computational techniques have been an integral part of successful *de novo* design of peptides and proteins. One advancing method involves unusual structural fold, created *de novo* for functional engineering is retrofitted with a novel polypeptide sequence to harbor a desired function, by following the established principles of protein folding. Inspired by the previously reported 20-residue triple stranded antiparallel β -sheet peptide “Betanova”, we have used the later approach in the current study to rationally design a triple stranded antiparallel β -sheet miniprotein of d” 30 amino acids, named ‘RL1’ with an unusual structural fold, having a receptor-like hole, with a potential to be engineered as a functional receptor. The structural stability of RL1 is tested in comaprison with Betanova using classical molecular dynamics (MD) simulation over 20ns at 300K. In a short look RL1 is found to be stable enough throughout the MD and has the potential to be engineered as a receptor.

Introduction

Proteins are a class of biologically important macromolecules made up of a chain of amino acids. Depending on the functional requirement, proteins can be a small polypeptide chain of 10 amino acids and sometimes can be a very long polypeptide chain of 100s of amino acid residues.¹ The main chain of naturally occurring proteins are generally made up of only L-() amino acids, except Glycine. All proteins possess the inevitable property of protein folding through critical tertiary contacts. Researchers still study this problem of protein folding since serious biochemical malfunctions arises when a protein misfolds to other states. To better understand such protein folding processes one can design small fragments of complex proteins and study those individual foldons.

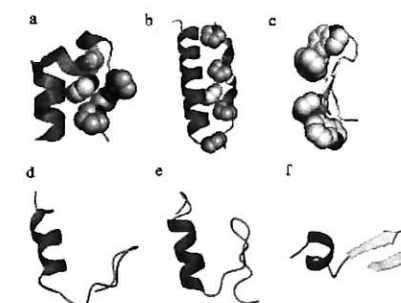


Figure 1: Cartoon representation of the structure of few miniproteins d” 30 amino acids, from the literature. (a) Trp Cage, (b) avian pancreatic polypeptide, (c) Trp zipper, (d) BBA, (e) Zinc finger and (f) BH17.

Υσε οφ Δ-αμινο αχιδσ ιν πεπτιδε δεσιγν ηασ α λονγ ηιστορψ σταρτινγ φρομ χψχλιχ πεπτιδε βασεδ νανοτυβεσ. Βασεδ ον α δεσιγνεδ τυπε-Π□ Δ-Προ-Γλψ βturn, Gellman and coworkers, Balaram and coworkers³⁻⁵ designed two to four stranded all β -systems. Durani and coworkers even contributed a hexapeptide fold using D-amino acids.⁶⁻⁷ Further, Durani and coworkers⁸⁻¹⁰ explored the conformational space of D-amino acids by designing a molecular bracelet with five D-amino acids in a total 14 residue polypeptide. In addition, using the stereochemical engineering approach, an / mini-protein was designed as a -cup shaped receptor for acetyl choline. The authors employed residues that exhibits - interactions, stabilizing the protein

fold. The aromatic triad used makes critical contacts in this rationally designed 15-residue mixed L, D protein. Extension of similar ideas have resulted many functional miniproteins¹¹⁻¹² including a self-assembled foldamer a zinc-finger hydrolase mimetic.¹³⁻¹⁴

Design of such proteins can expand our knowledge about functional proteins which can be further used to develop new antibiotics, biomaterials, biological probes etc. Also the design and study of these miniproteins, we would be able to answer (i) why specific amino acid sequences fold? (ii) why proteins malfunction? and (iii) what are the most important interactions required between protein and substrates for its suitable function.

Inspired from the designs previously reported for "Betanova" and "boat" shaped peptides, the following objectives are proposed for exploration in the current study.

(i) Modeling a three stranded anti-parallel β -sheet structure from an extended Poly-Ala chain of ≤ 30 -amino acids, by carefully incorporating D-amino acids at specific positions to induce β -turns.

(ii) Stereochemically engineer the resultant β -sheet peptide structure to create an unusual all β -fold with a potential to design a molecular cleft.

(iii) Retrofit the stereochemically engineered all β -fold with a series of amino acids to generate a model "miniprotein".

(iv) Compare the overall stability of the designed "miniproteins" in light of "Betanova" by recruiting the advanced molecular dynamics studies in explicit water.

Results and Discussions

Initially, a Poly-Ala chain of 30 L-()-amino acids end-capped at both N- and C-terminus was modelled in an extended (Ramachandran angles: $\phi = -120^\circ$, $\psi = 120^\circ$) conformation. Analysis of protein structure database reveals that certain residues such as Pro, Gly, Asn, Asp and Ser show relatively higher intrinsic preference toward β -turns. In addition, many small designed β -hairpin peptides have also been reported with D-Pro-Gly¹⁵⁻¹⁷ and D-Phe-Pro based type-II' β -turns, which tremendously help in stabilizing the overall backbone hydrogen bonding in the peptide. Thus, ¹¹Ala, ¹²Ala and ²¹Ala, ²²Ala were respectively mutated to ¹¹D-Pro, ¹²Gly and ²¹D-Phe, ²²Pro to invoke type-II' β -turns in the extended polypeptide backbone. Finally, the (ϕ , ψ) values of the rest of the amino acids were set to (-139° , 135°) to create a three stranded anti-parallel β -hairpin structure with favorable backbone hydrogen bonding.

The resultant triple stranded β -hairpin was substituted with D- amino acids at strategic positions to create an all β -fold creating a molecular cleft. Initially, ⁷Ala, ¹⁴Ala, and ²⁷Ala were subjected to stereochemical inversion from L-() to D-()-amino acids to induce a half-bent structure in the backbone of the β -hairpin. Further stereochemical inversions at ³Ala, ¹⁸Ala, and ²³Ala converted the half-bent β -hairpin backbone to a molecular cleft-like structure.

Using the established principles of rational protein design, the modeled β -hairpin based molecular cleft was subjected to sequence optimization at each Ala position to obtain a variety of 30-residue miniproteins. It is well known that large aromatic residues (Tyr, Phe, and Trp) and β -branched amino acids (Thr, Val, Ile) have relatively higher propensities for β -sheet conformation. The design principles have been well validated in many designed peptides. For example, Serrano and co-workers¹⁸ synthesized a 20 residue three stranded β -sheet. Betanova is yet another 20-residue mini-protein designed by Serrano and co-workers.¹⁹ In light of the these miniproteins, the following sequence (named RL1) was rationally designed and subsequently retrofitted to the stereochemically engineered β -hairpin fold.

RL1: Ac-Glu¹-Asp²-D-Asn³-Asn⁴-Gln⁵-His⁶-D-Glu⁷-Glu⁸-Lys⁹-D-Pro¹⁰-Gly¹¹-Trp¹²-His¹³-D-Arg¹⁴-Tyr¹⁵-Trp¹⁶-Ser¹⁷-D-Asp¹⁸-Asn¹⁹-D-Phe²⁰-Pro²¹-Arg²²-D-Asn²³-Arg²⁴-Trp²⁵-Glu²⁶-D-Tyr²⁷-Asp²⁸-His²⁹-Ala³⁰-NH₂

Design scheme behind the RL1

First, the inner core of the protein is designed with hydrophobic residues, which will favour the protein to fold to such a globular shape through hydrophobic interactions. and the exterior with polar and charged hydrophilic residues that stabilizes the fold through interactions like salt bridge, cation- π , and hydrogen bonding. Thus, in RL1, a Trp residue is introduced at position 16 on strand II and then the adjacent positions 5 and 25 on nearby strands I and II are fitted with residues Gln and Trp respectively to induce hydrophobic interactions like π -stacking and alkyl- π interactions. Besides this Trp being a fluorescent active molecule

can be exploited to study the protein dynamics and as a bulky residue can fill the protein core effectively. Although Gln is a polar residue the two side-chain alkyl carbon atoms can show hydrophobic interactions and its polar nature also helps to increase the solubility of the protein. It also renders the possibility to be further engineer this region to bind some amphiphilic ligand while optimizing the sequence as a receptor for any such ligand.

In addition, another Trp residue is introduced at position 12 in RL1, where it can interact with Trp16 and Trp25 through π -stacking. Further, an amphiphilic residue Lys is introduced at position 9 with the same rationale. Trp12 can also interact with the hydrophobic carbon chain of Lys9 on strand I. These Trp residues will be helpful in elucidating the structure and the folding dynamics of the protein. Then a His residue is introduced at position 29, adjacent to Trp12, on the third strand thinking that it can interact with the π -system of the Trp triad and its polar protons can form hydrogen bonds with the backbone oxygen atoms.

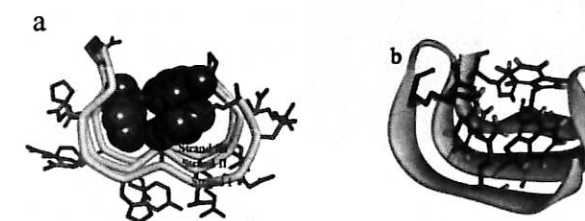


Figure 2: Cartoon representation showing the hydrophobic core and hydrophilic exterior of the designed sequence. a) structure before MD and b) structure after MD.

In addition, the exterior of RL1 was designed with hydrophilic polar residues as His13, D-Arg14, Tyr15, Ser17, D-Asp18 and Asn19. The side chains of these residues being oriented outwards can increase the solubility of the protein. Also adjacent to His13, negatively charged residues Glu and Asp were used at positions 8 and 28 on strands I and III, as they can interact with His13 through non-bonded interactions like salt bridge, π -anion etc. His is introduced at position 6 on strand I, adjacent to Tyr15, in RL1 to bring in π - π and cation- π interactions between them and Glu is used at position 26 on strand III so that its carboxyl group can form hydrogen bond with the hydroxyl group of Tyr15, holding together the strands.

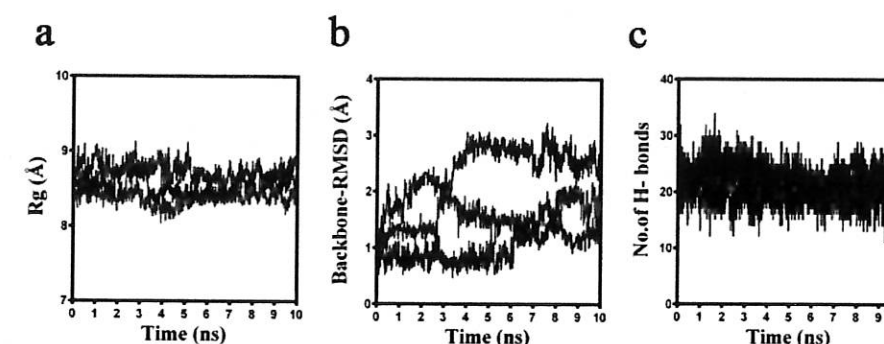


Figure 3: Comparison of (a) radius of gyration, (b) backbone RMSD and (c) total number of hydrogen bonds of Betanova (black), Trpcage (blue) and RL1 (red) miniproteins.

Comparison of the radius of gyration (Rg) between RL1, Betanova and Trpcage indicates that the designed protein RL1 maintains the desired morphology. The miniprotein also maintains more or less same number of hydrogen bonds over the duration of the MD, which suggests its structural stability in solution. Out of the 14 side chain hydrogen bonds observed in the starting structure of RL1, bonding between five pairs, namely D2-N19, D18-N23, H13-D28, W12-E26 and W25-P21 are found to be stable over 10ns. Hydrogen bonding between side chains of other five pairs, W12-Y15, S17-N4, W16-F20, W25-F20 and Y15-N4 are also found to be consistent for nearly more than 50 percent of the time scale. Similarly, out of the several electrostatic interactions nearly three are found to be of significant strength since these pairs are within a range of 4 Å distance. Thus, these interactions play a significant role in stabilizing the fold of RL1 miniprotein.

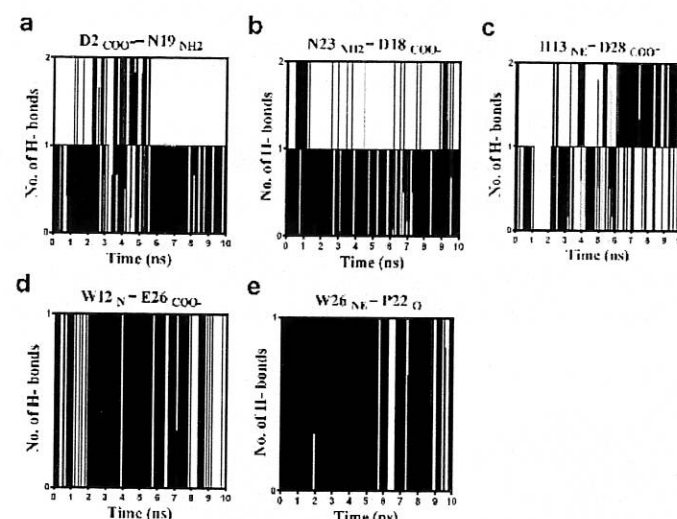


Figure 4: Side chain hydrogen bonds sustained over the duration of MD in RL1 miniprotein.

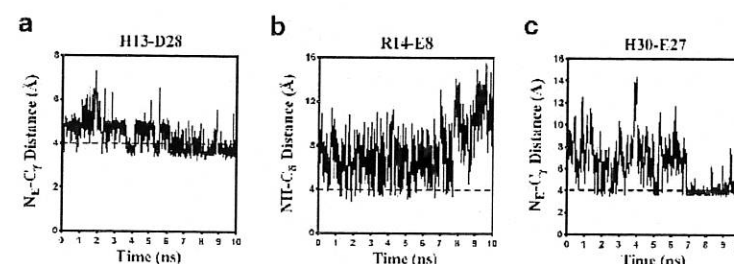


Figure 5: Summary of electrostatic interactions sustained over the duration of MD in RL1 miniprotein

Beside hydrogen bonding and electrostatic interaction between the exposed side chains of RL1, it is also important to understand the hydrophobic packing interactions at the core. Sustained hydrophobic interactions will not only help in stabilizing the protein core, but also will drive the downhill folding to maintain a globular structure. Thus, the hydrophobic interactions at the core of RL1 miniprotein were also probed with time.

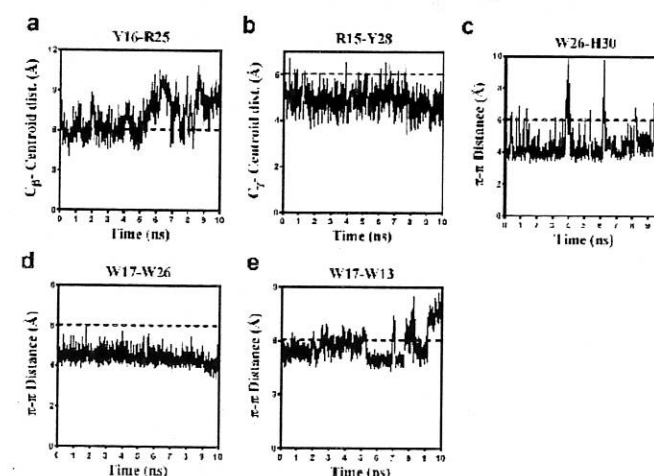


Figure 6: Summary of hydrophobic interaction between the side chains at the core of the RL1 miniprotein.

