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The Society for Polymer Science, India

SPSI MACRO 2022

16th International Conference on

Polymer Science and Technology

November 2- 4, 2022

Programme Book

Organized by

CSIR-National Chemical Laboratory

Indian Institute of Science Education and Research, Pune

Savitribai Phule Pune University

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Welcome Address

On behalf of the organizing committee, we warmly welcome you to Pune for the three-day symposium entitled "**Science and Technology of Polymers and Advanced Materials through Innovation, Entrepreneurship and Industry: SPSI-MACRO-2022".**

SPSI-MACRO is a premier flagship conference in the area of ***Polymer Science and Technology*** held once every two years. It is organized by ***The Society for Polymer Science***, India (SPSI, www.spsi.co.in.) and is attended by eminent polymer scientists and technologists from across the globe. The 16th conference in this series - ***SPSI-MACRO-2022*** is being jointly hosted by CSIR- National Chemical laboratory (https://www.ncl-india.org/ or http://academic.ncl.res.in/), Indian Institute of Science Education, and Research, Pune (http://www.iiserpune.ac.in/), Savitribai Phule Pune University and NCL Research Foundation from **November 2-4, 2022**.

The first and third day of the conference will be held at CSIR-National Chemical Laboratory. The second day will have three parallel sessions on contemporary topics in polymer science and will be held at IISER, Pune. The SPSI-MACRO-2022 program includes more than 50 talks in addition to two endowment lectures, four award lectures, and plenary lectures. The conference also includes early career lectures delivered by young dynamic researchers, providing visibility to their work. More than250 posters under various themes in polymer science are also being presented. 12 students have been selected for flash poster presentations, as this provides the students a platform to showcase and publicise their work. We are anticipating about 500 participants from across the country and a few from abroad.

SPSI-MACRO is being held for more than 30 years, and we as a society have evolved over the time. We are very happy to introduce a new event format in the form of two panel discussions for the first time in the SPSI-MACRO conference series. The first panel discussion is focused on "Innovation and Entrepreneurship," and the second is on "Industry Perspective". The primary objective of these discussions is to educate our students and bring attention of the students towards choosing an alternative for the career path. The panel discussions are scheduled on 4th Nov. 2022 in a single session and we highly encourage each one of you to participate and learn from this session.

This conference is also an occasion to honour the contribution of our revered past president and former Director of CSIR-National Chemical Laboratory, Padmashri Dr. Sivaram, who will celebrate his 76th birthday on November 4, 2022. Dr. Sivaram is a distinguished polymer chemist of international repute and a prolific inventor, holding the highest number of US patents by an Indian working outside the US. As an able administrator, visionary leader and institution builder, Dr. Sivaram is widely recognized for his contributions in the establishment of the first R&D centre on petrochemical research in India. Among many firsts, he set-up India's first Technology-Business Incubator - Venture Center. Dr. Sivaram is a fellow of all three national academies in the country and is the recipient of several prestigious national and international awards. The third day of the conference at NCL will have a grand dinner in his honour, which will be attended by several of his former students and colleagues as well as friends from various walks of life.

The organization of this mega event in a short time would not have been possible without the continuous and enthusiastic support from our colleagues and students from NCL, IISER Pune and SPPU. We are grateful to the President SPSI and the scientific advisory committee for timely suggestions and support. We acknowledge the financial support from several scientific societies, industrial houses, and sponsors. We take this opportunity to thank each and everyone who has

put tireless efforts for organizing SPSI-MACRO-2022. As many of you would understand, organizing an event of this scale is not an easy task, and there might be shortcomings inspite of our best efforts. We request you to bear with us. We assure you that the local organizing committee will try their best to make your stay in Pune very pleasant and scientifically efficacious.

Dr. S. K. Asha
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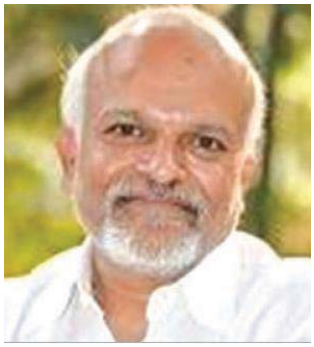

It is really heartening to begin returning to normalcy after nearly two dry years, during which most meetings shifted to an online mode; all of us have been looking forward to *real meetings* where we share our ideas and research outcomes with fellow researchers and relish conversations over a cup of tea. What could be a better way to begin resuming real meetings than to have the MACRO-2022 conference coincide with the 75th birthday of our illustrious past-president Dr S Sivram, who apart from being an excellent scientist, is an outstanding leader and a real champion for the cause of Polymer Science in India. Right from the time SPSI came into formal existence in the early 1990's, DrSivaram has played a crucial role in ushering the society to the current vibrant stature, paying close attention to every minor detail and guiding us to attain greater and greater success. So, it is befitting that MACRO 2022, will be a special one that coincides with the 75th birthday of Dr Sivaram.

As all of you are aware, the biannual MACRO meeting of the SPSI was scheduled to take place in IIT-Guwahati in December 2020 but was cancelled due to the pandemic; despite our best intentions, we have not been able to reschedule it due to the vagaries of the pandemic and the consequent prevailing uncertainties. In the meantime, our colleagues at NCL, Pune and IISER, Pune floated this idea of hosting this special MACRO 2022 meeting in Pune; this suggestion was met with overwhelming support; and to the credit of the chair and co-chair, they were able to quickly organize an excellent program that will run for three days. The conference is being jointly hosted by NCL, IISER and Pune University; thanks to their remarkable effort in a short time, the meeting has witnessed overwhelming support and participation. As in all the MACRO meetings, three of the 2020 SPSI awardees will deliver their award lectures, and in addition there will be two endowment lectures that will be delivered by world leaders in Polymer Science. As always, enthusiastic participation from our student researchers will provide us a glimpse of tomorrow's leaders; we specially look forward to these.

I would like to congratulate Drs S. K. Asha and Sameer Chikkali and their colleagues for shouldering this enormous responsibility and accomplishing it with remarkable finesse, given the short time. I expect this meeting to be oversubscribed, given the long dry spell; I wish all the very best to the organizers and the participants in making this meeting a grand success. The next meeting of SPSI - MACRO 2023 will be held in December 2023 and it will be hosted by IIT-Guwahati; the exact dates will soon be notified. We expect the Guwahati meeting to be a culmination of a year-long effort that will be championed by our colleague Professor VimalKatyar and his colleagues; we look forward to an excellent meeting in 2023 in the beautiful environs of the northeast.

In closing, on behalf of the Society for Polymer Science-India, I would like to welcome each of you to the beautiful city of Pune –a seat of culture and education. Enjoy the conference and your stay in Pune, and I hope that you will return home, scientifically enriched and will carry fond memories of the wonderful hospitality that I am sure you will all relish.

Best wishes,

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Day-1, Wednesday, 02 November 2022	
Venue: CSIR-NCL Pune Auditorium	
8.00-9.00	Registration
9.30- 10.30	Inauguration: Chief Guest Prof. Sir Richard Roberts (Nobel Laureate)
10.30-11.00	Tea
	Session-1: Chair: S. Ramakrishnan, President, SPSI
11.00-11.45	Dr. S. R. Palit Memorial Lecture: Yves Gnanou. Developments in Polyether and Recent polycarbonate Synthesis Using Boron-Based Catalysts
11.45-12.15	Prof. Santappa Award Lecture: Niranjan Karak. Biodegradable Smart Polymer Nanocomposites as a Sustainable Material for Multifaceted Advanced Applications
12.15-12.45	Prof. Kishore Memorial Award Lecture-1: Suryasarathi Bose. Trash to Treasure: The Key Role of Vitrimers
12.45-14.15	Lunch
	Session-2: Chair: Ashok Misra
14.15-15.00	Dr. S. Sivaram Endowment Lecture: Richard Hoogenboom. Supramolecular Polymer Materials
15.00-15.30	Prof. Kishore Memorial Award Lecture-2: Samir Chikkali. Insertion Polymerization of Ethylene: Quo Vadis?
15.30-16.00	PL-1: Valeriy Kapelyushko. High Performance Polymers Sustainability solutions
16.00-16.30	Tea
	Session-3: Chair: Anup Ghosh
16.30-17.00	PL-2: Nikos Hadjichristidis. Macromolecular engineering via polylactide stereocomplexation, Hydrogen Bonding and Dynamic Covalent Bonding
17.00-17.30	PL-3: Ajit Sapre. Advances in polymer and composite materials towards Atma Nirbhar Bharat: One perspective
17.30-19.00	Poster Session-1
19.00 Onwards	Dinner at NCL GH

Day-2, Thursday, 03 November 2022				
Venue: IISER Pune, Main Building				
Time	**Hall-1 Session-4: Chair: Anil Kumar**	**Hall-2 Session-5 Chair: R. Boomi Shankar**	**Hall-3 Session-6 Chair: K. Krishnamoorthy**	**Hall-4 Session-7 Chair: Rajasekharan Pillai**
08.45-09.15	IL-1: Tarun K. Mandal. Stimuli-responsive Functionalized Polypeptides and Aggregates for Various Applications	IL-5: S. K. Sukumaran. Polymer Grafted Rubber Nanoparticles in a Polymer Matrix: Viscoelasticity and Sol-gel Transition	IL-9: Arun K. Nandi. Optoelectronic Properties of Polymer- Peptide Conjugates	IL-13: Sabu Thomas. Nanostructured Polysaccharides Materials for Water Purification
09.15-09.45	IL-2: Subi J. George. Molecular Programming at the Higher Hierarchical Levels of Supramolecular Self-Assembly	IL-6: Parbati Biswas. Conformation and Rheology of Ring Polymers in Dilute Solutions	IL-10: Sudip Malik. Metal-nanoparticle Embedded 1D Polyaniline Nanotubes: Charge Transport and Resistive Switching Behaviours	IL-14: Saju Pillai. Versatile Nanocellulose-derived Systems for Functional Applications
09.45-10.15	IL-3: Anindita Das. Crystallization-Driven Controlled Two-Dimensional Assemblies of Chromophore-Appended Semicrystalline Polymers	IL-7: Reji Varghese. DNA-decorated soft nanostructures	IL-11: Pralay Maiti. Sustainable Polymers in Energy Sectors	IL-15: Vimal Katiyar. Biodegradable Products Development using Home Grown Technologies
10.15-10.45	IL-4: Umaprasanna Ojha. Carboxylates as Dynamic Linkages for Development of Dynamic Covalent Organogels with Thermoresponsive Behavior	IL-8: Sharan Shetty. Role of Computational Material Science in Sustainability: An Industrial Perspective	IL-12: Arul Kashmir Arulraj. Stretchable and Wearable Biomedical Devices: The Step Towards Affordable Health Care	IL-16: S. T. Mhaske. Sustainable Valorisation of Waste for the Affordable Production of Bio-Based Packaging (SWAP)
10.45-11.15	**Tea Break**			
Time	**Session-8 Chair: S. G. Srivatsan**	**Session-9 Chair: NN Maldar**	**Session-10 Chair: Nirmalya Ballav**	**Session-11 Chair: Anuya Nisal**
11.15-11.45	IL-17: Suhrit Ghosh. Chain-folding Regulated Hierarchical Assembly of Amphiphilic Polyurethanes and Functional Materials	IL-21: Nikhil K. Singha. "Click" Chemistry; A Multi-talented Toolbox in Polymer Science"	IL-25: Satish Patil. Realization of Mott-Wannier Exciton in Organic Semiconductors: An Agnostic Approach	IL-29: Neetu Singh. Rethinking Solutions for Healthcare Technologies
11.45-12.15	IL-18: Raja Shunmugam. Functional Polymers Shows Very Interesting Similarities of Enzymes	IL-22: Tushar Jana. Polymers with Pendant Ferrocenyl Units as Burn Rate Catalysts	IL-26: Debasis Samanta. Immobilized Conjugated Polymers on Surfaces: Photovoltaics to Photocatalysis	IL-30: Vaishali S. Shinde. Thermoresponsive Pluronic based microgels for controlled release of curcumin against breast cancer cell line
12.15-12.45	IL-19: Rabibrata Mukherjee. Evolution and Dynamics of Nano Particle containing ultra thin Polymer films	IL-23: Sampa Saha. Anisotropic Colloidal Surfactants and their Application in Catalysis	IL-27: Asish Pal. Strategies towards precision supramolecular polymers and adaptive biomaterials	IL-31: Kaushik Chatterjee. 3D Printing of Scaffolds for Bone Tissue Regeneration