Materials and Methods

The 30-residue Poly-Ala peptide, end capped both at N-terminus ($-\text{COCH}_3$) and C-terminus ($-\text{NH}_2$) was initially modeled in extended conformation ($\phi = -120^\circ$, $\psi = 120^\circ$) and then stereochemical engineered using the in-house program PDBmake. The resultant models were fine-tuned by rotamer modelling using Discovery studio program. The advanced molecular dynamics (MD) studies were performed using the *gromos96 43a1* force field incorporated into the GROMACS package. It is worth mentioning that GROMACS is designed to handle only natural L-()-amino acids. Thus, to make our system work, the D-()-amino acids were incorporated into the GROMACS force field.

All the MD studies were carried out in a cubic box at 300K in presence of explicit simple point charge (SPC) water with density set to the value corresponding to 1 atm. Briefly, the designed “miniproteins” were subjected to careful energy minimization both in vacuum and also in water with periodic boundary conditions. Numerical integrations were performed in step size of 2 fs and coordinates were updated every 5 ps. Both the peptide and the solvent were coupled independently to Berendsen bath at 300 K, to the coupling time constant 0.1 ps. All the systems were charge neutralized with counter ions and were appropriately equilibrated prior to the production MD runs at 300K for over 10 ns each. The protocols were benchmarked against the well-known “Betanova” protein, prior to usage in case of the 30-residue “miniprotein”. The MD trajectories were analysed using the modules built into GROMACS.

Conclusions

The current study presents an intelligent attempt to rationally design a ≤ 30 amino acid miniprotein with a molecular cleft, by stereochemically engineering a triple stranded anti-parallel β -sheet peptide, with the help of the established principles of protein folding. Successful design of a β -sheet peptide is presented here for an unusual backbone fold with a varied degree of conformational stability, suggesting that stereochemical engineering of the backbone can be explored further in *de novo* design of peptides and proteins. However, the designed miniprotein presented in this study needs to be further engineered to evolve it for some specific function. Thus, the miniprotein will be subjected to further sequence optimization both at the core and the exposed regions to shape with receptor-like active site for a designated substrate and then can be taken up for future experimental studies.

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ഭലിത് ജീവിതത്തിന്റെ നേർക്കാഴ്ചകൾ സരസ്വതീ വിജയത്തിൽ

ഫാ. ടെജി കെ. തോമസ്

സമൂഹത്തിന്റെ മുഖ്യധാരയിൽ നിന്നു മാറ്റി നിർത്തപ്പെട്ടവരാണ് ഭലിതർ. യഥാസ്ഥിതിക ഹിന്ദുമതവും ബ്രാഹ്മണിക ധർമ്മശാസ്ത്രങ്ങളുമായി രുന്നു അതിനു കാരണം. സ്വന്തം മണ്ണിൽ വളർന്നുവന്ന ഇവിടുത്തെ ദേശീയ ജനവിഭാഗത്തെയാണ് ഭലിത് എന്ന പദം കൊണ്ട് അർത്ഥമാക്കുന്നത്. കടന്നാക്രമണത്തിന്റെയും കയ്യേറ്റത്തിന്റെയും സംസ്കാരം പ്രചരിപ്പിച്ച് തദ്ദേശീയ ജനവിഭാഗങ്ങളുടെമേൽ ആധിപത്യം ഉറപ്പിച്ച ആര്യന്മാരും പിന്നാലെ വന്ന പടിഞ്ഞാറൻ പരിഷ്കാരികളും ഒരു ജനതയുടെ സംസ്കാരത്തിന്മേൽ അധീശത്വം പുലർത്തി സ്ഥാപിച്ചെടുത്തതാണ് ഈ മേല്ക്കോയ്മ. ചരിത്രത്തെ മെനഞ്ഞെടുക്കുകയും എന്നാൽ എപ്പോഴും ചരിത്രത്തിൽനിന്ന് മാറ്റിനിർത്തപ്പെടുകയും ചെയ്യുന്ന ജനവിഭാഗമാണ് ഭലിത് ജനങ്ങൾ. അവരുടെ വിയർപ്പുകൊണ്ടും കണ്ണുനീരുകൊണ്ടും കെട്ടിപ്പൊക്കുന്ന സമൂഹത്തിൽനിന്നും അവർ അന്യരാക്കപ്പെടുന്നു. ജാതിമേന്മയും സമ്പത്തും സാങ്കേതിക ആധിപത്യവും ചേർന്ന് ഭൂപ്രദേശം വരേണ്യതയ്ക്കുമുമ്പിൽ എപ്പോഴും അപേക്ഷിക്കാൻ മാത്രമായുള്ളവർ എന്നു കരുതപ്പെടുന്ന ഒരു ജനതയാണിത്. യഥാർത്ഥ ഭലിത് ജീവിതം അപമാനവും പീഡിതവുമായ അനുഭവങ്ങൾ മാത്രം നിറഞ്ഞതാണ്.

ചിന്തകളുടെയും സിദ്ധാന്തങ്ങളുടെയും ശക്തമായ അടിത്തറയിലാണ് പാരമ്പര്യം ഇനിക്കുകയും വളരുകയും ചെയ്യുന്നത്. ഈ ചിന്തകളും സിദ്ധാന്തങ്ങളും തന്നെയാണ് പാരമ്പര്യത്തെ നിലനിർത്തുകയും സമ്പന്നമാക്കുകയും ചെയ്യുന്നത്. അധീശവർഗ്ഗം എല്ലാഴ്ചപ്പോഴും തങ്ങളുടെ സ്ഥാപിത താല്പര്യങ്ങൾക്ക് ഊന്നം തട്ടാത്തതരത്തിലുള്ള പാരമ്പര്യം സൃഷ്ടിക്കാൻ ശ്രമിക്കുന്നു. സമൂഹത്തിലെ ദുർബലവിഭാഗങ്ങളെ ഈ പാരമ്പര്യത്തിൽ അവർ തളച്ചിടുന്നു. ഇന്നുവരെയുള്ള നമ്മുടെ പാരമ്പര്യങ്ങളെല്ലാം ഒരു പിടിയാളുകൾ ഭൂരിപക്ഷത്തിനുമേൽ അടിച്ചേല്പിച്ചതാണ്. ഇത്തരം പാരമ്പര്യത്തെയും സംസ്കാരത്തെയും തിരസ്കരിക്കുന്നതോടൊപ്പം അധീശവർഗ്ഗം അടിച്ചേൽപ്പിച്ച പാരമ്പര്യത്തെ ചോദ്യം ചെയ്യുകയാണ് ഭലിത് സാഹിത്യകാരന്മാർ ചെയ്യുന്നത്. വരേണ്യവർഗ്ഗത്തിന്റെ ആവ്യന്യതയ്ക്കു സമാന്തരമായി സഞ്ചരിച്ചുകൊണ്ട് അവർ നിരവധി ചോദ്യങ്ങൾ തൊടുത്തു വിടുന്നു. ഇപ്രകാരം പത്തൊൻപതാം നൂറ്റാണ്ടിന്റെ ഉത്തരാർദ്ധത്തിൽ ഭലിതരുടെ ജീവിതാവസ്ഥകൾ ചിത്രീകരിച്ചുകൊണ്ട് പോത്തേരിക്കുഞ്ഞമ്പു രചിച്ച നോവലാണ് സരസ്വതീവിജയം.

സരസ്വതീവിജയത്തിന്റെ രചനാലക്ഷ്യം

അന്ധവിശ്വാസത്താലും ജാതിവ്യത്യാസത്താലും അനാചാരങ്ങളാലും അലങ്കോലപ്പെട്ടു കിടക്കുന്ന ഹിന്ദുമതത്തെ കഠിനമായി വെറുത്തിരുന്ന വ്യക്തിയാണ് സമുദായ പരിഷ്കർത്താവും സാമൂഹിക സേവകനും അഭിഭാഷകനും എഴുത്തുകാരനുമായിരുന്ന പോത്തേരി കുഞ്ഞമ്പു. ജാതിയുടെമേൽ വിദ്വേഹിയെ വിജയമാണ് സരസ്വതീവിജയത്തിലൂടെ അദ്ദേഹം പ്രകീർത്തിക്കുന്നത്. ജാതിവ്യത്യാസത്തെ സൃഷ്ടിച്ചത് ബ്രാഹ്മണമതമായിരുന്നുവെന്നും അത് വൈദികന്മാരുടെ സ്വാർത്ഥ തല്പരതയുടെ ഫലമായിട്ടായിരുന്നുവെന്നും അദ്ദേഹം വിശ്വസിക്കുകയും ധൈര്യസമേതം അഭിപ്രായപ്പെടുകയും ചെയ്തിരുന്നു. താഴ്ന്ന ജാതിക്കാരോടുള്ള താല്പര്യം, ബ്രാഹ്മണവിദ്വേഷം, അഭിഭാഷകവൃത്തി, ക്രിസ്തുമതാഭിമുഖ്യം എന്നിവ സരസ്വതീവിജയത്തിന്റെ രചനയിൽ പ്രകടമായ സ്വാധീനം ചെലുത്തിയിട്ടുണ്ട്.

നോവലിന്റെ രചനയെക്കുറിച്ച് അദ്ദേഹം തന്നെ പറയുന്നത് ഇപ്രകാരമാണ്. കണ്ടാൽ കണ്ണുകൾക്കുണ്ടെന്നുവെച്ച് ഉയർന്ന ജാതികളാൽ നടപ്പുഭീനമോ വിഷമോ ഉള്ള ജീവികളെ എന്നപോലെ ബഹുകാലമായി ദുരര അകറ്റപ്പെട്ട അഗതികളായ പറയരുടെ ഇടയിൽ വിദ്യാഭ്യാസം ഉളവാക്കേണ്ടത് അത്യാവശ്യമാണെന്നും വിദ്യാഭ്യാസം കൊണ്ട് അവരുടെ സ്ഥിതി വളരെ പരിഷ്കരിച്ചു വരുമെന്നും മദിരാശിയിലെ ചില ഇംഗ്ലീഷുവർത്തമാന പത്രങ്ങൾ ഘോഷമായെഴുതിയ ചില ലേഖനങ്ങൾ വായിച്ചപ്പോൾ മലയാളത്തിലെ പുലയരുടെ സങ്കടാവസ്ഥ ഓർത്ത് ഈ പുസ്തകം എഴുതാൻ ഇടവന്നതാണ്. 1892 ൽ സരസ്വതീവിജയം പ്രസിദ്ധീകരിക്കുമ്പോൾ അദ്ദേഹത്തിന്റെ മനസ്സിലുണ്ടായിരുന്ന ചിന്ത ഇതുകൊണ്ടായിരുന്നു.

സാമൂഹിക പ്രതിഫലനം നോവലിൽ

സാമൂഹികമായ ഉച്ചനീചത്വങ്ങളുടെ ഹൃദയസ്ഫുടമായ വിവരണങ്ങൾ സരസ്വതീ വിജയത്തിൽ സുലഭമാണ്. ഇന്ത്യൻ ജാതിവ്യവസ്ഥയുടെയും ബ്രാഹ്മണാധിപത്യത്തിന്റെയും പ്രത്യയശാസ്ത്രമായ മനുസ്മൃതിയെ കൂട്ടുപിടിച്ചാണ് കുബേരൻ നമ്പൂതിരി തന്റെ ക്രൂരതകളെല്ലാം കാണിക്കുന്നത്. ചൂഷണം ചൂഷണമല്ലെന്ന് വരുത്താനും അതിന് ദൈവികമായ അടിത്തറ ഉണ്ടെന്ന് സ്ഥാപിക്കാനും മനുഷ്യന്റെ ആദിപിതാവായ മനു എന്ന സാങ്കല്പിക മഹർഷിയിൽ അതിന്റെ പിതൃത്വം അവർ അടിച്ചേൽപ്പിക്കുന്നു. ചൂഷണത്തിന്റെ ആയുധം മാത്രമല്ല ആക്രമണത്തിന്റെ രാഷ്ട്രീയ ആയുധവും ദർശനവുമാണ് ദ്വിജന്മാർക്ക് മനുസ്മൃതി. മനുസ്മൃതി എന്ന പാഠപുറത്താണ് ഹൈന്ദവ സാമൂഹിക ക്രമം പടുത്തുയർത്തിയിട്ടുള്ളത്. ഹൈന്ദവ വിശുദ്ധഗ്രന്ഥങ്ങളുടെ ഭാഗമായതുകൊണ്ട് എല്ലാ ഹിന്ദുക്കൾക്കും അത് ദിവ്യഗ്രന്ഥമാണ്. ജാതിയെയും തൊട്ടുകൂട്ടായ്മയെയും മനു ഉയർത്തിപ്പിടിക്കുന്നു എന്നു മാത്രമല്ല അവയ്ക്ക് നിയമപരമായ അംഗീകാരം നല്കുകയും ചെയ്യുന്നു.

പാട്ടുപാടിയ കുറ്റത്തിന് കുബേരൻ നമ്പൂതിരിയുടെ കാര്യസ്ഥനാൽ ചവിട്ടിവിഴ്ത്തപ്പെട്ടു ബോധം കെട്ട മരത്തൻ എന്ന പുലയ യുവാവിന്റെ വിവരണത്തോടെയാണ് കഥ വികസിക്കുന്നത്. ചെർമ്മൻ എഴുത്തുപഠിക്കാൻ പാടില്ല, പാട്ടുപാടാൻ പാടില്ല, അങ്ങനെ ചെയ്താൽ നാട്ടിൽ മറ്റു പെയ്തില്ലത്രേ! നമ്പൂതിരി ചെറുമകൾക്കു പറഞ്ഞുകൊടുക്കുന്നതാണിങ്ങനെ. മാത്രമല്ല അവന്റെ ചാളയിൽപോലും അവൻ പാടാൻ പാടില്ല. എഴുത്തു പഠിച്ചാൽ നാട്ടിൽത്തന്നെ ദാരിദ്ര്യം പിടിപെടും എന്നാണ് നമ്പൂതിരി പറയുന്നത്. ചെർമ്മന്റെ അമ്മയെയും പെങ്ങളെയും വിസ്തരിക്കുന്നത് 64 അടി അകലെ നിന്നുകൊണ്ടാണ്. അരുദ്ധി ഉണ്ടാകാതിരിക്കാനാണ്. പുലയർ താമസിക്കുന്ന ചാളയുടെ വർണ്ണന ഹൃദയഭേദകമാണ്. കട്ടിലോ കതകോ

ജനലുകളോ ഇല്ലാത്ത ഇടുങ്ങിയകുരയിൽ മനുഷ്യഗുണങ്ങളെപ്പോലെ ഈ സാധുക്കൾ ജീവിക്കുന്നു. ഇവരെക്കൊണ്ട് രാപകൽ പ്രയത്നം ചെയ്തികുന്ന ജന്മികൾക്ക് ഇതൊന്നും അറിയേണ്ട ആവശ്യവുമില്ല.

അശുദ്ധി മാറുന്നതിനുവേണ്ടി കുബേരൻ നമ്പൂതിരി നടത്തുന്ന കളി പരിഹാസഭ്യുതകമായി നോവലിൽ അവതരിപ്പിച്ചിരിക്കുന്നു. ബ്രാഹ്മണൻ ഒഴികെയുള്ളവരെ തൊട്ടാലും തീണ്ടിയാലും ഉണ്ടാകുന്ന അശുദ്ധം മുങ്ങിക്കുളിച്ചാലേ പോകൂ എന്നാണ് കുബേരൻ നമ്പൂതിരിയുടെ ദൃഢമായ വിചാരം. സാധാരണയായി നിറച്ചും വെള്ളം ഉള്ളപ്പോൾത്തന്നെ മലമുത്ര വിസർജ്ജനാനന്തരം ശുചിക്കുന്നത് അവരവർ കുളിക്കുന്ന കുളങ്ങളിലെ വെള്ളങ്ങളിലിറങ്ങിട്ടാണ്. ശുചിച്ച ഉടനെയെന്ന മുനിലുള്ള വെള്ളം വായിൽ കവളുന്നതു സാധാരണയും അത് അശേഷം വെളുപ്പില്ലാത്തതുമാണ്. ഇങ്ങനെ പോകുന്നു ആ വിവരണം. കാരണവന്മാർ കാലത്തേയുള്ള നാട്ടുനടപ്പ് മാറുന്നത് ഗുരുതൃക്കേടാണല്ലോ എന്ന് കൂട്ടിച്ചേർക്കുകയും ചെയ്യുന്നു. ഇതോടൊപ്പംതന്നെ നാട്ടുനടപ്പ് എന്നതിന്റെ പേരിൽ നടത്തുന്ന അനാചാരങ്ങളെയും അന്ധവിശ്വാസങ്ങളെയും നോവലിസ്റ്റ് ചോദ്യം ചെയ്യുന്നുണ്ട്. മദ്യാദയും അപമദ്യാദയും ആചാരവും അനാചാരവുമെല്ലാം സ്വന്തം സുഖത്തിനും താൽപ്പര്യത്തിനും വേണ്ടി ഓരോ ജനതയും ഉണ്ടാക്കിയെടുത്ത സ്വാർത്ഥതയുടെ പര്യായങ്ങളാണെന്നും ഉദാഹരണസഹിതം നോവലിൽ വിവരിക്കുന്നു. ശുഭ്രനെ ദൈവം നമ്മുടെ ദാസനായിരിപ്പാൻ സൃഷ്ടിച്ചതാണ്. ദാസന് വിദ്യാഭ്യാസം കൊണ്ട് ആവശ്യമില്ല എന്ന് മനുസ്മൃതിയെ കൂട്ടുപിടിച്ച നമ്പൂതിരി ആവർത്തിച്ചു പറയുന്നു. മാത്രവുമല്ല ശുഭ്രൻ എത്രതന്നെ ധനികനായാലും അവ നമ്മോടു സംസാരിക്കുമ്പോൾ അടിയൻ എന്നു പറയണം എന്നും ചണ്ഡാലന്മാർക്ക് സ്വത്തുക്കളും ഉടയായിരിപ്പാൻ പാടില്ല എന്നും കൂട്ടിച്ചേർക്കുന്നു.

ജാതിനിർണ്ണയം ബ്രാഹ്മവു ചെയ്തിട്ടുള്ളതാണ്. മുജ്ജന്മത്തിൽ ബ്രാഹ്മണതിരുമുതലായ പാപങ്ങൾ ചെയ്തവരാണ് ഹീനജാതിയിൽ വന്നു ജനിക്കുന്നത്. അവർ ചെയ്ത പാപത്തിന്റെ ശക്തി അവർ ഈ ജന്മത്തിൽ വീട്ടണം. ഇത് കണ്ടിട്ട് മറ്റുള്ളവർ ബ്രാഹ്മണതിരുമുതലായതു ചെയ്യാതിരിക്കണം. ഇങ്ങനെയാണത്രേ സ്മൃതിയിൽ പറയുന്നത്.

ബ്രാഹ്മണരക്ഷ ആത്മരക്ഷയ്ക്കു മീതെയുള്ളതാണെന്നും ബ്രാഹ്മണരക്ഷ ചെയ്യാത്താൽ ഇഹത്തിലും പരത്തിലും കേടാണ് എന്നു മനുസ്മൃതിയെ കൂട്ടുപിടിച്ച് കുബേരൻ നമ്പൂതിരി അധികാരിയായ കോതുന്നമ്പ്യാരോടു പറയുന്നു.

ദലിതന്റെ ഉയിർപ്പ് സരസ്വതീവിജയത്തിൽ

ഹിന്ദുമതത്തിലെ വരേണ്യവർഗ്ഗത്തിന്റെ പീഡനങ്ങൾ ദലിതരെ ക്രിസ്തുമതത്തിലേക്കെത്തിക്കുന്നതും ക്രൈസ്തവസഭ അവർക്കുവേണ്ട സഹായം നൽകി ഉയർത്താൻ ശ്രമിക്കുന്നതുമാണ് സരസ്വതീ വിജയത്തിൽ വിവരിക്കുന്നത്. പീഡനം സഹിക്കവയ്യാതെ മരത്തന്നെ പുലയക്കിടാത്തൻ ക്രിസ്തു മതം സ്വീകരിച്ച് യേശുദാസനായി. ക്രിസ്ത്യാനികളുടെ സഹായത്താൽ അയാൾ പഠിച്ച് മജീസ് ട്രേട്ടാകുന്നു. മരത്തൻ കൊല്ലപ്പെട്ടതാണെന്നും അതിന് കാരണക്കാരൻ ഒരു നമ്പൂതിരിയാണെന്നുമുള്ള കേസ് നിലവിലുണ്ട്. ആരോഹണവിധേയനായ നമ്പൂതിരി അതോടെ ഒളിവിൽ പോകുന്നു. വർഷങ്ങൾക്കുശേഷം ഈ നമ്പൂതിരിയെ പോലീസ് കസ്റ്റഡിയിലെടുത്ത് യേശുദാസിന്റെ കോടതിയിൽ ഹാജരാക്കുന്നു. നമ്പൂതിരി കുറ്റക്കാരനല്ലെന്നു കണ്ട് കോടതി അയാളെ കുറ്റവിമുക്തനാക്കുന്നു. ഇതാണ് സരസ്വതീവിജയത്തിലെ പ്രധാനപ്രമേയം.

യുക്തിബോധമോ വിശ്വാസ്യതയോ കഥയിൽ അധികമാനും ഇല്ലെങ്കിലും നിയമത്തിന്റെ മുമ്പിൽ അന്തണനും അന്ത്യജനും തുല്യരാണെന്നും പുരോഗതിയിലേക്കുള്ള മാർഗ്ഗം എന്നത് പഠിച്ച് അറിവു നേടുക എന്നുള്ളതാണെന്നും ഈ കൃതി വിളിച്ചോതുന്നു. സ്മാർത്തവിചാരാദി സാമൂഹിക സ്ഥാപനങ്ങളെ ഇത് തുറന്നുകാണിക്കുന്നു. അതുപോലെതന്നെ ജാതിയുടെ പേരിൽ മനുഷ്യർ തമ്മിലുള്ള ഉച്ച-നീച വ്യത്യാസത്തിന്റെ അർത്ഥശൂന്യതയും. ജാതിവ്യവസ്ഥയെ പ്രശ്നവൽക്കരിച്ചുകൊണ്ട് കീഴാതുർക്കും സ്ത്രീകൾക്കും സംവാദത്തിനുള്ള ഇടം നൽകുകയായിരുന്നു സരസ്വതീവിജയം. വിദ്യയുടെ വിജയമാണ് ഗ്രന്ഥനാമം കൊണ്ട് സൂചിപ്പിക്കപ്പെടുന്നത്. താനുൾപ്പെടുന്ന തീയ്യസമുദായം ക്രിസ്തുമതത്തിലൂടെയും വിദ്യാഭ്യാസത്തിലൂടെയും പുരോഗതി പ്രാപിക്കണമെന്ന് എഴുത്തുകാരൻ ആഗ്രഹിച്ചു.

പത്തൊമ്പതാം നൂറ്റാണ്ടിന്റെ ഉത്തരാർദ്ധം കേരളത്തെ സംബന്ധിച്ചിടത്തോളം സമസ്തമേഖലകളിലും പരിവർത്തനത്തിന്റെ കാലഘട്ടമായിരുന്നു. ഈ കാലഘട്ടത്തിലാണ് കേരളത്തിൽ അടിമത്തവും അയിത്തവും ചോദ്യം ചെയ്യപ്പെടുന്നത്. അന്ന് കൂട്ടുകുടുംബവ്യവസ്ഥിതിയും മരുമക്കത്തായവും ശിഥിലമാവുകയും നിയമത്തിന്റെ മുമ്പിൽ മേൽജാതിക്കാരും കീഴ്ജാതിക്കാരും തുല്യരാവുകയും ചെയ്തു. കീഴ്നിലക്കാർക്കും ആഭരണവും മേൽമുണ്ടും ധരിക്കാമെന്നു വന്നു. സാക്ഷരത്വത്തിന്റെ ഉയർച്ച, അച്ചടിയുടെയും വായനയുടെയും വളർച്ച, തൊഴിൽ വിഭജനം എന്നിവ നടപ്പിലായി. ഭരണക്രമത്തിൽ മാറ്റങ്ങൾ ഉണ്ടായി. കാണപ്പാട്ടക്കാരനും വെറും പാട്ടക്കാരനും സമരത്തിലൂടെ ഭൂമിയിൽ അവകാശം നേടി. ഈ മാറ്റങ്ങൾ ഭൂപ്രഭുത്വാധിഷ്ഠിതവും ജാതിവ്യത്യാസശിഥിലവുമായ കേരളീയ സാമൂഹികഘടനയെ ഇളക്കി മറിച്ചു. കേരളത്തിലാകമാനം യഥാതഥമായ ഒരഭിവൃദ്ധി ഇതോടെ ഉണ്ടായി. മലയാള സാഹിത്യത്തിലേക്കും അതിന്റെ അലയൊലികൾ പ്രതിധ്വനിച്ചു. നാടുവാഴിത്തകാലത്തെ റൊമാൻസുകളിൽ നിന്ന് ഭിന്നമായ സാഹിത്യരൂപങ്ങൾ ജീവൻവെയ്ക്കുന്നതിന്റെ കേരളീയ പഞ്ചാത്തലും ഇതാണ്. ഈ കാലഘട്ടത്തിലെ ദലിത് ജീവിതസാന്നിധ്യമുള്ള മൂന്നു ഗദ്യകൃതികളാണ് ഘാതകവധവും പുല്ലേലിക്കുഞ്ചുവും, സരസ്വതീവിജയവും.

സാമൂഹികമായും സാമ്പത്തികമായും ചൂഷണമനുഭവിക്കുന്ന ജാതിശ്രേണിയുടെ ഏറ്റവും അടിത്തട്ടിലുള്ള ജനവിഭാഗത്തിന്റെ പ്രതിനിധിയാമണ് സരസ്വതീവിജയത്തിലെ മരത്തൻ. അസ്‌പൃശ്യത കല്പിക്കപ്പെടുകയും സമൂഹത്തിന്റെ അടിത്തട്ടിലേക്ക് നിർദ്വയം ചവിട്ടിത്താഴ്ത്തപ്പെടുകയും ചെയ്ത വിഭാഗത്തിന്റെ നേർച്ചിത്രം നാം മരത്തനിൽ കാണുന്നു. സാമൂഹിക ജീവിതത്തിന്റെ ഒരു മേഖലയിലും - സാമ്പത്തികം, വിദ്യാഭ്യാസം, നിയമം, മതം, സംസ്കാരം ഇവയിലൊന്നിലും അവർക്ക് അവകാശമോ അധികാരമോ ഉണ്ടായിരുന്നില്ല. ഈ ഒരു സാമൂഹികാന്തരീക്ഷത്തിലാണ് പരിവർത്തനത്തിന്റെയും അറിവിന്റെയും പ്രതീകമായി മരത്തന്റെ ഉയിർപ്പ് നാം കാണുന്നത്. ജാതിയോ മതമോ പണമോ നോക്കാതെ എല്ലാവ

രെയും മനുഷ്യരായി കാണുകയും വിദ്യയ്ക്കുള്ള അവസരങ്ങൾ ഉണ്ടാക്കിക്കൊടുക്കുകയും ചെയ്യുന്ന പുതിയ സായ്പന്മാരുടെ പ്രവർത്തനങ്ങളിൽ ആകൃഷ്ടരായി പാവങ്ങൾ വിദ്യ അഭ്യസിക്കുകയും സ്വതന്ത്രരായി ജീവിക്കുകയും തങ്ങളും മനുഷ്യരാണെന്ന തിരിച്ചറിവിൽ സ്വയം പര്യാപ്തരാവുകയും ചെയ്യുന്ന കാഴ്ച സരസ്വതീവിജയത്തിൽ കാണാം. തൊട്ടുകൂട്ടാത്തവരെ അയിത്തം ആചരിക്കുന്ന ജാതിഹിന്ദുക്കളുടെ പിടിയിൽ നിന്ന് മോചിപ്പിച്ച്, സാമൂഹികവും സാംസ്കാരികവുമായ പുരോഗതി നേടിയവരോടൊപ്പം കൊണ്ടുവന്ന്, മുഖ്യധാരയിൽ അവർക്കും ഇടം കൊടുക്കുക എന്ന ശ്രമകരമായ ദൗത്യമാണ് സരസ്വതീ വിജയത്തിലൂടെ ഗ്രന്ഥകാരൻ നിർവ്വഹിച്ചത്.