Day-2, Thursday, 03 November 2022				
Venue: IISER Pune, Main Building				
Time	**Hall - 1 Session-8 Chair: S. G. Srivatsan**	**Hall - 2 Session-9 Chair: NN Maldar**	**Hall - 3 Session-10 Chair: Nirmalya Ballav**	**Hall - 4 Session-11 Chair: Anuya Nisal**
12.45-13.05	IL-20: Swapnil Sonawane. Polyelectrolyte Multilayers for Emissive Europium Films	IL-24: Vikas Gite. Smart self-healing anticorrosive organic coatings based on vegetable oils	IL-28: Smrutirekha Mishra. Dual Emitting Polymer-Carbon dots composites for sensor application	IL-32: Kiran S. Surface functionalized radiopaque microspheres for embolization and localized diagnostic applications
13.05 - 14.30	Lunch, IISER Dining Hall, First Floor (5 minutes walk)			
Time	**Session-12 Chair: HN Gopi**	**Session-13 Chair: Prakash Wadgaonkar**	**Session-14 Chair: Srinivas Hotha**	**Session-15 Chair: Manohar Badiger**
14.30-15.00	IL-33: Priyadarsi De. Combination of Living Cationic and RAFT Polymerizations for Macromolecular Engineering	IL-38: Susanta Banerjee. Sterically Hindered Pyridinyl-Linked Sulfonated Polytriazoles: Synthesis, Characterization and Properties	IL-43: Sayam Sen Gupta. Trafficking of glycopolypeptides and their self-assembled nanostructures: the role of the carbohydrate	IL-48: Anoop Anand. Structural Composites with Interleaved Nanofibers
15.00-15.30	IL-34: Ramaswamy Nagarajan. Utilizing Biobased Byproducts as Feedstock For the Developmemt of Intumescent Flame Retardant Coatings	IL-39: E. Bhoje Gowd. Hierarchical Assemblies of Supramolecular Block Copolymers and Star-Shaped Poly(Lactides)	IL-44: Bimlesh Lochab. Sustainable Polybenzoxazines: Upcoming Class of Phenolic Polymers	IL-49: Amit Dixit. Biobased Epoxy Resins and Recyclable Systems for Composites
15.30-16.00	IL-35: Satyavrata Samavedi. Robust design of electrospun polymeric meshes for controlled and predictable drug release	IL-40: U. Natarajan. Simulations of Polymer-Surfactant Complexes in Aqueous Solution	IL-45: Anilkumar P. R. Biocompatibility evaluation of Bioink for Three Dimenstional Bioprinting of Liver	IL-50: Sravendra Rana. Vitrimers: an approach towards sustainable future
16.00-16.30	IL-36: Leena Nebhani. Porous Functionalized Catalytic Inorganic and Polymer Particles	IL-41: Ashok Kumar Dasmahapatra. Polymer Nanocomposites for Energy Harvesting Applications	IL-46: Syed G. Dastager. Bacterial Nano Cellulose (BNC) as a sustainable technological material	IL-51: Smita Mohanty. Insight of Biopolyester based mulch films in open field: Evaluation of performance characteristics and Microplastics Assessment
16.30-17.00	IL-37: Raj Kumar Roy. A new framework for folding aromatic polyamides into intrachain β-sheet structures and their applications in organo-electronics & catalysis	IL-42: Amit Kumar Jaiswal. 3D Scaffold Systems for tissue engineering applications	IL-47: Titash Mondal. Polymeric Flexible Electronic Sensors for Point of Care Applications	IL-52: Nishant Sinha. Computational Modeling of Polyurethane Foams
17.00-17.30	**Tea Break**			
Time	**Session-16 Chair: Tamanna Thakur**			
17.30-18.30	Early Career Researchers Session Somdeb Jana Tapas Dembsharma Sandeep Sharma Nagnath Patil			
18.30-19.30	**Flash Posters** (Chair: Seena Joseph)			
20.00 Onwards	Dinner at NCL GH			

Day-3, Friday, 04 November 2022	
Venue: CSIR-NCL Pune Auditorium	
	Session-17 **Chair: Sarika B.**
9.00-9.30	PL-4: Sanjay Rastogi. Too Hot to Melt
9.30- 10.00	PL-5: Guruswamy Kumaraswamy. Covalently bonded chains of colloids
10.00-11.00	Panel Discussion-1: Innovation & Entrepreneurship: Moderator: V. Premnath. Panelist: Sachin Dubey, Jayant Khandare, Anuya Nisal, Parul Ganju
11.00-11.30	**TEA**
	Session-18 **Chair: B. L. V. Prasad**
11.30-12.00	PL-6: A. Ajayaghosh. 2-Dimensional Polymers of Ionic Covalent Organic Nanosheets
12.00-12.30	PL-7: Manickam Jayakannan. Tweaking Polymer Topology in Breaching Bacterial Cell Membrane
12.30-14.15	Poster Session-2 & Lunch
	Session-19 **Chair: Ashish Lele**
14.15-15.30	Panel Discussion-2: Building a Career in Industry: A Perspective: Moderator: Raman Ramachandran Panelist: Gopa Kumar Nair, Rahul Shingte, Saptarshi Ray, Anil Gaikwad, Saswati Pujari
15.30-16.15	Popular Lecture -1: Dr. R. A. Mashelkar
16.15-17.00	Popular Lecture -2: Prof. Ajit Ranade
17.00-17.30	Poster Award Distribution & Valedictory Function
17.30-18.30	TEA
18.30-20.00	Cultural Program
20.00 Onwards	Dr. S. Sivaram Felicitation Dinner (NCL GH)

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Dr. Santi Ranjan Palit Endowment Lecture

Developments in Polyether and Recent polycarbonate Synthesis Using Boron-Based Catalysts

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With the exception of poly(propylene oxide) (PPO) and poly(propylene carbonate) (PPC) that can be obtained using the same double metal cyanide catalyst (DMC), other polyethers and polycarbonates generally require specific catalysts, either alkali bases for polyethers and complex organometallic systems for polycarbonates.

Several organocatalysts have been specifically designed over the last twenty years for the polymerization of epoxides in an attempt to ditch metallic systems but they could never be successfully applied to the synthesis of polycarbonates.

In a recent addition we have shown that upon associating alkyl boron to various onium salts not only polyethers but also a whole range of polycarbonates resulting from the copolymerization of epoxides with carbon dioxide (CO_2) can be synthesized with excellent catalytic activity. The role of boron centers is twofold: as a Lewis acid alkyl boron interacts with the anionic growing species, curbs their reactivity, formingan ate complex of moderate reactivity; boron also independently activates epoxides, enhancing their reactivity. As a result PPO could be generated free of any side reactions using such boron-based systems and PPC as well.

The presentation will actually discuss the potential, the activity, the respective advantages and limitations of two families of boron-based systems: the bicomponent family of boron-based systems associates alkyl boron with various onium salts; in the bifunctional family boron centers and anions responsible for the (co)polymerization initiation are included in a same molecule.

Besides epoxides and CO_2, these systems were also found efficient at (co)polymerizing a whole range of oxygenated monomers, such as anhydrides, cyclic esters, isocyanates and aldehydes.

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[5] N. Patil, Y. Gnanou, X. S. Feng, *Macromolecules* **2022**, *55*, 7817.

Santappa Award Lecture

Biodegradable Smart Polymer Nanocomposites as a Sustainable Material for Multifaceted Advanced Applications

N. Karak*[1]

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Sustainability is a requirement for today's society and polymeric materials are not an exception of it. Conventional petroleum-based polymers are mostly non-biodegradable and obtained from non-renewable fixed resources. Thus, it is essential to develop bio-based sustainable biodegradable polymeric products with desired performance to fulfill the demand of an ever-increasing world population and comfort in human life on one hand, and reduction of fossil fuel reserves, global warming, climate change, and stringent environmental rules and regulations on other hand. In this endeavor, the author's group has tried to exploit naturally renewable resources as feedstocks for the development of desired polymers with required biodegradability. Hence, a few industrially important bio-based polymers such as polyurethanes, polyesters, poly(ester-amide)s and epoxies have been developed using different naturally renewable bio-resources. These polymers have been synthesized by using the dictates of Green Chemistry. Recently, modified natural polymers have also been utilized. But, to achieve the desired performance of such bio-based polymers and to address the societal demands of advanced applications, a variety of nanocomposites by incorporation of different types of nanomaterials from zero to two including one-dimensional have been investigated. The developed nanocomposites showed significant improvement of mechanical, thermal, chemical, biological, optical, electrical, catalytic, etc. along with special properties like antimicrobial, antistatic, fluorescent, shape memory, self-expandability, self-healing, self-cleaning, biocompatibility, etc., depending on the special features of the used nanomaterials. A brief overview of all such studies including their applications from active surface coating to smart biomedical including structural materials will be discussed at this event.

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Prof. Kishore Memorial Award Lecture

Trash to Treasure: The Key Role of Vitrimers

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Thermoplastic Polyolefins are lightweight, inexpensive, and durable materials, which can be easily molded into a variety of products that finds use in a broad range of applications. India is ranked 12th among the countries mishandling plastic waste and the total plastic waste generation is about 3.47 MTA according to Central Pollution Control Board of India. Going by global statistics, municipal solid waste (MSW) typically contains more than 70 wt % plastics, amid food scraps, yard trimmings, textiles, paper, and other inorganic waste. This majorly (60%) consists of polyolefins (HDPE, LDPE, LLDPE, and PP) and the remaining fraction being PET, PVC, PS, and other minor polymers.

In India, a large quantity of low-density polyethylene (LDPE) is being consumed in packaging milk. So, the growing volume of post-consumer milk pouches in MSW is creating a serious problem. Hence, recycling of used milk pouches has become very important in order to minimize or avoid their adverse environmental impact. Since milk pouches come under the category of SUP, their collection and recycling may be commercially attractive, assuming their conversion to value-added products. However, it is well established that recycling plastics often result in inferior properties and hence, it is blended with virgin polymer. The most likely reason for this inferior mechanical property is the post-consumer recycling (PCR) that has suffered from degradation during their subsequent reprocessing. The extent of degradation depends on polymer type, number of cycles and the severity of conditions applied during reprocessing operations.