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സ്ട്രീ-പുരുഷ ബന്ധത്തിന്റെ ആഖ്യാനം
(അഷിതയുടെ 'ഒത്തു തീർപ്പുകൾ' മുൻനിർത്തിയുള്ള പാരായണം)

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സാഹിത്യം മനുഷ്യജീവിതത്തിന്റെ പ്രതിഫലനമാണ്. അതുകൊണ്ട് ജീവിതവുമായി ബന്ധപ്പെട്ട ഏതു വിഷയവും സാഹിത്യത്തിലും വിഷയമാകുന്നു. പ്രപഞ്ചസൃഷ്ടിയിലെ അഭിവാജ്യഘടകങ്ങളാണ് പുരുഷനും, സ്ത്രീയും. മാനുഷികബന്ധങ്ങളിൽ ഏറ്റവും പ്രാധാന്യം അർഹിക്കുന്നതും സ്ത്രീപുരുഷബന്ധം തന്നെയാണ്. അച്ഛൻ-മകൾ, അമ്മ-മകൻ, ഭാര്യ-ഭർത്താവ്, സഹോദരൻ-സഹോദരി, കാമുകൻ-കാമുകി എന്നിങ്ങനെ വിവിധതലങ്ങൾ ഈ ബന്ധത്തിനുണ്ട്. അതിൽ ഏറ്റവും പ്രാധാന്യം അർഹിക്കുന്ന ഒന്നാണ് ഭാര്യ ഭർത്താബന്ധം.

മലയാളത്തിലെ ആധുനികകഥാസാഹിത്യത്തിലെ മുഖ്യപ്രമേയങ്ങളിൽ ഒന്നാണ് സ്ത്രീ-പുരുഷബന്ധം. സ്ത്രീ-പുരുഷബന്ധത്തിന്റെ വിവിധ തലങ്ങളെ തങ്ങളുടെ കഥകളിലൂടെ അവതരിപ്പിച്ച പ്രമുഖകഥാകാരികളാണ് മാധവിക്കുട്ടിയും, സാറാ ജോസഫും. കുടുംബസമൂഹബന്ധങ്ങളിലുണ്ടാകുന്ന മാറ്റങ്ങളുടെ പശ്ചാത്തലത്തിൽ സ്ത്രീപുരുഷബന്ധത്തെ നോക്കിക്കാണുന്ന പുതിയ തലമുറയിലെ കഥാകാരിയാണ് അഷിത. അഷിതയുടെ കഥകളുടെ പ്രമേയം സ്ത്രീമനസ്സിന്റെ നൊമ്പരങ്ങളാണ്. ആധുനിക കാലത്ത് പുരുഷനുമുല്യാവകാശങ്ങൾ ആവശ്യപ്പെടുന്ന സ്ത്രീ ദാമ്പത്യജീവിതത്തിൽ പ്രശ്നങ്ങളെ നേരിടാനാകാതെ നിസ്സഹായാവസ്ഥയിലെത്തുന്നു. അഷിതയുടെ കഥകളിൽ ഭാര്യ-ഭർതൃബന്ധത്തിലെ പുരുഷാധിപത്യത്തിനെതിരെ പ്രതികരിക്കാനാവാതെ നിരബ്ദമായിപ്പോകുന്ന സ്ത്രീ കഥാപാത്രങ്ങളെയാണ് അഷിത തന്റെ കഥകളിലൂടെ അവതരിപ്പിക്കുന്നത്. “പുരുഷന്റെ ഉള്ളിലുള്ള സ്ത്രീ എപ്പോഴും ഒരു ലൈംഗിക ഉപയോഗവസ്തുവാണ് അഷിത തന്റെ കഥകളിലൂടെ അവതരിപ്പിക്കുന്നത്. “പുരുഷന്റെ ഉള്ളിലുള്ള സ്ത്രീ എപ്പോഴും ഒരു ലൈംഗിക ഉപയോഗവസ്തുവാണ്. അവൾ, മുഷിഞ്ഞ് വസ്ത്രങ്ങൾ ഉരിഞ്ഞടുമ്പോൾ അലക്കുവാനുള്ള ഒരു അലക്കുകാരിയും, ഭക്ഷണം കഴിച്ച് എഴുന്നേറ്റ് പോകുമ്പോൾ ആ പാത്രം കഴുകുവാനുള്ള ഒരു വേലക്കാരിയും, നടന്നു പോകുമ്പോൾ അണിഞ്ഞൊരുങ്ങി പുരുഷന്റെ പത്രാസ് വർധിപ്പിക്കാനുള്ള ഒരു സൗന്ദര്യധാമവുമാണ് എന്ന ധാരണയാണ് പൊതുവെ പുരുഷലോകത്തിന് പലപ്പോഴുമുള്ളത്.”¹ അഷിതകളുടെ കഥകളിലെ ഭാര്യമാരും ഇതിനെ സമർത്ഥിക്കുന്നവരാണ്.

ഭാര്യ-ഭർത്തൃബന്ധത്തിലെ വിശ്വാസത്തകർച്ചയെ പ്രമേയമാക്കിയുള്ള കഥയാണ് 'ഒത്തുതീർപ്പുകൾ' കഥാനായികയായ സരള കോളനിയിലെ ഫ്ളാറ്റിൽ മൂന്നാം നിലയിൽ ആയിരുന്നു താമസിച്ചിരുന്നത്. സമ്പന്നവർഗത്തിന്റെ താവളമായിരുന്നു കോളനി. കോളനിയിലെ മാനുരും പരിഷ്കൃതരെന്നും അവകാശപ്പെടുന്നവരുടെ നിശബ്ദതയ്ക്കെതിരെ ശബ്ദമുയർത്തിക്കൊണ്ട്, വഴക്കും, ബഹളവും, കൂട്ടികളുടെ കരച്ചിലുമായി കോളനിയിലെ ജോലിക്കാരുടെ കുടിലുകൾ പിൻവശത്ത് ഉയർന്ന് നിന്നിരുന്നു. ഫ്ളാറ്റിലെ ആരും തന്നെ കുടിലുകളുടെ വശത്തേക്കുള്ള ജനലുകൾ തുറന്നിട്ടിരുന്നില്ല. എന്നാൽ കിടപ്പുമുറിയുടെ പിൻവശത്തുള്ള ആ ജനലുകൾ സരള മാത്രം അടയ്ക്കുവാൻ കൂട്ടാക്കിയില്ല. കോളനി ജീവിതത്തിന്റെ ഏകാന്തത തന്നെ ശ്വാസം മുട്ടിക്കുമ്പോൾ പിൻവശത്തെ ജനലുകൾ തുറന്നിട്ടാണ് അവൾ അതിൽ നിന്ന് രക്ഷപ്പെട്ടത്.

കോളനിയിലെ പൊങ്ങച്ചക്കാരികളായ സ്ത്രീകൾ പലപ്പോഴും സരളയെ സന്ദർശിച്ചിരുന്നു. എന്നാൽ അവരുടെ സന്ദർശനങ്ങളിൽ അവൾക്ക് തീരെ താത്പര്യം തോന്നിയിരുന്നില്ല. അവരിൽ നിന്നാണ് പുറകുവശത്തെ കുടിലുകളിൽ താമസിക്കുന്നവരെ കുറിച്ചും, കുപ്പമ്മയെ കുറിച്ചും സരള അറിഞ്ഞത്. കറുപ്പുകുറിയിൽ കടഞ്ഞെടുത്ത തീഷ്ണമായ സൗന്ദര്യമുള്ള കുപ്പമ്മ ആരേയും വശീകരിക്കുന്ന ചിരിയോടെ ദിവസവും സന്ധ്യക്ക് വാടിയ മുല്ലപ്പൂച്ചിടയ്ക്കു ചുവന്ന റബ്ബറുകെട്ടി മുറുക്കി ചുവപ്പിച്ചു, കുപ്പിവളകൾ കിളിക്കി കോൺക്രീറ്റ് കെട്ടിടങ്ങൾക്കും കുടിലുകൾക്കും ഇടയിൽ ഒരു തീജ്വാലപോലെ കത്തിനിന്നു. കുപ്പമ്മയെ ആദ്യം കണ്ട സന്ദർഭം സരളയുടെ ഓർമ്മയിൽ തെളിഞ്ഞു. കുട്ടിയെയും ഒക്കത്തെടുത്ത് മെലിഞ്ഞു വിളിയിരുന്ന ഒരു സ്ത്രീ കുപ്പമ്മയുടെ കുടിലിന്റെ വാതിൽക്കൽ നിന്ന് ഉറക്കെ ചീത്ത പറയുകയായിരുന്നു. വലിയ ഒരു വഴക്കുണ്ടാകും എന്നാണ് സരള കരുതിയത്. എന്നാൽ കുപ്പമ്മ പണിക്കു പോകാനൊരുങ്ങി മന്ദഹസിച്ചുകൊണ്ട് പുറത്തേക്കിറങ്ങി വന്നു. “മാലിന്യലേശമില്ലാത്ത ഒരു ചിരി എന്തിന്റെയൊക്കെയോ ആഴങ്ങളിലിറങ്ങി രസിക്കുന്ന ഒന്നായിരുന്നു അതെന്ന് പിന്നീട് സരളക്കു തോന്നി- സമ്മാനിച്ച്, ആ സ്ത്രീയുടെ ഒക്കത്തെ കുട്ടിയുടെ തലയിലൊന്ന് കളിയായി തടവി കുപ്പമ്മ നടന്നു നീങ്ങുകയാണ് ചെയ്തത്” 2

കോളനിയിൽ എല്ലാവരും ഭയപ്പെട്ടിരുന്ന കുപ്പമ്മയോട് സരളയ്ക്ക് അറപ്പും ആകർഷണവും കലർന്ന മനോഭാവമായിരുന്നു. എന്നും തനിക്ക് അപ്രാപ്യമായിരുന്ന അസഭ്യവാക്കുകൾ പറയുന്ന ആരേയും നേരിടുന്ന കുപ്പമ്മ സരളയ്ക്ക് ഒരു കൗതുകമായി മാറി. കുപ്പമ്മയെ കാണാൻ ഫ്ളാറ്റിന്റെ പിൻവാതിൽ തുറന്നിടുന്നതിലൂടെ കാണാൻ പാടില്ലാത്തതുകാണുന്ന ബാലിശമായ രസം സരള അനുഭവിച്ചു.

ഒരിക്കൽ മിസിസ്സ് നായരുടെ അടുപ്പിട്ട ജനലിൽ നോക്കി കുപ്പമ്മ അസഭ്യവർഷം നടത്തുന്നത് സരള കണ്ടു. ജനലുകളിൽ പ്രത്യക്ഷപ്പെട്ട മുഖങ്ങളിൽ നോക്കി കുപ്പമ്മ അവരോട് വിളിച്ചു പറഞ്ഞു “നിങ്ങളെപ്പോലുള്ള മഹാറാണിമാരുടെ കെട്ടിയവന്മാരാണ് സന്ധ്യയെ അടയാൽ എന്റെ അടുത്തേക്കെഴുന്നെള്ളുന്നത്, ആരും ഇത്ര പറയാനൊന്നുമില്ല.”³

കോളനിയിലെ മറ്റു സ്ത്രീകൾ വളർന്നു വരുന്ന അവരുടെ മക്കളെക്കുറിച്ച് ആശങ്കപ്പെട്ടപ്പോഴും സരള അഭിമാനത്തോടെ മനഃഹസി ക്കുകയാണ് ചെയ്തത്. നല്ല അനുസരണയുള്ള, പഠിപ്പിൽ മാത്രം ശ്രദ്ധിക്കുന്ന മകനെപ്പറ്റിയും, ശാന്തനും സംസ്കാരസമ്പന്നനുമായ ഭർത്താവിനെ കുറിച്ചും, അഹങ്കാരത്തോടെ ഓർമ്മിച്ചു. സരളയുടെ ജനൽ ഒരു സൗഹൃദത്തിന്റെ ചിഹ്നമായി തുറന്നു കിടന്നു.

ഒരു ദിവസം ഉച്ചക്ക് ഊണു വളമ്പിയിട്ട് ഭർത്താവിനെ കാണാതെ അന്വേഷിച്ചെത്തിയ സരള ആ കാഴ്ച കണ്ട് തരിച്ചു നിന്ന് പോയി. കിടപ്പുമുറിയിലെ ജനലരികിൽ പതുങ്ങി നിന്ന് കുപ്പുമ്മയെ ഒളിഞ്ഞു നോക്കുന്ന ഭർത്താവ്. കുപ്പുമ്മയപ്പോൾ പൈപ്പിനരികിൽ കുളിക്കുകയായിരുന്നു. കോപത്തോടെയും, നിസ്സഹായമായ വെറുപ്പോടെയും സരള ജനൽപ്പാളികൾ ചേർത്തടച്ചു. “രക്തത്തിൽ അലിഞ്ഞു ചേർന്ന എന്തോ ഒന്ന് സരളയിൽ പിടഞ്ഞുണർന്നു. പ്രാകൃതമായ ഒരു വികാരം കയറുകൾ പൊട്ടിച്ചോടി മനസ്സിനെ ചവിട്ടി മെതിച്ചപ്പോൾ സരളയുടെ നാവിൻ തുമ്പിൽ പൊടിഞ്ഞമർന്നത് കുപ്പുമ്മ ഉപയോഗിക്കാറുള്ള നാണയത്തുട്ടുകൾ പോലെ വിലകുറഞ്ഞ പദങ്ങളായിരുന്നു ജനൽ ചില്ലുകൾക്കു പിന്നിലെ സരളയുടെ കോപാകുലമായ മുഖത്ത് നോക്കി കൈത്തണ്ട നെറ്റിയിൽ ചേർത്ത് വച്ച് ഒന്നു നീട്ടി തുപ്പി, കുപ്പുമ്മ ഉറക്കെ നിർത്താതെ ചിരിച്ചു. മുറുകി ചുവപ്പിച്ച ആ നിലയ്ക്കാത്ത ഉജ്ജ്വലമായ ചിരിയിൽ നിന്ന് കടുംപരിഹാസത്തിന്റെ തുള്ളികൾ തെറിച്ച് വീണ് തന്റെ ജനൽ ചില്ലുകളിൽ നിരന്തരം കറകൾ വീണുകൊണ്ടിരിക്കുന്നുവെന്ന് സരളയ്ക്കു തോന്നി.”4

കുപ്പമ്മയെ ഒളിഞ്ഞു നോക്കുന്ന ഭർത്താവിനെ കണ്ടപ്പോൾ അന്യമായിരുന്ന വിലകുറഞ്ഞ പദങ്ങൾ സരളയുടെ നാവിൻ തുമ്പി ലെത്തി. അഭിമാനം പ്രണപ്പെട്ടപ്പോൾ മാത്രമാണ് അവൾ പൊട്ടിത്തെറിച്ചത്. അഭിമാനത്തോടെ അഹങ്കരിച്ചിരുന്ന ഭർത്താവിനെ വിശ്വസി ച്ചിരുന്ന സരളയുടെ മുഖത്തേക്കാണ് കുപ്പമ്മയുടെ മുറുക്കാൻ കറ നിറഞ്ഞ തുപ്പൽ തെറിച്ച് വീണത്.