In this context, we have come up with a unique concept of introducing dynamic covalent bonds in PCR LDPE aided through transesterification and other such thermoreversible bonds which results in multiple covalent adaptable networks during recycling or subsequent re-processing. Our Vitrimer-LDPE survived more than 4 cycles of reprocessing and thereby opens new avenues in managing PCR LDPE waste in MSW.

Prof. Kishore Memorial Award Lecture

Insertion Polymerization of Ethylene: Quo Vadis?

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Today we produce about 300 million tons of polymers every year. Among these, polyolefins contribute more than half of the total volume of polymers produced. Most of these polyolefins are produced by a reaction called "Insertion Polymerization" or, more popularly, "Ziegler-Natta Polymerization".[1] Despite the seeming maturity, the insertion polymerization reaction continues to surprise us with growing complexity and is young as ever.

My talk shall take a stock of the remaining challenges in Ziegler-Natta polymerization, briefly discuss current solutions, and reiterate the enormous potential of this seventy-year-old reaction to meet contemporary demand. The first part of my talk will deal with a material called disentangled ultrahigh molecular weight polyethylene (dPE) (which is claimed to be stronger than steel). Controlled reduction of titanium can produce a pseudo-single site heterogeneous catalyst that produces dPE.[2] The second part of my lecture will showcase our endeavor in insertion copolymerization of difunctional olefins with ethylene to prepare functional polyethylene.[3-4] Finally, the talk will reveal how the fundamental understanding developed in our group is then exploited to address real-world industrial challenges.[5]

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Dr. S. Sivaram Endowment Lecture

Supramolecular Polymer Materials

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Supramolecular interactions are omnipresent in Nature and are at the basis of all adaptive and responsive processes in natural systems. Importantly, natural polymer structures based on supramolecular interactions provide a highly sophisticated level of control over the properties of the materials, ranging from information storage and read-out, via self-replication to transport of molecules and materials with high mechanical strength and efficient energy dissipation. Inspired by these natural systems, we aim to develop advanced materials based on the combination of polymer materials with supramolecular interactions which will be discussed.
At first the utilization of thermoresponsive polymers as basis for smart polymeric sensors with a memory function will be discussed.[1] It is demonstrated that thermal phase transitions with large hysteresis (up to 40K) could be obtained based on supramolecular host-guest association, which could be exploited as memory function for the thermal history of the solution.[2] When transferring these host-guest systems to polymeric hydrogels, the supramolecular association of the hydrogel with a tetracationic macrocyclic host was found to induce strong swelling of the hydrogels.[3] Combining this hydrogel with a thermoresponsive polymer that contains a stronger binding electron rich host in solution allows shuttling of the macrocyclic host between the solution and the hydrogel. As such, this multicomponent supramolecular system revealed heating induced swelling of the hydrogel and cooling induced shrinkage.
Secondly, poly(2-isopropenyl-2-oxazoline) (PiPOx) will be presented as broadly applicable building block for making responsive materials. PiPOx is hydrophilic and biocompatible while modification is straightforward through coupling of carboxylic acids to the side-chain 2-oxazoline units. This allows modification of the hydrophilic-hydrophobic balance to make thermoresponsive polymers,[3] but also can be used to introduce side-chain functionalities, such as azobenzenes for sensing or photoresponsive behavior. In addition, the use of difunctional carboxylic acids leads to straightforward preparation of crosslinked hydrogels.[4] The preparation of strong and energy dissipating hydrogels will be discussed based on poly(2-isopropenyl-2-oxazoline) that is crosslinked with either a pillar[5]arene as supramolecular crosslinker or with terpyridine metal complexes.[5]

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Plenary Lecture-1

High performance polymers Sustainability solutions

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Abstract

Solvay Materials comprises Specialty Polymers and Composite Materials businesses that are market leaders providing solutions for sustainable mobility, light weighting and energy efficiency. Broad portfolio of high performance polymers, such as PEEK, PVDF, PES and others, enables key applications addressing Sustainability goals, such as Batteries, e-mobility, renewable energy, hydrogen economy, water purification membranes, connectivity and life solutions.

One example of current research activity is related to PVDC, polymer with exceptionally low permeability to oxygen and water vapor. The retention of barrier properties to oxygen even in humid conditions, and its process ability, explain its success as barrier layer in high performance films for packaging. The recyclability of packaging films is crucial for the reduction of plastic waste and the sustainability of the applications. The different approaches under development shown. Both mechanical and advanced recycling technologies have been investigated to address Circular Economy challenges for high performance films.

Plenary Lecture-2

Macromolecular engineering via polylactide stereocomplexation, Hydrogen Bonding and Dynamic Covalent Bonding

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The heart of material properties lies at the molecular level, so by controlling the molecular structure, one can control the macroscopic properties. The structure (star, comb, cyclic, etc.) of the polymeric materials synthesized in our past and present Laboratories was based on conventional covalent bonds.[1] A few years ago, we started working on architectures based on polylactide (PLA) stereocomplexation (SC), hydrogen bonding (HB) and dynamic covalent bonding (DCB). [2,3,4] In this presentation, we will give the principle of the synthesis of a few simple examples (diblock and triblock copolymers and a 3-arm star) and discuss the methods of characterizations (NMR, SEC, XRD, DSC, FTIR) and the beneficial properties (self-healing, recyclability, thermal stability) coming from the non-covalent (conventional)-based macromolecular architectures. We think that this study opens avenues towards a variety of well-defined non-covalent bond based complex macromolecular architectures.

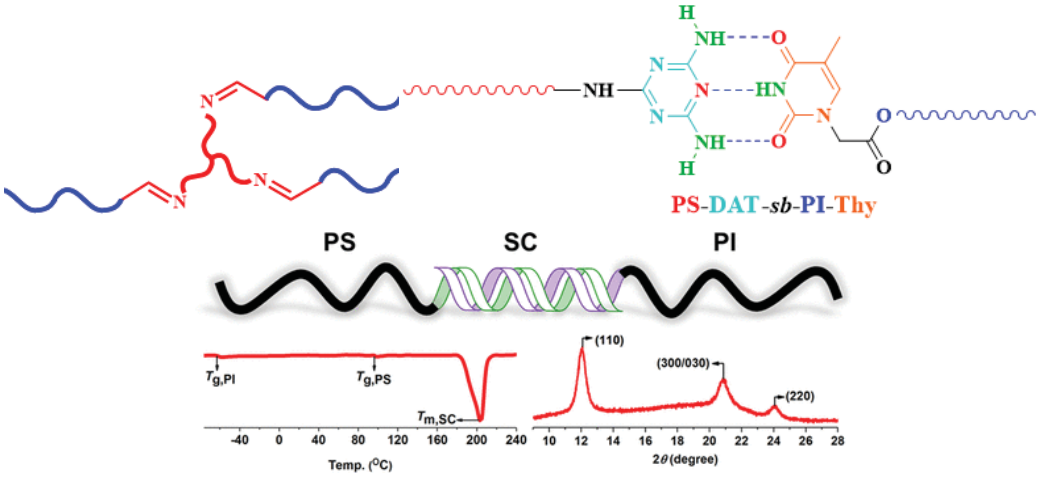

Figure. *Schematic presentation of a 3-arm star PI (DCB), PS-b-PI (HB) diblock copolymer and PS-PLA-PI triblock terpolymer (SC) along with a DSC thermogram and XRD spectrum.*

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Plenary Lecture-3

Advances in polymer and composite materials towards Atma Nirbhar Bharat: One perspective

Dr. Ajit Sapre
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Abstract

Advances in polymer and composite materials will significantly contribute towards sustainable and resilient socio-economic growth in India. High performance materials will continue to grow in critical sectors such as energy, transportation, agriculture, infrastructure, textile, healthcare, defense, etc., to support our ambitious economic growth targets. The present talk will give an overview of Reliance's recent technology and product & applications developments for novel engineering polymeric materials (Disentangled Polyethylene and Polypropylene), functionalized SBR and composites, self-healing elastomers (specialty Halo butyl Rubber and PBR), Polyolefin Elastomers (POE) , CPVC, Eco-smart plasticized PVC, bio-composites PVC, interlocking Sulfur polymers, Super Absorbent Polymers and polymeric materials for advanced batteries and fuel cells. Surface functionalized polyester for enhancing shelf life of fruits and vegetable will also be highlighted.

To support sustainability, Reliance's efforts in bio compostable and biodegradable plastics (PBAT & PHA's) will also be discussed. Circular economy of plastics is becoming more critical to address plastics pollution challenges, requiring advance technologies for effective recycling and upcycling of plastic waste to provide end of life solutions critical for sustainability. We have also developed, novel catalyst and reactor technology to convert mixed plastic waste to stable hydrocarbon oil that can be converted to various plastics again, closing the loop. Some examples of novel sustainable unique materials such as Spider silk, Nano-cellulose, etc., produced with genetically modified organisms will also be illustrated. Reliance Industries R&D developments to commercialize novel high-performance disruptive materials we believe will contribute to Atma Nirbhar Bharat.

Plenary Lecture-4 Sanjay Rastogi

Too Hot to Melt

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Secondary interactions have profound effect in packing of small as well as large molecules. The prime examples range from the prevalence of hydrogen bonding in water and the weak van der Waals interactions in a range of synthetic as well as bio-polymers. The hydrogen bonding in water make the material unique in several ways, including the complexity and polymorphism realized in the pressure-temperature phase diagram of water. Here we will address a set of polymers that alike water shows inversion in melting temperature (inversion in Clausius-Clapeyron equation) and solid state amorphization below the glass transition temperature. The observations in poly-4-methyl pentene-1 extends beyond the two observed factors in water, as the re-entrant phase is observed in the one-component system leading to unique scenario of crystal having higher entropy than the amorphous phase within a specific region of the *p*-T phase diagram. This observation invokes Kauzmann Paradox and recalls theoretical predictions made by Tammann in 1903 over the re-entrant phases. These fundamental findings have technological implications where on crystallization expansion in volume is realized against the normally anticipated contraction, retrospectively overcoming the challenges of in-built stress in the material during processing and providing a route to make materials that can address the challenges of dimension instability with time. Fragility in the melt state that deviates from the WLF equation, in the polymer, will be also addressed.

Plenary Lecture-5

Covalently bonded chains of colloids

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Abstract: There has been great interest in studying assemblies of colloids, as analogues of molecular systems. Micron-sized colloids are Brownian particles and can be readily visualized using optical microscopy at visual wavelengths. Advances in particle synthesis and microscopic techniques (especially confocal microscopy) have made it possible to track individual particles in assemblies, something that is nearly impossible when studying molecular systems. We have prepared string-like assemblies, where colloidal particles are bonded together through a thin crosslinked polymer mesh that surrounds each particle. Controlling the extent of crosslinking of the polymer mesh affords control over the rigidity of the colloidal chain. It is possible to decorate the colloidal chain with catalyst nanoparticles, so that the colloidal chain is rendered "active" in a reactant bath. We show that such chains exhibit enhanced center of mass diffusion, that is controlled by the chain rigidity. In another set of experiments, we use a thermoresponsive polymer mesh to control the solvophilicity of the colloidal chain. Here, we demonstrate the reversible formation of helical structures by the chains as temperature is varied.

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Plenary Lecture-6

2-Dimensional Polymers of Ionic Covalent Organic Nanosheets

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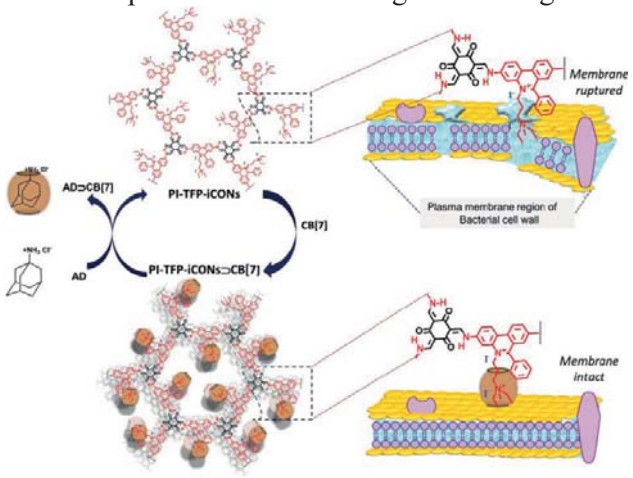
2-Dimensional polymers of organic molecules are rare when compared to the 1-dimentional chains of covalent polymers. Self-assembly of certain functional molecules are known to form 2-D polymeric sheets.[1] Other examples of 2-D polymers are covalent organic frameworks (COFs) and coordination polymeric gels.[2,3] However, poor control on the exfoliation of COFs remains a disadvantage for their application as 2-D materials. In this context, ionic covalent organic nanosheets (iCONs) are a unique class of polymeric materials having the ability to self-exfoliate to form ionic nanosheets. Another challenge is the reversible control of the available surface charges on COFs. We have developed strategies for the exfoliation, re-stacking, surface-charge control and application of ionic COFs. An example is the propidium iodide-based ionic COFs, **PI-TFP**.[4,5] The surface charge on **PI-TFP** facilitates its initial self-exfoliation. However, interaction with DNA or CB[7] resulted in re-stacking with concomitant changes in fluorescence and zeta potential. Interaction is specific with double stranded DNA. Addition of 1-adamantylamine hydrochloride (AD) to the CB[7] complexed **PI-TFP**, facilitates decomplexation of **PI-TFP** from CB[7], resulting in exfoliation and an increase in zeta potential. Such control on the exfoliation, re-stacking, and the associated regulation of the surface charge in **PI-TFP** was exploited for controlling bacterial growth. Details of these studies will be presented.



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Plenary Lecture-7

Tweaking Polymer Topology in Breaching Bacterial Cell Membrane

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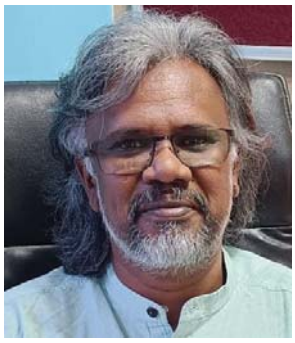

Synthetic polymers are emerging as important integral part of biomedical research for the enrichment of the drug administration to tumor specific region in cancer treatment and in the handling of infectious diseases caused by bacteria and viruses. Recently, our research group has put several efforts in the structural engineering of biodegradable polycaprolactone based cationic macromolecular architectures as a membrane disrupting antimicrobial vectors.[1] Fluorescent probes are tagged and their self-assembled tiny luminescent nanoparticles are employed to gain in-depth understanding on the bacterial membrane breaching mechanism. Confocal image-based FRET probe technology is developed for direct visualization and quantification of real-time antimicrobial action.[2] The bacterial-membrane reinforced FRET probe development in the group has significant long-term impact to unlock biological pathways for both fundamental understanding as well as leading new therapeutic formulation. The role of polymer topology control on the membrane disruption process is currently investigated by carefully designed 1D rod-shape and 3D star-shaped diblock core-shell polymers. They were employed as on-demand delivery vehicle for clinical broad-spectrum bacteriostatic macrolide antibiotics in order to maximize the impact via synergistic combination therapy. The development of aforementioned polytherapy treatment builds the foundation for substantial enhancement of drug efficacy along with reduced drug resistance. The presentation will be focussed to highlight our contribution in this field and also emphasize the need for new polymer technologies in handling the healthcare at large.

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List of Invited Lectures

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Session 4	
IL-01	**Stimuli-responsive Functionalized Polypeptides and Aggregates for Various Applications** **Tarun K. Mandal** *School of Chemical Sciences, Indian Association for the Cultivation of Science, Jadavpur, Kolkata 700 032, India* *E-mail: psutkm@iacs.res.in*
IL-02	**Molecular Programming at the Higher Hierarchical Levels of Supramolecular Self-Assembly** **Subi J. George** *New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)* Email: george@jncasr.ac.in
IL-03	**Crystallization-Driven Controlled Two-Dimensional Assemblies of Chromophore-Appended Semicrystalline Polymers** **Anindita Das** *School of Applied and Interdisciplinary Sciences, Indian Association for the Cultivation of Science, 2A and 2B raja S. C. Mullick, Road, Jadavpur, Kolkata 700032* *E-mail: psuad2@iacs.res.in*
IL-04	**Carboxylates as Dynamic Linkages for Development of Dynamic Covalent Organogels with Thermoresponsive Behavior** **U. Ojha*, Suman Debnath, C. Upadhayaya, S. Mandal** *Rajiv Gandhi Institute of Petroleum Technology, Jais, Amethi* **Corresponding author's E-mail: uojha@rgipt.ac.in*
Session 5	
IL-05	**Polymer Grafted Rubber Nanoparticles in a Polymer Matrix: Viscoelasticity and Sol-gel Transition** **S. K. Sukumaran*, K. Ishizuka, K. Hatano, Y. Aoki, M. Sugimoto** *Yamagata University, Yonezawa, Japan* **Corresponding author's E-mail: sa.k.sukumaran@gmail.com*
IL-06	**Conformation and Rheology of Ring Polymers in Dilute Solutions** **Parbati Biswas** *Dept. of Chemistry, University of Delhi, Delhi-110007* *E-mail: pbiswas@chemistry.du.ac.in*
IL-07	**DNA-decorated soft nanostructures** **Reji Varghese** *School of Chemistry* *Indian Institute of Sxcience Education and Research Thiruvananthapuram* *E-mail: reji@iisertvm.ac.in*
IL-08	**Role of Computational Material Science in Sustainability: An Industrial Perspective** **Sharan Shetty** *Shell Technology Centre-Bangalore* *E-mail:* Sharankumar.shetty@shell.com
Session 6	

IL-09	**Optoelectronic Properties of Polymer- Peptide Conjugates** **Soumyajit Hazra[a,b], Sanjoy Mondal[a], Arindam Banerjee[b] and Arun K. Nandi[a*]** *[a)]Polymer Science Unit, School of Materials Science,. Jadavpur, Kolkata-700 032* *[b)] school of biological Science Indian Association for the Cultivation of Sciences, Jadavpur, Kolkata-700 032* **Corresponding author's E-mail: psuakn@iacs.res.in*
IL-10	**Metal-nanoparticle Embedded 1D Polyaniline Nanotubes: Charge Transport and Resistive Switching Behaviours** **Sudip Malik[1]*and Mintu Mondal[2]** *[1]School of Applied and Interdisciplinary Sciences, and [2]School of Physical Sciences, Indian Association for the Cultivation of Science, 2A and 2B Raja S. C. Mullick Road, Jadavpur, Kolkata – 700032, E-mail:psusm2@iacs.res.in*
IL-11	**Sustainable Polymers in Energy Sectors** Pralay Maiti, * Shivam Tiwari, Om Prakash, Ravi Prakash and Sunil Kumar *School of Materials Science and Technology, Indian Institute of Technology (BHU), Varanasi 221005* **Email*: pmaiti.mst@itbhu.ac.in
IL-12	To be announced
	Session 7
IL-13	**Nanostructured Polysaccharides Materials for Water Purification** **Sabu Thomas** *Vice Chancellor, Mahatma Gandhi University, Priyadarshini Hills P. O. Kottayam, Kerala, India -686 560,* *sabuthomas@mgu.ac.in, www.sabuthomas.com, www.iiucnn.mgu.ac.in*
IL-14	**Versatile Nanocellulose-derived Systems for Functional Applications** **Saju Pillai*[1, 2]** *[1] CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram, 695 019, India* *[2] Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201 002, India* *E-mail: pillai_saju@niist.res.in*
IL-15	**Biodegradable Products Development using Home Grown Technologies** **Professor Vimal Katiyar** Dean, Research & Development & Professor, Department of Chemical Engineering Indian Institute of Technology Guwahati, Guwahati, Pin-781039, Assam, India *E-mail: vkatiyar@iitg.ac.in*
IL-16	**Sustainable Valorisation of Waste for the Affordable Production of Bio-Based Packaging (SWAP)** **Professor (Dr) S. T. MHASKE, *FMASc*** *DEAN, Off-Campuses, Professor of Polymer Technology & HEAD* *Department of Polymer & Surface Engineering* *INSTITUTE OF CHEMICAL TECHNOLOGY (ICT), Mumbai* *E mail: st.mhaske@ictmumbai.edu.in*
	Session 8
IL-17	**Chain-folding Regulated Hierarchical Assembly of Amphiphilic Polyurethanes and Functional Materials** **Suhrit Ghosh**

	School of Applied and Interdisciplinary Science, *Indian Association for the Cultivation of Science, Kolkata, India-700032* *Email: psusg2@iacs.res.in*
IL18	**Functional Polymers Shows Very Interesting Similarities of Enzymes** **N. Das and R. Shunmugam*** *Indian Institute of Science Education and Research Kolkata* **E-mail: sraja@iiserkol.ac.in*
IL19	**Evolution and Dynamics of Nano Particle containing ultra thin Polymer films** **Rabibrata Mukherjee** *Professor, Department of Chemical Engineering* *Chairperson, DST- Sophisticated Analytical & Technical Help Institute* *IIT Kharagpur, Pin 721302, West Bengal, India* *e-mail: rabibrata@gmail.com; rabibrata@che.iitkgp.ac.in;*
IL20	**Polyelectrolyte Multilayers for Emissive Europium Films** **Swapnil L. Sonawane*[1,2] Rachel L. Abbett[2] Rodney A. Tigaa[3] J. B. Sclenoff*[2]** *[1]Department of Chemistry, JET's, Z. B. Patil College, Dhule-424002, MS, INDIA* *[2] Department of Chem.& Biochem., Florida State University, Tallahassee, FL 32306, U.S.A* *[3]Department of Phys.& Environmental Sci., Concord University, Athens, WV 24712, U.S.A* **Corresponding author's E-mail: sonawanesl87@gmail.com*
Session 9	
IL21	**"Click" Chemistry; A Multi-talented Toolbox in Polymer Science"** **Nikhil K. Singha, FRSC** *Professor Rubber Technology Centre* *Associate Faculty; School of Nano Science & Technology* *Indian Institute of Technology, Kharagpur 721302 India* *E-mail: nks@rtc.iitkgp.ac.in; nks8888@yahoo.com*
IL22	**Polymers with Pendant Ferrocenyl Units as Burn Rate Catalysts** **Tushar Jana** *School of Chemistry, University of Hyderabad, Hyderabad, India* *E-mail: tusharjana@uohyd.ac.in , tjscuoh@gmail.com*
IL23	**Anisotropic Colloidal Surfactants and their Application in Catalysis** **Dr. Sampa Saha** *Department of Material Science and Engineering (DMSE),IIT Delhi ,India* *email: ssaha@mse.iitd.ac.in*
IL24	**Smart self-healing anticorrosive organic coatings based on vegetable oils** **V. V. Gite** *Department of Polymer Chemistry, School of Chemical Sciences,* *Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, India* *E-mail: vikasgite123@gmail.com*
Session 10	
IL25	**Realization of Mott-Wannier Exciton in Organic Semiconductors:**