ഒറ്റപ്പെടുത്തലിന്റെയും ഏകാന്തതയുടെയും സമ്മിശ്രമായ ജീവിതത്തിന്റെ ഇരുണ്ട വശത്തേയ്ക്ക് വിരൽ ചൂണ്ടുന്ന രണ്ട് വ്യക്തികളാണ് കുപ്പമ്മയും സരളയും പുതിയ തലമുറയിലെ കഥാകാരിയായ അഷിത കുടുംബത്തിലും സമൂഹത്തിലും ഉണ്ടായിരിക്കുന്ന മാറ്റങ്ങളുടെ പശ്ചാത്തലത്തിൽ ഭാര്യ-ഭർതൃബന്ധത്തെ നോക്കി കാണുകയാണ് 'ഒത്തു തീർപ്പുകൾ' എന്ന കഥയിലൂടെ.

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Hierarchy of Needs in *The Martian*: Stranded Soul Spilling the Silver Screen

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The existence of human beings comprises of the choices that they make. From sipping a cup of coffee in the morning, from building a house to live, from calling a person that he miss, people take a plethora of decisions, make choices and bear the consequences. Human beings are motivated by a hierarchy of needs and the choices they make in their life depend on these needs. Historically, the word 'motivation' comes from the Latin root 'moveers' which means to move. Motivation is the process of inducing movement in the organism. Motivation is a complex phenomenon which is influenced by multiple variables operating within the organism and in the environment. In our daily life, we use the term motive as our determination to act in some specific way, to carry out an intention, to arrive at a goal. Human beings are motivated when they are characterized both by a state of drive and by a direction of behaviour towards some goal which is selected in preference to all other possible goals.

The problem of motivation has been the central theme of philosophy since ancient times. Men have always been speculating and finding reasonable explanations of behaviour. The history of motivation is as old as the existence of human beings on earth. Its history can be traced back in the writing of Greek philosophers who believed in the concept of 'free will' of man. The man was supposed to be an active and free agent capable of choosing the right or wrong course for his action. Old Greek philosophers did not introduce the concept of motivation in their explanation of human behaviour. Man's intellect and free will provided sufficient amount of his actions. Reason was the determinant of the behaviour of man. Contemporary philosophers rejected the theory of 'free will' developed by Plato. They proposed the concept of ethical hedonism. It was believed that pleasure seeking and avoidance of pain is the ultimate goal of human life and this action of human beings is ethically good. The philosophical thought was characterized by the concept of reason and free will as the explanation of human behaviour. It hardly contained direct relevance to the modern problem of motivation. The second phase in the development of the concept of motivation began with a great intellectual revolution in sixteenth and seventeenth centuries. Philosophers and scientists replaced the old Greek philosophy by introducing more rational and scientific concepts.

Motive is a concept which joins together drive and goal. Motives can be grouped into Physiological motives, Social motives and Personal motives. Physiological motives are essential for the survival of the human beings. They include food, oxygen, water, sex, warmth in the body and emotions. Man is a social animal. Therefore he has social motives. He lives in groups which shape his behavior according to a definite pattern. Social motives are learnt in the social environment. They are influenced by cultural heritage and philosophy of the life of people. They are rooted in physiological motives and emerge out of them gradually with advancing age of the child. Social motives are the sources which bind human beings and social progress depends on their proper development. Some of the important social motives are social approval, affection, respect, prestige and money, etc. In addition to the social motives which are necessary for socialization, every person has special categories of motives which are dependent on the unique structure of the personality of the person. There may be a long list of personal motives depending upon individual differences which motivates individuals for action. Some of the common personal motives include interests, attitudes, values, and goals.

Maslow's hierarchy of needs is a theory in psychology proposed by Abraham Maslow in his 1943 paper "A Theory of Human Motivation." in *Psychological Review*. Maslow used the terms "physiological", "safety", "belongingness and love", "esteem", "self-actualization", and "self-transcendence" to describe the pattern that human motivations generally move through. Soon after Maslow began his career, he became frustrated with the two types of psychology at the time, which were Freudian psychoanalysis and behavioural psychology. Maslow believed that psychoanalysis focused too much on the sick half of psychology and not enough on the healthy half. On the other hand, he believed that behaviourism did not focus enough on how humans differ from the animals studied in behaviourism. He thus contributed to the third force of psychology that arose in response to this frustration: humanistic psychology.

Maslow critically examined the traditional approach of pain avoidance, pleasure seeking and tension reduction as the major sources of motivating behaviour. He has consistently argued that needs are arranged in a hierarchy. As one general type of need is satisfied, another higher order need will emerge and become operative in life. He developed his own system of needs and

categorized them into two divisions, deficit needs and growth needs. The needs of the first category include physiological needs, such as hunger and thirst. Once these needs are satisfied the person seeks to satisfy safety needs, love need, belongingness need and esteem needs. Under the second category, there is only one general need called self-actualization. The second important concept of Maslow is that each individual differs in nature which should be supported and encouraged. He criticized the views of those psychologists who believed that man is selfish, evil and antisocial. Maslow believed that there are degrees of humanness. He went slightly beyond other need theorists by postulating an order of potency or priority with regard to structuring the needs within the person.

The physiological needs necessary for survival are at the bottom of the structure while distinctly psychological needs are at the top. Starting from the satisfaction of the physiological needs, every individual strives for the satisfaction of the other needs of a higher order. This striving for one or the other level of needs provides the motivation for his behaviour. A need that has been satisfied is no longer a need. It ceases to be motivating force and, therefore, the satisfaction of one need leads an individual to try for the satisfaction of other needs. In this way the motivational behaviour of a person is always dominated not by his satisfied needs but by his unsatisfied wants, desires and needs. (Maslow 124)

The most potent needs of all the needs yet the least significant for self-actualizing person are the physiological needs. According to Maslow, when the physiological needs are deprived for a long period, all other needs fail to appear or recede in the background. It is almost impossible to make a list of all physiological needs.

Thus it seems impossible as well as useless to make any list of fundamental physiological needs for they can come to almost any number one might wish, depending on the degree of specificity of description. We cannot identify all physiological needs as homeostatic. That sexual desire, sleepiness, sheer activity and maternal behaviour in animals, are homeostatic, has not yet been demonstrated. (Maslow 2)

When the physiological needs are successfully fulfilled then safety needs become the dominant force in the personality of the individual. Safety needs are many and are mainly concerned with maintaining order and security. People feel the need of structure, law and order and to be under someone's direction. After physiological and safety needs are fulfilled, the third level of human needs is interpersonal and involves feelings of belongingness. The needs of this category emphasize the basic physiological nature of human beings to identify with the group life. These are needs of making intimate relationship with other members of the society, being an accepted member of an organized group, and needing a familiar environment as family. These needs are dependent on the fulfillment and satisfaction of previous categories of needs. The need for love and belongingness is especially strong in childhood and it can override the need for safety as witnessed in children who cling to abusive parents.

After the need for love and belongingness comes the need for esteem. Esteem needs are ego needs or status needs regarding a concern with getting recognition, status, importance, and respect from others. All humans have a need to feel respected. This includes the need to have self-esteem and self-respect. Esteem presents the typical human desire to be accepted and valued by others. The highest need, in the hierarchical system proposed by Maslow, is self-actualization. It means to fulfill one's individual nature in all its aspects, being what one can be. People can be motivated towards self-actualization only when their lower order needs have been satisfied.

Even if all these needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he, individually, is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be. He must be true to his own nature. This need we may call self-actualization. (Maslow 46)

One of the most important aspects of self-actualization is freedom, freedom from cultural and self-imposed restraints. The self-actualizing persons are not radicals or against their culture. They do not accept any extreme movement nor do they unquestionably identify themselves with the culture. Self-actualization is only possible if the basic needs of the person are met to the degree that they neither distract nor consume all available energy. When the person succeeds in satisfying his lower needs, he can act upon his higher needs. It is seen in the hierarchy of needs that for self-actualization, it is necessary that a person should not worry about his survival needs. He should enjoy his job. He should feel satisfied in his social relation in family, society and in his

job. Maslow's theory emphasizes that motivation to work is rooted in the fulfillment of various categories of needs which range from physiological to self-actualization. The fulfillment of self-actualization is thus a must for an individual as he will feel discontented and restless unless he strives for what he or she is fitted for.

The film *The Martian* is an example in which Maslow's hierarchy of needs is demonstrated as a template for existence and progression. The film portrays the ability of human beings to outwit the universe. *The Martian* can be read in the light of Maslow's motivation theory. *The Martian* is a 2015 science fiction film directed by Ridley Scott and starring Matt Damon. The screenplay by Drew Goddard is based on Andy Weir's 2011 novel *The Martian* about an astronaut who is mistakenly presumed dead and left behind on Mars. The film depicts his struggle to survive and the effort of his team to rescue him.

In 2035, the crew of Ares III mission to Mars is exploring Acidalia Planitia on Mars solar day 18 of their 31 sol expedition. A strong dust storm threatens to topple their Mars Ascent Vehicle, forcing them to abort their mission. During the evacuation, astronaut Mark Watney is struck by debris and lost in the storm. With Watney believed dead, the storm worsening, and the MAV on the verge of toppling over, mission commander Melissa Lewis orders the crew to take off and return to their orbiting vessel, Hermes. Watney awakens after the storm to a low oxygen warning and makes his way to the "Hab", the crew's base of operations.

Back on Earth, NASA holds a funeral for him. While reviewing satellite photos of Mars, satellite planner Mindy Park sees evidence of Watney's activities and realizes he has survived. Watney takes the rover to retrieve the nearby Pathfinder probe, which fell silent in 1997. Using the camera, he establishes rudimentary communication with Earth. NASA instructs Watney to partially modify the rover's code to link with Pathfinder so they can communicate via text. When the Hab's airlock malfunctions due to a small puncture, it destroys the crops that Watney grew. NASA administrator Teddy Sanders orders the team to speed up the supply mission with the Iris probe by skipping the safety inspections. The China National Space Administration offers NASA the Taiyang Shen, a classified booster rocket that can carry a payload to Mars.

Watney begins the 90- sol journey to Schiaparelli and the pre- positioned Ares IV MAV. To rendezvous with Hermes, Watney removes many components from the MAV, including the nose cone, to lighten it, replacing it with a piece of the Hab's canvas. The MAV fails to reach the required speed and altitude. Commander Lewis uses a Manned Maneuvering Unit, but still cannot reach Watney. Watney pierces the glove of his pressure suit and uses the escaping air to propel himself towards Lewis, effectively rescuing him after being alone for 560 Sols on Mars. After returning to Earth, Watney becomes a survival instructor for astronaut candidates. Five years later, on the occasion of Ares V mission launch, those involved in Watney's rescue have begun new lives.

Mark Watney follows the hierarchy of needs as his life depends mostly on when he can get food, water and shelter. Watney is impaled by an antenna and is swept away. He is injured but alive. He rushes to the Hab, the crew's base of operations. He rips off his space suit. He removes the piece of antenna that destroyed his suit's biomonitor and lodged in his torso by performing self-surgery. Mark begins a video diary and realizes that his only chance of rescue is to rendezvous with the Ares IV crew at the Schiaparelli crater, 3,200 kilometers away in four years. As he reaches the Hab which would provide him with Oxygen, the next need emerges. Mark has to attend to his physiological needs in order to survive in Mars. The basic physiological needs are vital for his survival in an inhospitable environment. Clothing is an important physiological need. To survive in Mars, Mark needs adequate clothing that suits the atmosphere. He has a space suit that helps him to survive in extreme temperatures. It also supplies Oxygen for him to breathe while he in the atmosphere of Mars. His space suit protects from being injured from impacts of small bits of space dust. Mark needs a steady supply of food and water to survive in Mars. Watney, being a botanist, improvises a farm inside the Hab utilizing Martian soil fertilized with human waste. He grows potatoes in it. He produces water by extracting hydrogen from leftover rocket fuel.

After the fulfillment of the physiological needs Mark climbs up to the next level of the hierarchy of needs. He has to satisfy the safety needs. He has a "Hab", the crew's base of operations. It acts as shelter for Mark in Mars. He also has a space suit that protects him from the harsh atmosphere of Mars.

The next mission to Mars isn't scheduled to arrive for another four years. NASA thinks he's dead, and, even when they figure out he is alive through satellite images, they still have no way to communicate with him. The main communications dish was battered in the storm. The other three backup communications systems were located in the Mars Ascent Vehicle (MAV),

which the rest of Mark's crew took with them when they left Mars, believing him dead from the storm. Mark modifies the only functional rover for longer journeys in so that he can travel long distances. He takes the rover to retrieve the nearby Pathfinder probe, which ceased to function in 1992. Using the camera of Pathfinder, he establishes rudimentary communication with earth. He uses plastic bin lids and hexadecimals to communicate with the NASA team. NASA instructs Mark to partially modify the rover's code to link with Pathfinder so that they can communicate via text. When he is able to communicate with the NASA team on Earth, Mark becomes extremely happy. His love and belongingness needs are satisfied.

When the communications between Mark and the earth is restored, the NASA team tells Watney that the entire world is looking forward to his return. The whole NASA team, his old crew and his country are proud of his knowledge and surviving skills. This realization boosts his self-esteem. Mark has full confidence in himself and this satisfies the level of esteem needs in Maslow's hierarchy of needs. Seven months pass on Mars. Watney resumes modifying the rover, since the new rescue plan requires him to drive to Ares IV's scheduled landing site and lift off from Mars in that mission's Mars Ascent Vehicle, which has already made an unmanned landing as part of the long preparations for that visit. He packs up the rover and leaves the Ares III site, having spent 461 sols there; and heads for the Ares IV MAV, which was dropped on Mars well ahead of the Ares IV mission. It is a 3200 kilometer drive across a trackless and inhospitable Martian landscape. He stops every day for 13 hours to sleep and recharge the rover's batteries with solar panels. During his excursion, he reasons that Mars is legally international waters. It is subjected to the law of the sea because it cannot be claimed by any country on Earth.

Back on Earth about one year later, Mark begins Day 1 as an instructor to aspiring astronauts. He tells them of his struggle on Mars. He tells them that if things go south for them, they can either accept their faith or start solving problems, because that is how you survive, by overcoming one problem after another. Mark Watney achieves self-actualization once he reaches Earth. He has become all that he can be. He used his skills and knowledge to make contact with Earth and gradually escaped from Mars. The choices he made to fulfill his needs led to his self-actualization.