	An Agnostic Approach **Satish Patil** *Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore* *E-mail: spatil@iisc.ac.in*
IL26	**Immobilized Conjugated Polymers on Surfaces: Photovoltaics to Photocatalysis** **Debasis Samanta** *Polymer Science and Technology Department,* *CSIR-Central Leather Research Institute, Adyar, Chennai-600020, India* *E-mail: debasis@clri.res.in*
IL27	**Strategies towards precision supramolecular polymers and adaptive biomaterials** **Dr. Asish Pal**, *Institute of Nano Science and Technology, Mohali, Punjab* *E-mail: apal@inst.ac.in*
IL28	**Dual Emitting Polymer-Carbon dots composites for sensor application** **Smrutirekha Mishra**, Department of Materials and Polymer Engineering, Institute of Chemical Technology-Indian Oil Odisha Campus Bhubaneswar, *E-mail: s.mishra@iocb.ictmumbai.edu.in;*
	Session 11
IL29	**Rethinking Solutions for Healthcare Technologies** **Neetu Singh** *Center for Biomedical Engineering,* *Indian Institute of Technology, Hauz Khas, New Delhi 110016* *sneetu@cbme.iitd.ac.in*
IL30	**Thermoresponsive Pluronic based microgels for controlled release of curcumin against breast cancer cell line** **Anuja S Kulkarni, and Vaishali S Shinde*** *Department of Chemistry, Savitribai Phule Pune University, Pune, India* *vaishali.shinde@unipune.ac.in*
IL31	**3D Printing of Scaffolds for Bone Tissue Regeneration** **Kaushik Chatterje** *Indian Institute of Science, Bangalore, India* *E-mail:* kchatterjee@iisc.ac.in
IL32	**Surface functionalized radiopaque microspheres for embolization and localized diagnostic applications.** **S. Kiran*, and Sonali. S. Naik** *CSIR-National Chemical Laboratory, Pune, India* *E-mail: s.kiran@ncl.res.in*
	Session 12
IL33	**Combination of Living Cationic and RAFT Polymerizations for Macromolecular Engineering** **Priyadarsi De** *Indian Institute of Science Education and Research Kolkata,* *Mohanpur - 741246, Nadia, West Bengal, India.*

	E-mail: p_de@iiserkol.ac.in
IL34	**Utilizing Biobased Byproducts as Feedstock For the Developmemt of Intumescent Flame Retardant Coatings** **Ramaswamy Nagarajan,[1]* Sourabh Kulkarni[2], Zhiyu Xia[2], Jayant Kumar[2] and Ravi Mosurkal[3]** *[1]The HEROES Initiative, Department of Plastics Engineering, University of Massachusetts Lowell, Lowell, MA, USA* *[2] Center for Advanced Materials, University of Massachusetts Lowell, Lowell, MA 01854, USA* *[3] Protection Materials Division, U.S. Army DEVCOM Soldier Center, Natick, MA 01760, USA* **Corresponding author's E-mail: Ram@uml.edu*
IL35	**Robust design of electrospun polymeric meshes for controlled and predictable drug release** **Nikhita Joy[1], Satyavrata Samavedi *** *Department of Chemical Engineering, Indian Institute of Technology, Hyderabad, India* **Corresponding author's E-mail: samavedi@che.iith.ac.in*
IL36	**Porous Functionalized Catalytic Inorganic and Polymer Particles** **Leena Nebhani** *Department of Materials Science and Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016* *E-mail: Leena.Nebhani@mse.iitd.ac.in*
IL37	**A new framework for folding aromatic polyamides into intrachain β-sheet structures and their applications in organo-electronics and catalysis** **Subhendu Samanta and Raj Kumar Roy*** *Department of Chemical Sciences,* *Indian Institute of Science Education and Research Mohali* *Email: raj@iisermohali.ac.in*
	Session 13
IL38	**Sterically Hindered Pyridinyl-Linked Sulfonated Polytriazoles: Synthesis, Characterization and Properties** **Sambit Roy, Susanta Banerjee*** *Materials Science Centre,* *Indian Institute of Technology Kharagpur, Kharagpur 721302, India* *E-mail: susanta@matsc.iitkgp.ac.in*
IL39	**Hierarchical Assemblies of Supramolecular Block Copolymers and Star-Shaped Poly(Lactides)** **E. Bhoje Gowd** *Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum 695 019, Kerala, India* *E-mail: bhojegowd@niist.res.in*
IL40	**Simulations of Polymer-Surfactant Complexes in Aqueous Solution** **L. Kunche , U. Natarajan,*** *Indian Institute of Technology Madras, Chennai, India* *E-mail: unatarajan@iitm.ac.in*
IL41	**Polymer Nanocomposites for Energy Harvesting Applications** **Ashok Kumar Dasmahapatra**

	Department of Chemial Engineering, and Centre for Nanotechnology, *Indian Institute of Technology Guwahati, Guwahati, India* *E-mail: akdm@iitg.ac.in*
IL42	**3D SCAFFOLD SYSTEMS FOR TISSUE ENGINEERING APPLICATIONS** **Amit Kumar Jaiswal,** *Centre for Biomaterials Cellular and Molecular Theranostics (CBCMT)* *Vellore Institute of Technology (VIT) Vellore, Tamilnadu, 632014* *E mail: amitj@vit.ac.in*
	Session 14
IL43	**Trafficking of glycopolypeptides and their self-assembled nanostructures: the role of the carbohydrate** **Basudeb Mondal,[1] Abinash Padhy,[2] and Sayam Sen Gupta[1]*** *[1]Depratment of Chemical Sciences,* *Indian Institute of Science Education and Research Kolkata, Mohanpur 721426* *E mail: sayam.sengupta@iiserkol.ac.in*
IL44	**Sustainable Polybenzoxazines: Upcoming Class of Phenolic Polymers** **B. Lochab** *Materials Chemistry Laboratory, Department of Chemistry, School of Natural Sciences,* *Shiv Nadar University, Gautam Buddha Nagar, Uttar Pradesh 201314, India* *E-mail: bimlesh.lochab@snu.edu.in*
IL45	**Biocompatibility evaluation of Bioink for Three Dimenstional Bioprinting of Liver** **Anilkumar P R** ***Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum*** *Email:anilkumarpr@sctinst.ac.in*
IL46	**Bacterial Nano Cellulose (BNC) as a sustainable technological material** **Syed G Dastager** *[1]NCIM Resource Center, Biochemical Sciences Division* *[2] CSIR-National Chemical Laboratory, Pashan Road Pune-411008, MH, India* *E-mail: sg.dastager@ncl.res.*
IL47	**Polymeric Flexible Electronic Sensors for Point of Care Applications** **Titash Mondal** *Functional Polymer and Elastomer Composite Laboratory, Rubber Technology Centre, IIT Kharagpur, India 721302* *E-mail:* titash@rtc.iitkgp.ac.in
	Session 15
IL48	**Structural Composites with Interleaved Nanofibers** **Anoop Anand** Composites Research Center, Research and Development Establishment (Engineers) - DRDO, Alandi Road, Pune, India E-mail: aanand.rde@gov.in
IL49	**Biobased Epoxy Resins and Recyclable Systems for Composites** **A. Dixit, S.Kosinski and T.Naiyawat** Aditya Birla Chemicals (Thailand) Ltd. (Advanced Materials), Rayong,Thailand) E-mail: amit.dixit@adityabirla.com, szymon.kosinski@adityabirl.com,

	thipa.naiyawat@adityabirla.com
IL50	**Vitrimers: an approach towards sustainable future** **S. Rana,* P. Singh, H. Sharma, V. Bijalwan** *University of Petroleum and Energy Studies (UPES), Energy Acres, Bidholi, Dehradun* *E-mail:* srana@ddn.upes.ac.in
IL51	**Insight of Biopolyester based mulch films in open field: Evaluation of performance characteristics and Microplastics Assessment** **Manmath Parida, and Smita Mohanty*** *School for Advanced Research in Polymers (SARP) - Laboratory for Advanced Research in Polymeric Materials (LARPM), Central Institute of Petrochemicals Engineering and Technology (CIPET), B-25, CNI Complex, Patia, Bhubaneswar, Odisha, E mail: drsmitamohanty@gmail.com*
IL52	**Computational Modeling of Polyurethane Foams** **Nishant Sinha[1], Vadhana Varadrajan[1]** *[1]Shell Technology Center Bangalore, India* **Corresponding author's E-mail: Nishant.sinha@shell.com*
Session 16	
	Early Career Researchers Presentation
	Flash Posters
Session 17	
	Panel Discussion-1: Innovation & Entrepreneurship
Session 18	
	Panel discussion-2: Industry Perspectives
Session 19	
	Popular Lecture -1 (Dr R A Mashelkar)
	Popular Lecture -2 (Prof Ajit Ranade, Agarkar Institute)

List of Poster Presentations Under All Themes

Abstract No.	Poster Presentations Under the Theme Advanced and Speciality Polymer Synthesis.
A1	**Effective Prevention of Insulin Fibrillation by Polyisobutylene-Based Glycopolymers** **A. Dey,1 U. Haldar,2 T. Rajasekhar,2 P. Ghosh,1 R. Faust,2 and P. De*1** *1Indian Institute of Science Education and Research Kolkata, Nadia, West Bengal, India.* *2University of Massachusetts Lowell, Massachusetts, United States.* **Corresponding author's E-mail: p_de@iiserkol.ac.in*
A2	**Synthesis of pendent compartmental ligand derived from polymethacrylate of 3-Formylsalicylic acid Schiff base and its application studies** **A. Dhivya,1 T. Kaliyappan1 and S. A. Dhivya*1** *1Puducherry Technological University, Town, Puducherry-605 014* **Corresponding author's E-mail: dhivyaarumugam9@pec.edu*
A3	**Surface functionalization of up conversion nanoparticles with polymers using PET-RAFT polymerization** **Tina Joshi1*, Leena Nebhani1** *1 Department of Materials Science and Engineering, Indian Institute of Technology Delhi, New Delhi, India* **Corresponding author's E-mail: : tina.joshi2392@gmail.com*
A4	**Cysteine-Based Cationic Polypeptide: Synthesis, Stimuli-responsiveness and Its Binding with DNA** **M. Anas,1 P. Dinda,1 M. Kar1 and T. K. Mandal*1** *1School of Chemical Sciences, Indian Association for the Cultivation of Science, Kolkata - 700032, India* **Corresponding author's E-mail: psutkm@iacs.res.in*
A5	**Lysine-Derived RAFT Polymers with Coexistent UCST and LCST and its Antifouling Behavior** **P. Dinda,1 M. Anas1, P. Banerjee1 and T. K. Mandal*1** *1 School of Chemical Sciences, Indian Association for the Cultivation of Science, Jadavpur, Kolkata 700032, India* **Corresponding author's E-mail: psutkm@iacs.res.in*
A6	**Synthesis, Characterization and Electro-conducting Study of Isomeric Polythiophene** **Devendra Kumar, Rudramani Tiwari, Dipendra Kumar Verma, Shashikant Yadav, Pubali Adhikary, S. Krishnamoorthi*** *Department of Chemistry, Center of Advanced Study, Institute of Science, Banaras Hindu University, Varanasi-221005, India* ** Corresponding Author's Email: dr.skmoorthi@gmail.com*
A7	**Advanced Reprocessable thermosets derived from polybenzoxazines** **Priyanshi Goel1* and Leena Nebhani1** *1Department of Material Science and Engineering, Indian Institute of Technology, New Delhi, India* **Corresponding author's E-mail:priyanshigoel98@gmail.com*
A8	**Alternating "Bitter-Sweet" Macromolecular Multimotive Nano-architectures** **S. Sahoo, and P. De*** *Indian Institute of Science Education and Research Kolkata, Nadia, West Bengal, India* **Corresponding author's E-mail: p_de@iiserkol.ac.in*
A9	**Synthesis and Characterization of high molecular weight triblock copolymers via ATRP: PDMS-*b*-PS-*b*-PDMS** **B. Mistry, C. N. Murthy*** **Macromolecular Materials Laboratory, Applied Chemistry Department, Faculty of Technology and Engineering, The M. S. University of Baroda, Vadodara, Gujarat, India, 390001.* *Corresponding author's E-mail: chivukula_mn@yahoo.com*

A10	**Self-assembly of visible light-responsive linear dendritic block copolymers** **Nitin B. Basutkar,1, 2 S. G. Surapaneni 1, 2 and Ashootosh V. Ambade*1, 2** *1 Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune-411008, India.* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad – 201002, India.* **Corresponding author's E-mail: av.ambade@ncl.res.in*
A11	**Dual reactive crosslinked coatings** **Vidyalakshmi Damodara and S Ramakrishnan*** *Department of Inorganic and Physical Chemistry,* *Indian Institute of Science, Bangalore 560012 INDIA* **Corresponding author's E-mail:*
A12	**Photo and pH dual stimuli-responsive block copolymer assemblies for drug delivery application** **Shankarrao V. Avhad,1,2 Shakeb N. Choudhari 1 and Ashootosh V. Ambade*1,2** *1 Polymer Science and Engineering Division, CSIR-National Chemical Laboratory,*Pune-*411008,*India *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad – 201002, India,* **Corresponding author's E-mail: av.ambade@ncl.res.in.*
A13	**Biodegradable Photocrosslinkable PLLA Resin Formulations for Additive Manufacturing.** **Shibam Pal1, 2 and Asha SK 1, 2*** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory,* *Dr. Homi Bhabha Road, Pashan, Pune-411008, India.* *2Academy of Scientific and Innovative Research, Sector 19, Kamla Nehru Nagar, Ghaziabad, 201002 Uttar Pradesh, India* **Corresponding author's E-mail: sk.asha@ncl.res.in*
A14	**Polymeric Micelle Derived from Modified Alginate and N-Boc-Glycine via RAFT Polymerization for pH Triggered Release of Hydrophobic Drug** **K. Manna1 and S. Pal*1** *1Department of Chemistry and Chemical Biology, IIT(ISM) Dhanbad, Dhanbad, India* **Corresponding author's E-mail: sagarpal@iitism.ac.in*
A15	**Origin of phase-segregated superstructure owing to *cis/trans* isomerization of polypeptide-based hybrid di block-copolymers** **A. S. Bisht, and R. K. Roy*** *Department of Chemical Sciences, IISER Mohali, 140306, Panjab, India* **Corresponding author's E-mail: raj@iisermohali.ac.in*
A16	**Formulation of benchmark photopolymerizable resin from commercially available (meth)acrylate monomers for 3D printed objects with enhanced mechanical properties.** **Pooja B. Fulare,1,2 and S. K. Asha *1,2** *1 CSIR-National Chemical Laboratory, Pune 411008, India* *2 Academy of Scientific and Innovative Research Sector,19, Kamla Nehru Nagar, Ghaziabad-201002* **Corresponding author's E-mail: sk.asha@ncl.res.in*
A17	**Precision Synthesis of Small Molecule-based Supramolecular Graft Copolymer** **A. Das, S. Kalita, V. B. Bankar, A. Sarkar, S. S. Agasti and S. J. George*** *New Chemistry Unit (NCU) and School of Advanced Materials (SAMat), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore-560064, India* **Corresponding author's E-mail: george@jncasr.ac.in*
A18	**Functional Covalent Adaptable Organogels Based on Reversible β-Keto Anchimerically Assisted Carboxylate Linkage** **C. Upadhyay,1 and U. Ojha*1** *1Department of Chemistry, Rajiv Gandhi Institute of Petroleum Technology (An Institution of National Importance), Bahadurpur, Harbanshganj, Jais, 229304, India* **Corresponding author's E-mail: uojha@rgipt.ac.in*
A19	**Amphiphilic Hydrogel Supported Catalysis** **Arun Kumar Gayen, Suresh Kumar Perala and S Ramakrishnan*** *Department of Inorganic and Physical Chemistry,* *Indian Institute of Science, Bangalore 560012 INDIA*

A20	**Probing Chain Collapse in Periodically Grafted Amphiphilic Polymers** **Harshita and S Ramakrishnan*** *Department of Inorganic and Physical Chemistry,* *Indian Institute of Science, Bangalore 560012 INDIA*
A21	**Vat Dye Congo Red Based Conjugated Donor − Acceptor Polyimide as Sensitizer for Dye-Sensitized Solar Cells** **Km Parwati and S Krishnamoorthi*** *Department of Chemistry, Centre of Advanced Studies, Institute of Science, Banaras Hindu University, Varanasi 221005, India* **Corresponding author's E-mail: dr.skmoorthi@gmail.com*
A22	**Combination of Living Cationic and RAFT Polymerizations for Macromolecular Engineering** **Priyadarsi De*1** *1Indian Institute of Science Education and Research Kolkata, Mohanpur - 741246, Nadia, West Bengal, India.* **Corresponding author's E-mail: p_de@iiserkol.ac.in*
A23	**Design, Synthesis and evaluation of novel polyamide holding coumarin moiety** **1Nikita Mishra,2Dr. Dilip Vasava,** *1,2Department of Chemistry, School of Science, Gujarat University, Ahmedabad, Gujarat-380009, India.* **Corresponding author's E-mail: neeki_mishra@yahoo.com*
A24	**Preparation, characterization and properties of carboxyl graphene reinforced melamine-based polyamide nanocomposites** **Himanshu V Madhad, Dilip V Vasava*** *Chemistry Department, School of Sciences, Gujarat University, Navrangpura, Ahmedabad, Gujarat-380009, India.* **Corresponding author's E-mail: dilipvasava20@gmail.com*
A25	**Resistive sensing stimuli responsive lanthanide-based polymeric hydrogels with tunable luminescence and fast self-recovery.** **Prachishree Panda1 | Rajat K. Das1*** *1Materials Science Centre, Indian Institute of Technology, Kharagpur* **Corresponding author's E-mail:* rajat@matsc.iitkgp.ac.in
A26	**Dual dynamic reversible bond derived self-healable waterborne polyurethane** **Samiran Morang1 and Niranjan Karak, *1** *1Advanced Polymer and Nanomaterial Laboratory (APNL), Department of Chemical Sciences, Tezpur University, Napaam, 784028, Tezpur, Assam, India.* **Corresponding author, E-mail: karakniranjan@gmail.com*
A27	**Visible Light Responsive Self-Healable Composites Based on Supramolecular Chemistry** **Shrabana Sarkar, Nikhil K. Singha*** *Rubber Technology Centre, Indian Institute of Technology Kharagpur* *Kharagpur, West Bengal, India.* **Corresponding author's E-mail: nks@rtc.iitkgp.ac.in*
A28	**Functionalized polyurethane composite gel electrolyte with cosensitized photoanode for higher solar cell efficiency using a passivation Layer** **Ravi Prakash1, Ishwar Chandra Maurya2, Pankaj Srivastava2, Sourov Mondal2, Biswajit Ray2, Pralay Maiti1*** *1School of Materials Science and Technology, Indian Institute of Technology (BHU), Varanasi-221005, India* *2Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi-221005, India* **Corresponding author's E-mail:* pmaiti.mst@itbhu.ac.in
A29	**Introduction of Ferrocene as a Facilitator for the Construction of Supramolecular Polymer** **M. U. Lone,1 Nihar Sahu,2 R. K. Roy 1 and B. Adhikari* 2** *1Department of Chemical Sciences Indian Institute of Science Education and Research (IISER) Mohali, Knowledge City, Sector 81, S. A. S. Nagar, Manauli PO, Punjab 140306, India* *2Department of Chemistry National Institute of Technology Rourkela Rourkela, Odisha 769008, India* **Corresponding author's E-mail: adhikarib@nitrkl.ac.in*