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The Pursuit of Meaning: Nuances of Frankl's Logotherapy in *Into the Wild*

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Introduction

The course of human history is a series of quests and confrontations to and of the "self." Since the ages of Plato and Aristotle, the ideas regarding the "self" and "meaning" have been given greater importance. Being a "thinking species", the humans are always attributed with a wide range of choices and ultimate freedom. In a sense one can say that it is this choice of freedom, that is, the choice of "will" that paves the way to a man's ultimate meaning and his confrontation with his existence. What really count are one's own actions. "Man is nothing other than what he makes of himself" (22) says Jean-Paul Sartre in his *Existentialism Is a Humanism*. The question is, how does a man "make" himself? What is really happening in the making process? How can a man make his life a "meaningful" one? The idea was celebrated and was at its peak until the formulation of the Psychotherapeutic theories of Austrian neurologist and psychiatrist as well as a Holocaust survivor, Viktor Emil Frankl. Frankl introduced new psychoanalytic and psychotherapeutic terms into the realm of studies related to the complexities of human mind. It was in his seminal work, *Man's Search for Meaning* (1946), that Frankl introduced the idea of Logotherapy, as a clinical as well as a psychological term.

Logotherapy: The Final Destination!

Life is not primarily a quest for pleasure, as Freud believed, or a quest for power, as Alfred Adler taught, but a quest for meaning. The great task for any person is to find meaning in his or her life (Frankl 8), says Harold S. Kumar in his preface to Viktor E. Frankl's ever celebrated work *Man's Search for Meaning* (1946). In general, the human life can be regarded as an unlimited, eternal quest for meaning and existence. According to Frankl, "Logotherapy focuses on the meaning of human existence as well as on man's search for such a meaning" (104). The term "logotherapy" comes from the Greek word "*Logos*," which means "meaning". In general terms, it is considered to be The Third Viennese School of Psychotherapy, the other two being Sigmund Freud's psychoanalysis and Alfred Adler's individual psychology. Based on an existential analysis, which refers to the analysis of one's own existence, which naturally flows into the question of meaning, logotherapy focuses on Kierkegaard's "will to meaning" and opposes Adler's Nietzschean doctrine of "will to power" and Freud's "will to pleasure." Elaborating further on the "will to meaning," one can see man's search for meaning as the primary drive in his life and not a secondary rationalization of instinctual drives. What Frankl says here is important in this context, that the meaning is unique and specific in that it must and can be fulfilled by him alone; only then does it achieve a significance which will satisfy his own *will* to meaning (105).

There are certain occasions when one cannot find a meaning of his or her own. Frankl calls this "existential frustration". In this condition, the will to meaning gets frustrated and logotherapy views this as "existential frustration."

The term "existential" may be used in three ways: to refer to (1) *existence* itself, i.e., the specifically human mode of being; (2) the *meaning* of existence; and (3) the striving to find a concrete meaning in personal existence, that is to say, the *will* to meaning (106).

This notion of "existential," as it is evident, is different from the traditional concept of the term. Frankl says that this existential frustration can cause neuroses, that is, "noogenic neuroses." The next most important aspect that Frankl introduces in relation to logotherapy is that of the "existential vacuum". Life does not always take a flawless path. Sometimes there comes a situation where one's whole assumption about life and meaning gets questioned. Haunted by the experience of inner emptiness, they feel a void within themselves, and thus end up in existential vacuum. According to this, the meaninglessness is a hole, an emptiness, in one's life and one needs to "fill" this hole. When man is questioned by life, he can only answer by answering for his own life; to life he can respond only by being responsible. Logotherapy makes one fully aware of his or her own responsibilities. The maxim of logotherapy about the responsibility of life is important here,

Live as if you were living already for the second time and as if you had acted the first time as wrongly as you are about to act now! (Frankl 114)

Here, this maxim invites man to imagine first that the present is past and, second, that the past may yet be changed and amended. It is one's own duty to find about the responsibilities and the ways to interpret one's own life. The idea of "the self-transcendence of human existence" is important in this context. According to logotherapy, the meaning in life can be acquired in three different ways. The first one can be identified as by creating a work or doing a deed. The second way to find meaning is by experiencing something or encountering someone. The third and final way of finding a meaning in life is by the attitude one takes toward unavoidable suffering. These three constitute the "Meaning Triangle." The culmination the argument can be seen the postscript of *Man's Search for Meaning*, regarding "tragic optimism." Tragic optimism can be identified as one's ability to remain optimistic in spite of the "tragic triad." Here by the word "tragic triad," what Frankl says is all about those aspects of human existence which may be restricted by the notions of pain, guilt, and death. Suffering is inevitable but not a necessary thing. During the times of unavoidable sufferings, what one can do is nothing but change his attitude. The second one is that of guilt. Refuting the collective concept of guilt, Frankl says that, a logical explanation of guilt and the cause would redeem people. The third and final one among the triad is the concept of death. Here the notion of life and transitoriness occupy central attention. the notion of logotherapy is indeed the one which directs people towards a meaningful life and which also helps them to maintain a tragic optimism whenever there comes a difficult situation or tragedy in life. The term of logotherapy, in spite of being a clinical term, can be used in a holistic, all encompassing way to study the whole workings of the human mind. With the arrival of this notion, the branch of psychology and psychotherapy made a firm position within the discourses of philosophy and literature.

Road Not Taken

It is said that the road has answers for everything. Sometimes this assertion is true. The act of traveling and seclusion from the general society has almost always helped people to find a meaning in their lives, which otherwise they could not have possibly made. The real life story of Alexander McCandless can be found as an apt example for this. The questions are, what prompts McCandless to set out on a journey, alone, towards his meaning? Why does he leave all of his money and family relations behind during this hike? Is the idea of Alaska merely a destination of meaning for Chris? Written and directed by Sean Penn, based on a book by the same title by Jon Krakauer, the movie *Into the Wild* (2007) sheds light upon the very issues of meaning and self-realization, along with the notion of happiness. In the movie we can see the character of Chris in a conflict with his family, especially with his parents. The main reason for this "conflict" can be identified as his disillusionment he feels while within the family. It is clear from the movie that Chris' father, Walt McCandless was legally married to a woman named, Marcia, while he met Billie, Chris's mother. This fact suddenly redefines Chris and his sister, Carine, as bastard children. Along with this, the arrogance of Walt also makes him fragile and oblivious of the pain he causes. When it comes to the matters regarding Chris, both the parents do not seem to care at all, like adding insult to injury. What is most unacceptable to Chris are the naked truths about the fraudulent marriage of his parents and his father's denial of the other son, born of his first marriage. In the narration Carine says that,

CARINE: This fraudulent marriage and our father's denial of the other son, was, for Chris, a murder of everyday's truth. He felt his whole life turn, like a river suddenly reversing the direction of its flow, suddenly running uphill. These revelations struck at the core of Chris' sense of identity. They made his entire childhood seem like a fiction. Chris never told them he knew and made me promise silence, as well (54:05).

This is the "reason" why Chris does not find solace within his family and his resentment towards his father. In terms of logotherapy, the will to meaning within Chris was in conflict with his familial relationships since childhood. Frankl's notion of the "existential frustration" affects Chris here. The meaning as a son is thwarted by the act of his father. And the meaning within his family is also destroyed. Now what is left for him is a choice to pretend, which he eventually leaves behind. This notion of the frustration of the will to meaning is the one which eventually leads him to a condition where he lacks the awareness of a meaning worth living for. He tries to fill his vacuum by travelling footloose and meeting new people. In spite the desire for will to power or pleasure, as usually happens during one feels an existential vacuum, Chris opts for a newly redefined will to meaning. For that, now he rejects the material aspects of society. To say metaphorically, like that of Frankl's experience, which he faced in the concentration camps, Chris finds himself "trapped" in the general society. The society and its constructs as a whole resemble to him something similar to a concentration camp, from where he should make his escape to create a new meaning in his life.

CHRIS: No longer to be poisoned by civilization, he flees, and walks alone upon the land to become lost in the wild (19:51).

According to logotherapy, as Frankl puts in *Man's Search for Meaning*, there are mainly three ways to attain meaning in one's life (Meaning Triangle),

(1) by creating a work or doing a deed; (2) by experiencing something or encountering someone; (3) by the attitude we take toward unavoidable suffering (115).

Leaving his home and family behind, Chris makes meaning in this by travelling to Alaska. The first source for meaning he takes is that of the third one, that is, the one related to suffering. Even though he had to suffer, he did not succumb himself into suffering. Rather than surrendering himself, he took a new outlook towards it and changed the very suffering as a reason for his journey into salvation and meaning. What is to be noted here is that, even though Chris had to undergo "pain," he successfully changed the whole aspect of pain into an idea of optimism, as a means towards his *meaning*. The next source he finds for a meaning is that of the second one, which deals with the aspect of meeting someone or experiencing something. Here, what come into account are the people he meet during his journey towards Alaska and the very place of Alaska itself along with a number of other natural landscapes he encounters.

The second way of finding a meaning in life is by experiencing something—such as goodness, truth and beauty—by experiencing nature and culture or, last but not least, by experiencing another human being in his very uniqueness—by loving him (115).

Chris finds meaning, in this point of view, primarily in nature. . The fact that Chris derives meaning from natural world is again clear from the words he quotes from famous texts such as Thoreau's *Walden* and *The Maine Woods*, Primo Levis *Bear Meat*, Tolstoy's *War and Peace* and so on. The next source of meaning can be identified as the people he meets in his journey and the random jobs he does. In logotherapy, the true meaning must be found in the world, that is, within the human relationships. As Frankl says, "The salvation of man is through love and in love" (49). Self actualization comes only from self realization. Chris' acquaintances, even though short termed, with Mads, Sonja, Rainey, Jan, Wayne, Tracy and so on, reveals his humane attitudes. Here, one can see a Chris, who, by self-transcendence, eventually achieving self realization. The act of finding meaning in love comes at the end of the movie. In his long journey, Chris finds out the fact that to forgive and love is the best thing one can do. The scene with Chris and Ron is so heart touching that it presents before us the ultimate and selfless meaning of love and forgiveness—the final way towards *meaning*. Ron says that,

RON: But when you forgive, you love. And when you love, God's light shines on you (02:03:37).

Here, the realization comes to him and he decides to forgive his parents. The meaning by love and human solidarity is portrayed best when he quotes from Tolstoy's *Family Happiness* by the end of the movie,

CHRIS: I have lived through much, and now I think I have found what is needed for happiness. A quiet secluded life in the country, with the possibility of being useful to people to whom it is easy to do good, and who are not accustomed to have done it to them; then work which one hopes may be of some use; then rest, nature, books, music, love for one's neighbor—such is my idea of happiness. And then, on top of all that, you for a mate, and children, perhaps—what more can the heart of a man desire? (01:46:25)

Chris finally succeeds in finding a meaning within human relationships and nature, thus conforming to the second aspect of "Meaning Triangle," in its explicit best. He writes in his book that "Happiness is only real when shared" and resolves to go back to his family. By the end of the movie, as it is presented, we can see the notion of suffering comes back to Chris on a concrete level. This time it comes as a physical manifestation of illness to which he eventually succumbs himself. This physical suffering is different from the mental suffering he was having before. The moldy seeds he eats, which contain poison, are the ones which eventually lead him to his death. Here, too, one can see an optimistic Chris. Even in the face of this fatal suffering, Chris stays optimistic and happy. He thinks about his previous life, the happy moments he had, and resolves to forgive his parents. The final note he writes, saying "goodbye", shows his positive attitude towards this suffering.

It is to be noted that, in the final note Chris comes into terms with his family. Earlier in the movie, we can see Chris changing his last name into "Supertramp." Here, he reclaims his relationships and writes his name as "Christopher Johnson

McCandless." This act can also be read as his reconciliation with his family and his forgiveness, especially to his father. Regarding all these, it is obvious that, the acts of Christopher McCandless are indeed the manifestations of Frankl's logotherapy. The driving force within him is nothing but a zest for ultimate meaning and happiness.

Conclusion

Like Frankl says, quoting Friedrich Nietzsche, "He who has a *Why* to live for can bear almost any *How*" (84). The assertion can be found true after and analysis of the character of Christopher McCandless in *Into the Wild* (2007). Citing from Frankl again, as he puts in *Man's Search for Meaning*, the notion of logotherapy

focuses on the meaning of human existence as well as on man's search for such a meaning. According to logotherapy, this striving to find a meaning in one's life is the primary motivational force in man (104).

As we have seen here, the protagonist, Christopher McCandless stands as ample examples, as the one who successfully found his "meaning" despite of the harsh realities the life had showered upon them. Here Sean Penn has succeeded in portraying the character of Chris as one who longs for meaning instead of one without a meaning. The general existential point of view is changed into a logotherapeutic one. The infidelity and betrayal of Chris's father, Walt, drives him into a state of meaninglessness and existential vacuum. The struggle he has to endure is his struggle for meaning. This pain and suffering are the ones which later drive him into his meaning. As logotherapy says, no suffering is meaningless. There can be found nobility in suffering. Chris' journey to Alaska is a direct outcome of this suffering. He triumphantly changes this suffering into a new window which opens towards meaning. Chris did not make himself succumb to the pain he had to endure. Rather he resolved to act and set out for a journey, making "Alaska" as a meaning. He finds solace and happiness in the natural world too. Meeting people and the notion of love also make him find meaning. Regarding all these we can arrive at the conclusion that Christopher McCandless is the embodiment of what Viktor Frankl calls as logotherapy. Sean Penn with his artistic genius and mastery portrays this notion of logotherapy in its explicit best. Quoting Nietzsche again, we can say that, "He who has a *Why* to live for can bear almost any *How*" (Frankl 84).

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A Review on Nanomaterial Coated Polymeric Membranes

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Abstract

Water scarcity is a major global issue. Polymeric nanocomposite membranes play a major role in the removal of various pollutants from aquatic media due to the presence of nanofillers. In this review the performance of the nanocomposite membrane in terms of permeability and fouling resistance are compared with the bare polymeric membranes. The nanocomposite membrane shows better permeability due to very small pore size distribution. They also show improved fouling resistance due to the decrease in surface roughness. The performance of the membrane depends on both the properties of nanofillers as well as the composition of the membrane. At higher concentrations of nanofillers aggregation of nanoparticles results in a decrease in performance.

1. Introduction

The demand of water is increasing with population growth. It also leads to water pollution. The protection of current water resources and production of clean drinking water by proper technologies are of vital importance.

Membrane technique is a widely accepted and an effective method for the production of safe drinking water. It is a cost effective and environmental friendly method since it requires minimum energy input and does not produce any harmful chemicals [1, 2]. It is a cost effective and environmental friendly method since it requires minimum energy input and does not produce any harmful chemicals. By properly modifying the pore sizes and surface properties it is capable of selectively filter various contaminants [3]. There are various membrane separation process. Among which pressure driven membrane process have great importance. Pressure driven membrane techniques can be classified as microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO). Among these MF and UF are low pressure methods and they are mainly used for the removal of suspended solids, fungi, virusus and macromolecules [4]. But the high pressure techniques such as NF and RO mainly focus on small ions, organic pollutants, hardness removal, water desalination etc [5].

Another classification of membranes is based on their composition as inorganic and polymeric membranes. Inorganic membranes are superior to polymeric membranes due to its high mechanical strength, chemical resistance, temperature endurance, good fouling resistance etc. But the major disadvantages are high cost and difficulty in controlling pore size. In water treatments polymeric membranes are commonly used. Polymeric membranes are cost effective and we can easily tune the pore sizes. But due to hydrophobic nature it is more prone to fouling and it affects the filtration efficiency of the membranes [6]. Also it reacts with chlorine, which is the most commonly used disinfectant in water treatments.

A good membrane always possesses good permeability, antifouling performance and resistant to chlorine. The performance of the membrane can be improved by changing its surface functional properties by different surface modification methods. One way to change the surface functional property is the incorporation of proper nanoparticles in the membrane system. These nanoparticles show unique properties and possess large surface area [7]. Thus the properties of the polymeric membranes can be enhanced by the introduction of nanoparticles. Different types of nanocomposites such as mix matrix, thin film nanocomposites, surface located nanocomposite etc. can be synthesized depending on the location and structure of nanoparticles on the membrane. This review discusses about various nanocomposite membranes and their efficiency in improving the filtration properties of polymeric membranes.

2. Carbon nanotubes (CNTs)

Carbon nanotubes (CNTs) are composed of graphene sheets. Both Single-walled carbon nanotubes (SWCNTs) and multi-walled carbon nanotubes (MWCNTs) have been used for improving the functional properties of membranes. CNTs allow frictionless transport of water molecules and hence useful for the fabrication of high flux membranes [8]. The antifouling performance of the polyethersulfone membrane was found to be improved on incorporating CNTs during the filtration of proteins, albumin and

ovalbumin under cross flow conditions [9]. The amount of proteins adsorbed on the membrane surface decreased due to the improvement in the hydrophilic nature of the membrane. But the agglomeration of CNTs increased the surface roughness and this can be solved by incorporating proper functional groups such as carboxyl functional group, polyethylene glycol groups and amine group [10].

3. Graphene oxide

Graphene is a sheet of sp^2 carbon having atoms in a honeycomb like structure having electrical, molecular blocking and mechanical properties [11]. Graphene oxide (GO) is a derivative of graphene intercalated with oxygen rich functional groups and can be used as a nanocomposite material with good dispersion in polymer surfaces [12]. Polyamide membrane on functionlized with graphene oxide nanosheets showed good antimicrobial property [13]. After one hour it inhibits the growth of 65% of bacteria. We can further improve the performance of graphene oxide by different functionalization methods. Polyethersulfone membrane on coated with graphene oxide modified with polyethylenimine improves its biocompatibility and showed good antifouling and antimicrobial properties [14]. In another study, positively charged amine containing graphene oxide and negatively charged graphene oxide was alternatively deposited on polyethersulfone membrane by layer by layer assembly manner. The nanocomposite membrane thus prepared was stabilized by electrostatic force as well as hydrogen bonding and showed a decrease in roughness of about 53.8% which improves the fouling resistance [15]. CNT on combining with graphene oxide improves its dispersion ability in polymeric systems. Since graphene oxide showed surfactant like properties and combines with carbon nanotube by non covalent interactions and improves its dispersion in aqueous solutions [16]. Also CNT and graphene oxide mixed in a ratio of 5:5 exhibits improved fouling resistance compared to CNT or graphene oxide alone while coated on polyvinylidene fluoride (PVDF) ultrafiltration membranes [17].

4. Metal and metal oxide nanoparticles

Metal and metal oxide nanoparticles are commonly employed in polymeric membranes to improve its properties. The diffusivity, selectivity and temperature resistance of polyvinylidene was improved in presence of silica nanoparticles [18]. The chitosan membrane showed better antimicrobial and mechanical properties by the incorporation of zinc oxide nanoparticles [19]. Polyether sulfone showed greater porosity and high flux in presence of aluminium oxide nanoparticles [20]. Polybenzimidazole membranes showed gas separation property and permeability after the incorporation of silica nanoparticles [21]. Due to low cost, high surface area, low toxicity and hydrophilic nature, FeO is widely used for water treatments. It was found that in presence of 0.1 wt% of FeO nanoparticles, polyether sulfone nanofiltration membrane was able to remove about 92% of copper [22]. The hydrophilic properties of polymer membranes can be improved by the incorporation of inorganic nanoparticles [23]. The antifouling performance and mechanical properties of PVDF was increased on the addition of suitable amount of nano- Al_2O_3 . It also improves the hydrophilicity without altering the pore size and the number of pores [24]. TiO_2 is another important nanoparticle material commonly used as photocatalyst for the decomposition of many organic pollutants [25]. While coated on a suitable polymeric membrane support a small amount of TiO_2 is required. On modifying the surface of poly(amideimide) membrane with suitable amount of TiO_2 the antifouling property of the membrane was improved thereby decreasing the flux decline [26]. The strength of the membranes can also be improved in presence of aluminium and zinc oxide nanoparticles. Silver nanoparticles are highly effective against bacteria, fungi and algae during water purification. It shows good catalytic properties and is non toxic to humans [27]. It is also useful for improving the antimicrobial properties of membranes. For example, polyethersulfone coated with Ag nanoparticles is commonly employed in water filtrations for enhancing the antibacterial properties of membranes [28]. It has the ability to interact with thiol groups found in proteins and works effectively against viral DNA [29]. It can also acts as a preventive barrier against selected elements while incorporated on membranes. Silver nanoparticles incorporated cellulose acetate, polyamide and polyimide membranes are widely used in water treatments to reduce biofouling [30]. Metallic nanoparticles increases the rigidity of the membranes due to its cross linking property [31]. The tensile strength and elongation at break of polyether sulfone membrane was improved on the addition of 0.1 wt% ZnO nanoparticles [32].

5. Metal organic frame works (MOFs)

Metal organic frame works are inorganic materials that linked with organic membranes thereby increasing its pore volume and adsorption sites. MOFs are porous in nature and contain metal ions and organic ligands and hence show good compatibility

with the polymeric supports. They are found to be very useful for the removal of heavy metals such as arsenic, lead etc and multivalent ions [33]. Zeolitic imidazolate framework-8/ sodium 4-styrenesulfate (ZIF-8/PSS) metal organic frame work membrane was fabricated on tubular alumina substrate by in situ layer by layer assembly method for the removal of dyes from water under nanofiltration conditions [34].

6. Membrane resistance to disinfectants

Amide membranes are commonly used in water purification. But the widely used disinfectant, chlorine degrades the membrane material due to the formation of forming N-Cl bond during chlorination. While incorporating grapheme oxide the chlorine resistance of the polyamide membrane was improved and it enhances the NaCl rejection. The electron rich graphene oxide acts as a shield to protect the inner layers of the polyamide membrane from chlorine attack [35]. Also the graphene oxide layer restricts the passage of the reactive form of chlorine, -OCl⁻ by size exclusion [36]. Charge exclusion between the reactive species and graphene oxide is another important factor responsible for the rejection [37]. It was reported that the presence of MWCNT in polyamide reverse osmosis membrane increases the resistance towards chlorine due to the presence of carboxylate groups [38].

7. Conclusions

The bare polymeric membrane exhibits enhancement in overall performance due to the incorporation of nanoparticles. The behaviour of the as such prepared membrane depends on the type of the nanomaterials, particle size, shape, composition and nature of the polymer support used. The antifouling nature, chlorine resistance and stability of the nanocomposite membrane improve by the incorporation of suitable nanomaterials. But under long run the stability of the membrane is left unknown. The scaling up of the manufacturing of the nanocomposite membrane structures and improvement of mechanical properties as well as long term stability will largely intensify their applications in various fields.

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बदलती नारी मानसिकता : मन्नू भंडारी की कहानियों में

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भूमिका

साहित्य समाज का दर्पण होता है। साहित्य की आँखों से हम समाज देखते हैं और समाज की आँखों से साहित्य देखते हैं। प्राचीन काल से अब तक साहित्य के विभिन्न रूप कविता, कहानी, उपन्यास, नाटक आदि समाज का प्रतिनिधित्व करते रहे हैं। इसमें कहानी सर्वाधिक लोक - प्रिय विधा है। आदिम युग से लेकर कहानी आज तक विकसित होती आ रही है। इस में परिस्थिति और समय के अनुसार परिवर्तन होता रहा है। स्वतंत्रता के बाद की कहानी परिवर्तित भावलोक की कहानी है। कहानी ग्रामीण परिवेश से आगे चलकर शहरी जीवन को अपनाया है। नवीन कहानीकारों ने बाजारवादी, उपभोक्तावादी जीवन की जटिलता और आर्थिक विसंगतियों तनावों एवं संघर्षों को पर्याप्त कुशलता से उभरा है।

मन्नू भंडारी

स्वातंत्र्योत्तर काल में नारी समस्याओं को लेकर अनेक लेखिकाओं ने कहानी के क्षेत्र में पदार्पण किया। साहित्य के युगों पुरानी कथा की रूढ़ियों के मलबे के नीचे से नारी के मौलिक व्यक्तित्व का अन्वेषण, उसके चरित्र का यथार्थ और निस्संग अभिव्यक्ति करनेवाली लेखिका है मन्नू भंडारी। वह नारी अस्तित्व के पारिवारिक और सामाजिक पक्ष के प्रति पूर्ण सहज है।

मन्नू जी पहली साहसी लेखिका है जिन्होंने आधुनिक शहरी नारियों के भावों को सत्य के साथ खोलने का प्रयत्न किया। इसके बारे में राजेन्द्र यादव की राय है। “भ्रम और सेक्स के दुहरे जटिल शोषण के संस्कारों के जाल से नारि के मौलिक और स्वतंत्र व्यक्तित्व को खोज निकालने के लिए जिस साहस और निर्भीकता की आवश्यकता है वे मन्नू के सबसे सशक्त हथियार हैं।”¹ अकेलेपन और आर्थिक समस्याओं से आहत नारी के धूधले स्वरूप को लेखिका ने बड़ी सहजता और पैनी दृष्टि से प्रस्तुत किया है, मन्नू जी ने ‘आँचल में दूध और आँखों में पानी’ वाली नारी के विपरीत नारी मन की घुटन, टूटन तथा आक्रोश को उकेरा है।

छठे दशक की महिला लेखिकाओं में मन्नू भंडारी का नाम सर्वधिक महत्वपूर्ण है। कथा रचना में नया मोड़ लेकर आयी मन्नू भंडारी ने हिंदी कहानी को रूढ़ियों से मुक्त करने की कोशिश की। मन्नू भंडारी के अंतर लिखने की जो शक्ति निहित है इसके बारे में उनका कहना है, - “जीवन की धड़कन से भरपूर स्थितियाँ, विचार या समस्याएँ ही मुझे लिखने के लिए प्रेरित करती हैं”²। मन्नू जी ने बड़ी ही ईमानदारी के साथ नारी मन के भावों, स्थितिविशेष में पुरुष के मन में उठनेवाले भावों, शंकाओं और ईर्ष्याओं को अपनी कहानियों में समावेश किया। इस संदर्भ में डॉ. उर्मिला गुप्त का कथन सोर्थक है, □ “सुश्री मन्नू भंडारी ने व्यक्तिगत चरित्रों को मुख्य केंद्र बनाकर कथानकों की सृष्टि की है। व्यक्तित्व के विकास में सामाजिक परिवेश को प्रेरणा स्रोत माना”³। उनकी कहानियों में व्यक्तियों को प्रमुखता देने के साथ समाज भी प्रमुख रहा।

मन्नू भंडारी ने नारी जीवन के विभिन्न पहलुओं जैसे दाम्पत्य जीवन, बेटी की समस्यायें, नारी शोषण, नारी का प्रेमिका रूप आदि को अपनी कहानियों के लिए कथ्य चुना है। आधुनिक पति- पत्नी के औपचारिक सम्बन्ध, टूटते - बिखरते स्नेह, रिश्ते नातों के विविध पहलुओं की सटीक अभिव्यक्ति इनकी कहानियों में हुई है। ‘तीन निगाहों की एक तस्वीर’, ‘कील और कसक’, ‘वंद दराजों के साथ’ आदि कहानियाँ इसका दस्तावेज है।

तीन निगाहों की एक तस्वीर

□ ‘तीन निगाहों की एक तस्वीर’, पारिवारिक प्रेम और दाम्पत्य सम्बन्ध की कहानी है। बीमार दर्शना नैना की मौसी है। नैना उसे मिलने आती है। दर्शना उसे नहीं पहचान सकती है। लेकिन मौसी को बेहद व्यार करने के कारण वहीं रुक जाती है। दर्शन नैना से मिले बिना ही दम तोड़ देती है। वहाँ से नैना दर्शना की डायरी और हरीश नामक लेखक की कहानी हाजिल करती है। यहाँ से दर्शन की कहानी शुरू होती है। दर्शना टी. बी से बीमार पति की सेवा करती है। रिश्तेदारों से सिर्फ मौखिक सहानुभूति मिलती है। टि. बी के कारण उसकी ओर किसी ने झाँककर भी नहीं देखा है। आर्थिक तनाव के कारण दर्शना एक कमरा किराये पर दे रखा है। उस कमरे में आया लेखक हरीश और दर्शना के बीच एक आत्मीयता स्थापित हो जाती है। जब इस बात का पता उसके पति को चलता है, तो उसे वह बहुत पीटता है। उसके बाद घर से निकाल देता है, और सब संबन्धियों को इसकी सूचना देता है। सब लोग दर्शना से नफरत करते हैं। यही दर्शना अपने पति की मृत्यु की खबर सुनकर कहती है, “मरी तो सारी भावनायों ही जैसे मर गई हैं। मैं ही जाने क्यों जिंदा हूँ।”⁴ वह अंत में नौकरी करती है। ऐसे दर्शना के बारे में नैना ने जो अनुभव पाया है उसकी तस्वीर मन्नू जी ने प्रस्तुत कहानी के द्वारा खींची है। डॉ. शिवशंकर पाण्डेस की राय में “तीन निगाहों की एक तस्वीर कहानी पारिवारिक प्रेम एवं दाम्पत्य सम्बंध की कहानी है। जिन्दगी का यथार्थ तथा आधुनिकता बोध जीवन में अकेलेपन, अजनबीपन तथा व्यर्थताबोध को उभरने का प्रयत्न तो करता है ही, साथ ही धरातल पर संघर्ष को जन्म देकर उसके संबंधों को खंडित भी करता है और उसके सोच को भी बदलता है।”⁵ इस कहानी में तीन निगहें नैना, हरीश, और दर्शना है।