Poster Presentations Under the Theme Conductive Polymers and Energy Materials	
B1	**Single ion-conducting pseudo-solid polymeric electrolyte material for sodium ion-based energy storage devices** **Rudramani Tiwari,† Dipendra Kumar Verma,† Devendra Kumar,† Shashikant Yadav,† Pubali Adhikary,† S. Krishnamoorthi†*** *† Department of Chemistry, Centre of Advanced Studies, Institute of Science, Banaras Hindu University, Varanasi 221005, India.* ** Corresponding Author: Prof. S. Krishnamoorthi, (E-mail: dr.skmoorthi@gmail.com)*
B2	**Flexible, Carbon Black Incorporated Carbon Nanofiber, polydimethylsiloxane composite for electromagnetic Interference Shielding** **Govind Kumar Sharma, and Nirmala Rachel James*** *Indian Institute of Space Science and Technology, Thiruvanthanumpuram, India*Corresponding author's E-mail: nirmala@iist.ac.in*
B3	**High Capacitive Benzotristriazine Networks from Aliphatic Monomers** **S. Vijayakumar,1,4 P. M. Anjana3, R. B. Rakhi2,4, Sreejith Shankar1,4* and Ayyappanpillai Ajayaghosh1,4*** *1Photosciences and Photonics Section, Chemical Sciences and Technology Division,* *2Material Sciences and Technology Division,* *CSIR-National Institute of Interdisciplinary Science and Technology (CSIR-NIIST), Thiruvananthapuram, Kerala - 695019, India.* *3Department of Physics, University of Kerala, Kariavattom, Thiruvananthapuram, Kerala - 695581, India.* *4Academy of Scientific and Innovative Research (AcSIR), CSIR-Human Resource Development Centre, Ghaziabad - 201002, India.* *Email: sreejith.shan@gmail.com , ajayaghosh@niist.res.in*
B4	**Polybenzoxazine - an enticing precursor for engineering heteroatom-doped carbon materials** **Ingita Tiwari1*, Leena Nebhani1** *1 Department of Materials Science and Engineering, Indian Institute of Technology Delhi, New Delhi, India* **Corresponding author's E-mail:* msz208141@mse.iitd.ac.in
B5	**Tailor-made poly N-vinyl-1,2,4-triazole-*b*- poly N-vinyl imidazole *grafted* MWCNT: Nanofiller for Super Proton Conducting Membranes** **Nilanjan Mukherjee, Anupam Das and Tushar Jana*** *School of Chemistry, University of Hyderabad, Hyderabad-500046* **Corresponding author's E-mail: tusharjana@uohyd.ac.in*
B6	**High-performing hybrid polyurethanes via backbone modification using oligomeric anilines** **Ermiya Prasad P1,P, P Aruna1, R Narayan1 and Chepuri R.K. Rao*1** *Polymers & Functional Materials Division, CSIR-Indian Institute Of Chemical Technology, Uppal road, Tarnaka, Hyderabad-500 007, Telangana, India* *Academy of Scientific and Innovation Research (AcSIR), Ghaziabad, -201002, Uttar Pradesh, India* **Corresponding author's E-mail: ramchepuri@iict.res.in (Dr. Chepuri R K Rao)* *P: Presenting author : ermiya.549@csiriict.in (Ermiya Prasad P)*
B7	**Effect of Asymmetric Substitution on Charge Carrier Mobility of *i*-indigo based Conjugated Polymers** **Radhakisan S. Kargude,1 and K.Krishnamoorthy*1** *Polymer science and Engineering Division* *1CSIR-National Chemical Laboratory Pune 411008* *2 Academy of Scientific and Innovative Research, Kamla Nehru Nagar, Ghaziabad* 201 002 **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B8	**Continuous Flow Synthesis of Defect-Free, High Molecular Weight P(NDI2OD-T2) by Stille and DHAP Polymerization** **Navnath R Kakde, 1 Bharathkumar H J, 2 Bhaiyyasaheb A.Wavhal, 3 Arun Nikam,4 Suneha Patil,5 Soumya Ranjan Dash,6 Kumar Vanka,7 K. Krishnamoorthy,8Amol Kulkarni 9* and S. K Asha 10*** *1,2,3,8,10) Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune 411008, India* *4,5,9) Chemical Engineering & Process Development Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune 411008, India* *6,7) Physical and Materials Chemistry Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune 411008, India* **Corresponding author's E-mail: sk.asha@ncl.res.in*

B9	**Terpyridine Based Metallosupramolecular Polymers for Electrochromic Applications** **Anisha Mathew1,2, Indulekha Mukkatt1,2, Ayyappanpillai Ajayaghosh*1,2 and Sreejith Shankar*1,2** *1 Photosciences and Photonics Section, Chemical Sciences and Technology Division* *CSIR-National Institute for Interdisciplinary Science and Technology (NIIST)* *Thiruvananthapuram-695019, Kerala, India* *Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India* **Corresponding author's E-mail: ajayaghosh@niist.res.in, sreejith.shankar@niist.res.in*
B10	**Polyphenol Facilitated Deposition of Metals** **Sathishkumar Palani, and K.Krishnamoorthy*** *Polymer Science and Engineering Division* *CSIR-National Chemical Laboratory, Pune 411008* **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B11	**Conducting Polypyrrole hydrogel as high sulfur loading host for electrochemically stable Li-S battery** **Bharathkumar H J,1,2 and K. Krishnamoorthy*1,2** *Polymer Science and Engineering Division* *1CSIR-National Chemical Laboratory, Pune* 411008 *2 Academy of Scientific and Innovative Research, Kamla Nehru Nagar, Ghaziabad* 201 002 **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B12	**Triazatruxene Donor-Based D-A-D Unsymmetrical Squaraine Dyes for Dye-Sensitized Solar Cells** **Kiran Balaso Ingole,1,2 Shivdeep Deshmukh1,2 and Jayaraj Nithyanandhan*1,2** *1Physical and Materials Chemistry Division, CSIR-National Chemical Laboratory, CSIR-Network of Institutes for Solar Energy, Dr. Homi Bhabha Road, Pune 411008, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India* **Corresponding author's E-mail: j.nithyanandhan@ncl.res.in*
B13	**Concurrent Polyvalent Interaction and Electrocatalysis to Improve Lithium-Sulfur Battery Performance** **S. Kumar1 and K. Krishnamoorthy*1** *1CSIR-National Chemical Laboratory, Pune.* **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B14	**High Tc Ferroelectric assisted with C-T interactions: Exhibiting Mechanical Energy Harvesting Response** **Deepak1, Z. Mallick2, D. Mandal2* and R. K. Roy1*** *1Indian Institute of Science Education and Research, IISER Mohali, India* *2Institute of Nano Science and Technology Mohali, India* **Corresponding author's E-mail: raj@iisermohali.ac.in*
B15	**Thermochromic Metal Bipyridine Complexes for Logic Enabled Multi-state Volatile Memory Operations and Smart Window Applications** **Anjali Nirmala,1,2 Indulekha Mukkatt,1,2 Sreejith Shankar*1,2 and Ayyappanpillai Ajayaghosh*1,2** *1CSIR- National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram - 695019, Kerala, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad- 201002, India* **Corresponding author's E-mail: ajayaghosh@niist.res.in, sreejith.shankar@niist.res.in*
B16	**Electrochromism and Energy Storage Applications of Nitrogen-rich Metallopolymers** **Greeshma V S1, 2, Indulekha Mukkatt1,2, Ayyappanpillai Ajayaghosh*1,2 and Sreejith Shankar*1,2** *1Photosciences and Photonics Section, Chemical Sciences and Technology Division* *CSIR-National Institute for Interdisciplinary Science and Technology (NIIST)* *Thiruvanathapuram-695019, Kerala, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India* **Corresponding author's E-mail: ajayaghosh@niist.res.in, sreejith.shankar@niist.res.in*
B17	**Effect of sidechain variation on charge carrier mobility of random polymers Gitanjali Swain, and K. Krishnamoorthy*** *Polymer Science and Engineering Division, National Chemical Laboratory, Pune, India* **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B18	**Synthesis of Ru/Os-Based Heterometallic Supramolecular Polymer for Electrochromic Application** **S. Sarmah and M. K. Bera*** *Polymers and Functional Materials Department, CSIR-Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad 500007, India .* **Corresponding author's E-mail: manas.497@csiriict.in; mkb.bera@yahoo.com*

B19	**Design and Synthesis of Solid-state Red Emissive Copolymers** **Prasanta Pal, Ayan Datta and Sudip Malik*** *School of Applied & Interdisciplinary Sciences (SAIS), Indian Association for the Cultivation of Science, 2A and 2B Raja S. C. Mallick Road, Jadavpur, Kolkata-700032.* **Corresponding author's E-mail: **psusm2@iacs.res.in***
B20	**Polymer Based Synthesis of Electrocatalyst for Commercially Feasible And Sustainable Seawater Splitting Applications** **A. Tewary, 1U.Ojha. *1and A.S.K. Sinha1** *1Rajiv Gandhi Institute of Petroleum Technology (An Institution of National Importance),Jais, Amethi, Uttar Pradesh– 229304, India* **Corresponding author's E-mail: uojha@rgipt.ac.in*
B21	**Electrodeposition of PAMT/TiN composite coating for corrosion protection of 316L Stainless steel plate.** **E. Murugan*and F. Lyric** *Department of Physical Chemistry, School of Chemical Sciences, University of Madras, Guindy Campus, Chennai-600025, Tamilnadu, India.* **Corresponding author's E-mail: dr.e.murugan@gmail.com*
B22	**Multifunctional Polymer with Pyromelliticdiimide as Organic Electrode for Rechargeable Lithium-ion Batteries.** **Jagadish D. Aher,1,2 K.krishnamoorthy *1,2** *1 Polymer Science and Engineering Division* *CSIR-National Chemical Laboratory Pune 411008* *2 Academy of Scientific and Innovative Research Sector 19 Kamla Nehru Nagar, Ghaziabad-201002, India* **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
B23	**Soluble and highly fluorescent conjugated polymer framework and their applications** **Neelam Gupta1and Biplab Kumar Kuila2,*** *1Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, UttarPradesh, India* **Corresponding author's E-mail: bkkuila.chem@bhu.ac.in*
B24	**Study of Na+ ion conducting solid biopolymer electrolyte hydrogel material for energy storage devices** **Dipendra Kumar Verma and S Krishnamoorthi*** *Department of Chemistry, Centre of Advanced Studies, Institute of Science, Banaras Hindu University, Varanasi 221005, India* **Corresponding author's E-mail: dr.skmoorthi@gmail.com*
B25	**Helically Twisted Room Temperature Phosphorescent Regioisomeric π-Extended Nanographenes** **K. Viksit,1, 2 and Dr. S. S. Babu*1, 2** *1 Organic Chemistry Division, National Chemical Laboratory (CSIR-NCL), Dr. Homi Bhabha Road, Pune-411008* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail:* sb.sukumaran@ncl.res.in
B26	**Sustainable Electrocatalytic thin-films for Water Splitting: Single Cluster Catalysis with Heterogenized Polyoxometallates** **Ashish Maurya, Priyanka Dobariya, Karan Marvaniya, Divesh Srivastava, Shilpi Kushwaha,* and Ketan Patel*** *CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar-364002, India. Academy of Scientific and Innovative Research (AcSIR), CSIR-Human Resource Development Centre, (CSIR-HRDC) Campus, Sector 19, Kamla Nehru Nagar, Ghaziabad-201002, India.* **Corresponding author's E-mail: shilpik@csmcri.res.in;* ketanpatel@csmcri.res.in