कील और कसक

यौन अतृप्ति के परिणाम की और संकेत करनेवाली कहानी है ‘कील और कसक’। इस कहानी की नायिका रानी के विवाह काले चेचक के दागोंवाले कैलास से होता है। रात - दिन प्रेस में काम करते - करते कैलास का मन - मस्तिष्क यत्र की तरह हो गया है। मन्नू जी के शब्दों में “कैलास स्वयं एक मशीन बन गया था, भावहीन, रसहीन, उसे न रानी में दिलचस्पी थी, न घर में कर्ज का भूत कोड़े लग- लगाकर काम करवाता था”⁶। रानी के यहाँ एक पेड़ग ‘रोखर’ आया। रोखर खवारा मिली प्रशंसा और सहानुभूति ने रानी को उसकी ओर आकृष्ट किया। इसी दौरान शेखर का व्याह एक सुन्दर लड़की से हो जाता है। व्याह के बाद रानी विक्षिप्त - सा

आचरना करने लगती है। वह शेखर और उसकी पत्नी से बार - बार झगडा करती है। अंत में यह सब देखर कैलास मकान बदल देता है। इस प्रकार अतृप्त इच्छा की कील कसक से रानी कभी मुक्त नहीं हो पाती।

काम - अतृप्ति मनुष्य को मानसिक और शारीरिक दोनों धारातलों पर खंडित करके दाम्पत्य- संबंध में अशांति पैदा करती है। इस विषय के संबंध में प्र. किशोर गिरडकर का कथन उल्लेखनीय है- “अतृप्त यौवन लालसायों नारी को पर - पुरुष की ओर आकृष्ट कराती है और वहाँ से भी प्रतिदान न पाकर, स्वभावतः ही असमं विक्तियाँ उत्पन्न हो जाती है जो उसे झगडालू और दुराग्रही बना देती है।”⁷

वंद दराजों के साथ

इस कहानी की नायिका है मंजरी। कहानी में मंजरी की अन्तर्द्वद्वात्मक स्थिति का ज्वलन्त चित्रण है। मंजरी अपने पति विपिन के साथ सुखमय जीवन बिताती है। एक दिन विपिन ने मंजरी को देखकर कुछ कागज दराज में वंद कर दिया। दराज में लगा ताला उसके विश्वास की दीवार को तोड़ देता है। मंजरी ने दराज खोला तो अपने पति की प्रेमिका और उससे पैदा हुए बच्चे के बारे में जानकारी मिली। इससे दोनों के बीच दरार आ जाती है। विपिन विवाह के बाद भी प्रेमिका से संबंध रखता है। इसलिए मंजरी अपने बच्चे के साथ विपिन से अलग हो जाती है। अपने पुत्र आसित को वह होस्टेल भेजती है। मंजरी ने विपिन से अलग होने के बाद दिलीप नामक एक सुवक के साथ नई जिन्दगी शुरू करकी है। कॉलेज के सहकर्मियों की हिकारत भरी नजर से दुःखी होकर मंजरी अपनी नौकरी छोड़ देती है। छुट्टियों के दिनों में असित घर आता है। जब स्कूल से फीस का कार्ड आया तब दिलीप ने आर्थिक कठिनाई की बात कहकर फीस देने को तैयार नहीं हुआ। मंजरी पूर्ण रूप से टूट जाती है। वह सोचती है “आज जिन्दगी का हर पहलू हर स्थिति और संबंध एक समाधानहीन समस्या होकर ही आता है जिसे सुलझाया नहीं जा सकता, केवल भोग जा सकता है जिसमें आदमी निरंतर बिखरता और टूटता चलता है”⁸।

इस कहानी में नारी के खंडित व्यक्तित्व का चित्रण हुआ है। विवाह पूर्व प्रेम संबंध पारिवारिक जीवन विघटन का कारण बन सकता है। इस कहानी के बारे में देवी शंकर आवस्थी ने लिखा है - “आज के तनाव को यह कहानी पूरी गहराई से आँकती है। मनुष्य न तो छुटी हुई जिन्दगी को छोड़ पता है और न चुनी हुई जिन्दगी को अपना सकता है। दानों और खीचा जाकर वह क्षत - विक्षत हो जाता है”⁹।

निष्कर्ष

मन्नू भंडारी की कहानियों में पति - पत्नी के बनते - विगडते संबंधों एवं आधुनिक प्रेम का सूक्ष्म, सहज एवं सटीक चित्रण किया है। नारी मन के घुटन एवं टूटन का चित्रण करने के साथ भारतीय पारंपरिक बंधनों से नारी को मुक्ति देकर नारी के एक बदलते स्वरूप को उजागर करने में मन्नू भंडारी सक्षम दीखती है।

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राष्ट्रवाद और हिंदी सिनेमा

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भूमिका

मानव सभ्यता के आरंभ से मनुष्य मस्तिष्क की भूख मिटाने के लिए विभिन्न कलाओं का सृजन किया। साहित्य, कला, शिल्पकला, चित्र कला, संगीत कला, नाट्य कला आदि विभिन्न कलाएँ सभ्यता के विकास में महत्वपूर्ण भूमिका निभाती हैं। सिनेमा चित्रकला से ज्यादा प्रभावित है। सिनेमा और नाटक दृश्यकला है। सिनेमा रंगमंच की सीमाएँ भेदने में समर्थ है। इसी कारण से सिनेमा का प्रभाव ज्यादा महत्वपूर्ण है। भारत जैसे देश में जहाँ ज्यादा लोग अनपढ़ हैं, सिनेमा एक ऐसा माध्यम है जिसके द्वारा जनता जागृत हो सकती है।

सिनेमा और भारतीय समाज

सिनेमा एक कथा प्रस्तुत करनेवाला माध्यम है। इसकी भाषा चित्रभाषा होने से सिनेमा की संप्रेषणीयता बढ़ती है। सिनेमा एक साथ अनेक लोगों तक पहुँचने में सक्षम है। यह सार्वदेशिक और सार्वकालिक है। सिनेमा सदाभावनाएँ उत्पन्न करने में सक्षम दीखता है। डॉ.सी. एच रामुलु के मत में - १. □ **सद्भावना के मूल में सद्वृत्ति, सत्संकल्प, सद्विच्छा और मानवीय करुणा निहित है। इसके लिए व्यक्ति का परिष्कृत हृदय तथा उदात्त चरित्र का संपन्न होना अपेक्षित है।** □

सिनेमा का स्वरूप परिवर्तित होता है। सिनेमा का व्यावसायिक पक्ष है। यह मात्र कला नहीं व्यवसाय भी है। यह गतिशील माध्यम है। वैज्ञानिक साधनों की सहायता से सिनेमा का प्रसार संभव है। इस कारण से सिनेमा को विशुद्ध कला के रूप में रखना समीचीन नहीं दीखता है।

भारत में १९१३ से सिनेमा की शुरुआत हुई। दादा साहेब फालके द्वारा बनाया राजा हरिश्चंद्र प्रथम फीचर फिल्म है। उन्नीस सौ तीस तक आते आते भारत में करीब २०० से अधिक फिल्में बनती थीं। राजा रहिश्चन्द्र में शब्द का अभाव था। भारत का प्रथम शब्दयुक्त फिल्म आलम आरा १९३१ में आरदेशिर ईरानी ने बनाया था। उस समय से आज तक भारत फिल्मों के लिए उर्वर भूमि रही। भारत में विभिन्न भाषाओं में फिल्में बनती हैं। लेकिन हिंदी भारत के प्राय सभी राज्यों के बीच संपर्क भाषा का दर्जा प्राप्त करने से पूरे भारत में हिंदी सिनेमा का महत्वपूर्ण स्थान है।

राष्ट्रवाद: सामान्य अवधारणा

भारत को संपूर्णता में देखने का प्रयास करती हिंदी सिनेमा कई फिल्मों के द्वारा अपनी स्थानीय सीमाओं से ऊपर उठते दीखता है। पूरे भारत को एक राष्ट्र के रूप में प्रस्तुत करते हुए भारतीय जनता को देशप्रेम के आवेग में डुबोनेवाली कई फिल्में निकली हैं। डॉ.सी.एच. रामुलु के मत में २. □ **राष्ट्रीयता एक मानसिक भावना है कि जो एक निर्णीत भूखंड में रहनेवाले लोगों के सामान्य गौरव, विभूतियाँ और परंपराओं का सम्मिश्रित रूप है।** □

व्यक्तिपरक प्रेम विस्तृत होकर राष्ट्रीयता बनती है। राष्ट्रीयता देशप्रेम और देशभक्ति की नींव पर टिकी है। राष्ट्रीयता व्यक्तिपरक प्रेम से ऊपर उठकर समष्टिपरक बनती है। डॉ.सी.एच रामुलु का कथना इस संदर्भ में उल्लेखनीय है- ३. □ **मातृभूमि के प्रति सघन रागात्मकता ही राष्ट्रीयता है।** □

सभ्यता के विकास क्रम में जंगली मानव अपना घर, कुल, कबीले की रीति रिवाजों और आचार - विचारों का निर्माण करता रहा। अपना परिवार और परिवारवालों की सुरक्षा हेतु कुछ नियम बनाये। अपनी वस्तुओं की चोरी न हो इस दृष्टि से कानून बनाये। धीरे- धीरे मानव समूह विभिन्न गोत्रों, देशों में विभक्त हो गये। हरेक गोत्र और देश अपनी अपनी रीति रिवाज और आचार - व्यवहार अपनाने लगे।

स्थूल दृष्टि से देखने पर राष्ट्रीयता भौगोलिक सीमाओं के अंतर्गत निहित है। देश की प्रकृति, नदियाँ, पर्वत आदि के माध्यम से अपने जन्मदेश को देखना ही राष्ट्रीयता का आधार है। देश की सामाजिक और सांस्कृतिक परिस्थितियाँ भी राष्ट्रीयता के अंतर्गत निहित हैं। राष्ट्रीयता का मनोवैज्ञानिक पहलु भी है। जिन लोगों में एक हो वैभव, परंपराएँ और पैतृक संपत्तियाँ हैं, उन में राष्ट्रीयता की मनोवैज्ञानिक भावना उत्पन्न होती है।

भारत और राष्ट्रीयता

भारत में राष्ट्रीयता का सूत्रपात उन्नीसवीं सदी के नवजागरण के साथ हुआ। पूरे भारत में विदेशी शासन के विरुद्ध एक उल्लेखनीय जागृत हो उठी। भारतीय राष्ट्रीय चेतना के प्रसार के अंतर्गत भारत में एक शिक्षित वर्ग उभरा। स्वामी विवेकानंद, रविंद्रनाथ टैगोर जैसे महान व्यक्तित्वों ने भारतीय राष्ट्रवाद को अंतर्राष्ट्रीय आकार देने में सक्षम रहे।

अंग्रेजी शिक्षा द्वारा सभी जाति के लोगों को शिक्षा का अधिकार देने से शिक्षा पर ब्राह्मणों के एकाधिकार को समाप्त कर दिया। भारत में सब से पहले बंगला भाषा अंग्रेजी से ज्यादा संपर्क में आई थी। महान उपन्यासकर बंकिमचंद्र और शरत्चंद्र उभरे जिन्होंने अपनी रचनाओं द्वारा राष्ट्रवाद की प्रेरणा दी। स्वामी दयानंद ऐसे व्यक्तित्व थे जिन्होंने पूरे भारत को हिंदी के सूत्र में बाँध दिया था। निर्मल कुमार जी का कथन उल्लेखनीय है- ४. □ **स्वामी दयानंद ने अपनी सभी पुस्तकें हिंदी में लिखीं। उनका विचार था कि हिंदी के जरिए पूरे राष्ट्र को संगठित किया जा सकता है।** □

नवजागरण की प्रवृत्ति समुचे भारत में राष्ट्रीयता की लहर उत्पन्न करने में सक्षम रही। स्वाधीनता संग्राम एक ऐसा अंदोलन रहा जब भारत में एक शिक्षित वर्ग सामने आया। जिन्होंने भारत की प्राचीन संस्कृति, साहित्य और इतिहास का पढ़न- पाठन में अपने को पूर्ण रूप से समर्पित किया।

तत्कालीन साहित्य और दूसरी कलाएँ नवजागरण की प्रवृत्तियों को अपने में समेटने में सक्षम रहे। आगे चलकर ये स्वाधीन भारत की सामाजिक, सांस्कृतिक

व राजनीतिक परिस्थितियों को उजागर करती दीख पड़ीं। सिनेमा ऐसा माध्यम रहा जो मनोरंजन का माध्यम होने के साथ - साथ जनमानस में समसामायिक परिस्थिति संबंधी अवधारणाएँ पैदा करती है।

हिंदी सिनेमा में राष्ट्रवाद

हिंदी सिनेमा में राष्ट्रीयता की अवधारणा जगानेवाली कई फिल्में आईं। १९५७ में निकली मदर इंडिया नरगिस की अभिनय प्रतिभा को उभारनेवाला सशक्त सिनेमा है। फिल्म का नाम ही भारत को माता के रूप में घोषित करने में सक्षम है। इसी वर्ष निकली नया दौर में नायक शंकर अपने प्रयासों से विभाजित गाँव को फिर से जोड़ने में सक्षम रहता है। वह मानव और मशीन की होड़ में मानव के विजय पर विश्वास रखता है। सात हिंदुस्तानी (१९६९), रोजा (१९९२), १९४२ ए लव स्टोरी (१९९४), बाँर्डर (१९९७), लगान (२००१), स्वदेश (२००४), मंगल पांडेय द रैसिंग (२००५), रंग दे बसंती (२००६) चक दे इंडिया (२००७), भाग मिलखा भाग (२०१३), दंगल (२०१६), राजी (२०१८) ऐसी फिल्में हैं जिसमें भारतीय राष्ट्रवाद की कोई न कोई पहलू विद्यमान है।

पानीपत २०१९ में निकली फिल्म है जिसका निर्देशक है अशुतोष गौरीकार। यह पानीपत की तीसरी लड़ाई पर आधारित है जो १७६१ जनवरी १४ में हुआ। यह लड़ाई मराठा और अफगान के शाह अहमद शाह अब्दाली में हुई थी। यह उठारहवीं सदी की सबसे विनाशक लड़ाई मानी जाती है।

निष्कर्ष

राष्ट्रवाद और सिनेमा पर विचार करते हुए यह विपिक है कि हिंदी में फिल्में आई हैं जो भारतीयता की मानसिकता से ओतप्रोत हैं और दर्शकों में राष्ट्रीयता की उत्तेजन भरने में सर्वदा सक्षम हैं।

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