B27	**Secondary interactions led molecular weaving of Hydrogen bonded Organic Frameworks & their crystalline thin films for Uranium extraction from seawater** **Karan Marvaniya, Ashish Maurya, Priyanka Dobariya, Ketan Patel, and Shilpi Kushwaha*** *CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar-364002, India. Academy of Scientific and Innovative Research (AcSIR), CSIR-Human Resource Development Centre, (CSIR-HRDC) Campus, Sector 19, Kamla Nehru Nagar, Ghaziabad-201002, India.* **Corresponding author's E-mail: shilpik@csmcri.res.in*
B28	**Morphological Interference of two different Cobalt Oxides derived from Hydrothermal Protocol and a single two-dimensional Metal Organic Framework precursor to stabilize β-phase of PVDF for Flexible Piezoelectric Nanogenerator.** **Suparna Ojha, Sarbaranjan Paria, Sumanta Kumar Karan, Suman Kumar Si, Anirban Maitra Amit Kumar Das, Lopamudra Halder, Aswini Bera, Anurima De, Bhanu Bhusan Khatua*** *Materials Science Centre, Indian Institute of Technology Kharagpur, Kharagpur-721302, West Bengal, India* **Corresponding author's E-mail: khatuabb@matsc.iitkgp.ernet.in*
B29	**Helically Twisted Room Temperature Phosphorescent Regioisomeric π-Extended Nanographenes** **K. Viksit,[1, 2] and Dr. S. S. Babu*[1, 2]** *[1] Organic Chemistry Division, National Chemical Laboratory (CSIR-NCL), Dr. Homi Bhabha Road, Pune-411008* *[2] Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: sb.sukumaran@ncl.res.in*
B30	**Functionalized CNT-Azobenzene-PVA-Based Self-Healing Hydrogel as a Conductive Photoresponsive Actuator** **Aswini Narayanan,1,2 T. M. Bhagyasree1 Arun Torris1,3 and Sukumaran Santhosh Babu*1,2** *1Organic Chemistry Division, National Chemical Laboratory (CSIR-NCL), Dr. Homo Bhabha Road, Pune-411008, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India* *3Polymer Science and Engineering Division, National Chemical Laboratory (CSIR-NCL), Dr. Homo Bhabha Road, Pune-411008, India* **Corresponding author's E-mail: sb.sukumaran@ncl.res.in*
B31	**Polymer composites of a chiral organic salt for piezoelectric energy harvesting applications** **Supriya Sahoo1, Premkumar Kothavade2, and Kadhiravan Shanmuganathan*2, Ramamoorthy Boomishankar*1** *1 Indian Institute of Science Education and Research, Pune, India* *2 Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Academy of Scientific and Innovative Research, Ghaziabad, India* **Corresponding author's E-mail: boomi@iiserpune.ac.in*
B32	**Synthesis of Double Network Hydrogel and Application in Soft Electronics As Strain Sensor** **S. Anand[1] and U. Ojha[*1]** *[1]Department of Chemistry, Rajiv Gandhi Institute of Petroleum Technology, Jais, Amethi, Uttar Pradesh-229304, India* **Corresponding author's E-mail: uojha@rgipt.ac.in*
Poster Presentations Under the Theme Polymer Membrane Technology and Applications	
C1	**Mixed Matrix PEM of Functionalized Porous Organic Polymer (POP) loaded Polybenzimidazole** **Anupam Das,1 Mousumi Hazarika2 and Tushar Jana*** 1 *1 School of Chemistry, University of Hyderabad, Hyderabad – 500046, India* *2 Department of Chemistry, National Institute of Technology Meghalaya, Shillong-793003, Meghalaya, India.* **Corresponding author's E-mail: tusharjana@uohyd.ac.in*
C2	**Modification of polysulfone-based polymer/functionalised MWCNT mixed matrix membrane for water treatment** **P. Mistry, C. N. Murthy*** *Macromolecular Materials Laboratory, Applied Chemistry Department, Faculty of Technology and Engineering, The M. S. University of Baroda, Vadodara, Gujarat, India, 390001.*

	**Corresponding author's E-mail: chivukula_mn@yahoo.com*
C3	**Acetic acid separation using ABPBI-based dense hollow fiber membranes** **Saroj Gawas,1 and Ulhas Kharul*** *1,*Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune 411008, Maharashtra, India* *1Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, Uttar Pradesh 201002, India.* **Corresponding author's E-mail: uk.kharul@ncl.res.in*
C4	**Poly(*2,5*-benzimidazole) based Hollow Fiber Membranes for Pervaporation** **Lavanya Alladi,1 and Dr. Ulhas K. Kharul*1** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune, India.* **Corresponding author's E-mail: uk.kharul@ncl.res.in*
C5	**Hollow Fiber Membrane Based On ABPBI for the Forward Osmosis (FO) Process** **Nitin M. Thorat,1,2 and U. K. Kharul*1,2** *1CSIR-National Chemical Laboratory, Pune-411008, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India* **Corresponding author's E-mail: uk.kharul@ncl.res.in*
C6	**A novel approach towards fabrication of thin film composite polyaniline membranes using micro-dispensing system (Ink-jet printing).** **R D Chaudhari,1 S N Nene2 and H. V. Pol*2** *1CSIR- National Chemical Laboratory,Pune 411008,India.* **Corresponding author's E-mail: hv.pol@ncl.res.in*
C7	**Impact of Reduced Graphene Oxide and Functionalized Reduced Graphene Oxide on Removal of Heavy Metals using Mixed Matrix Membranes** **Dixita Prajapati, C. N. Murthy** *Macromolecular Materials Laboratory, Applied Chemistry Department, The Maharaja Sayajirao University of Baroda, Vadodara, India.* **Corresponding author's E-mail: chivukula_mn@yahoo.com*
C8	**Millable polyurethane – cellulose acetate blend systems for biomedical applications** **Gopika M, and G Unnikrishnan** *National Institute of Technology Calicut, Calicut, 673601, India* **Corresponding author's E-mail:* unnig@nitc.ac.in
C9	**Physico-chemical modification of natural rubber latex with dextrin and Nanohydroxyapatite** **Mekha Mariam Mathew and G. Unnikrishnan** *1 National Institute of Technology, Calicut, India* **Corresponding author's E-mail: unnig@nitc.ac.in*
C10	**Investigation on the antifouling performance of modified polyether sulfone mixed matrix membranes containing functionalized MWCNT** **Km Nikita,1 V.K. Aswal2 and C.N. Murthy*1** *1The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat* *2Solid State Physics Devision, Bhabha Atomic Research Centre, Mumbai, India* **Corresponding author's E-mail: nikita-appchem@msubaroda.ac.in*
C11	**Nanoporous Membranes of Archimedean Polyoxometallates with Sub-1 Nanometer Pore for Selective Molecular Sieving** **Priyanka Dobariya, Ashish Maurya, Karan Marvaniya, Shilpi Kushwaha, Ketan Patel*** *CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar-364002, India. Academy of Scientific and Innovative Research (AcSIR), CSIR-Human Resource Development Centre, (CSIR-HRDC) Campus, Sector 19, Kamla Nehru Nagar, Ghaziabad-201002, India.* **Corresponding author's E-mail:* ketanpatel@csmcri.res.in
Poster Presentations Under the Theme Polymers for Health Care	
D1	**Mechanically stable macroporous antimicrobial polymer gel for water disinfection** **Amit Kumar, Jyoti Sharma, Preeti Srivastava, Leena Nebhani*** *Indian Institute of Technology, Delhi, India* **Corresponding author's E-mail: leena.nebhani@mse.iitd.ac.in*
D2	**Effect of chain length variation of infection resistant zwitterionic polymer brushes-based scaffold for wound dressing applications, Shaifali Dhingra, Sampa Saha,** **Shaifali Dhingra[1], Shih-Po Su[2] Yang-Hsiang Chan[3]and Sampa Saha[1]** **[1]Department of Materials Science and Engineering, Indian Institute of Technology Delhi* *[2]Institute of Biomedical Engineering, National Yang Ming Chiao Tung University, Taipei, Taiwan* *[3]Department of Applied Chemistry, National Yang Ming Chiao Tung University, Hsinchu,Taiwan* **Corresponding author: Sampa Saha, Email: ssaha@mse.iitd.ac.in*
D3	**Development of chitosan towards the self-healing and mechanically stronger biocompatible hydrogel Sheetal jaiswal1, Shere afgan1, Kristan Pal1, Paramjeet**

	Yadav1, Virendra Singh2, Biplob Koch2, Rajesh Kumar* *1Institute of Science, Department of chemistry, Banaras Hindu Univesity, Varanasi, India 2Institute of Science, Department of Zoology, Banaras Hindu University, Varanasi, India* **Corresponding author's E-mail: orajesh@bhu.ac.in*
D4	**Co-delivery of BRAF and MEK inhibitors using P-selectin-targeted PLGA-PEG Nanoparticles for the treatment of melanoma** **P. Dey,[1, 2] S. Koshrovski-Michael,[1] Y. Epstein,[1] R. Satchi-Fainaro *[1]** [1]Department of Physiology and Pharmacology, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv 69978, Israel. [2] Department of Chemistry, Siksha Bhavana, Visva-Bharati (A Central University), Santiniketan, West Bengal, 731235 - India. *Corresponding author's E-mail: *ronitsf@tauex.tau.ac.il*
D5	**Chain folding regulated self-assembly and antiviral activity of amphiphilic polyurethane** **Atish Nag[2] and Suhrit Ghosh*[1]** *[1]School of Applied and Interdisciplinary Sciences, Indian Association for t h e Cultivation of Science, 2 A and 2B Raja S. C. Mulick Road, Kolkata, India-700 32* *[2]School of BiologcalSciences, IndianAssociationfor the Cultivationof Science, 2A and 2B Raja S. C. Mullick R ad,Kolkata India 7 0* **Corresponding author's E-mail:* psusg2@iacs.res.in, bcssj@iacs.res.in
D6	**Stimuli -Responsive Amphiphilic Polymers: Synthesis, Self-assembly and Applications** **Shivshankar R. Mane** **Polymer Science and Engineering Division, CSIR-National Chemical Laboratory Pune, India.* **Corresponding author's E-mail: s.mane@ncl.res.in*
D7	**Development of Self-healing, Biocompatible, Chitosan based hydrogels and its application in the spheroid development** **Paramjeet Yadav[1], Shere Afgan[1], Krishtan Pal[1] Sheetal Jaiswal[1] Virendra Singh,[2] Rajesh Kumar[1],*, Biplob Koch[2]** *[1]Department of Chemistry, Institute of Science, Banaras Hindu University Varanasi, India* *[2]Department of Zoology, Institute of Science, Banaras Hindu University Varanasi, India* **Corresponding author's E-mail: orajesh@bhu.ac.in*
D8	**Anti-tumorigenic characteristics of poly (N-Acryloyl-glycine-acrylamide) co-polymeric hydrogel** **Kirti Wasnik$_1$, Prem Sankar Gupta1, Divya Pareek1, Sukanya Patra1, Pradip Paik1*.** *School of Biomedical Engineering, Indian Institute of Technology (IIT), BHU, Varanasi, 221 005, UP, India* **Corresponding author's E-mail: paik.bme@iitbhu.ac.ib,kirtiwasnik.rs.bme17@itbhu.ac.in*
D9	**Harnessing hydrophilic polymer poly(N-vinylcaprolactam) for controlling the emcitabine release from solid lipid nanoparticles** **Sai Geetika Surapaneni[1,2] and Ashootosh V. Ambade*[1,2]** *[1] CSIR-National Chemical Laboratory, Polymer Science and Engineering Division, Pune -411008, India* *[2] Academy of Scientific and Innovative Research (AcSIR), Ghaziabad – 201002, India,* **Corresponding author's E-mail: av.ambade@ncl.res.in*
D10	**Synthesis & characterization of amino acid-based acrylamide derived amphiphilic block copolymer using a new xanthate and its influence on cell cytotoxicity & cell viability** **Rajan Singh2, and Rakesh K. Singh2*** *[1]Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi 221005, UP, India* *2Department of Biochemistry, Institute of Science, Banaras Hindu University, Varanasi 221005, UP, India* **Corresponding author's E-mail: orajesh@bhu.ac.in*
D11	**Nitric oxide-releasing polymeric nanotherapeutics for wound healing** **Prem Shankar Gupta[1], Kirti Wasnik[1],Divya Pareek,[1]Sukanya Patra[1],Dr. Monika[1] and Pradip Paik[1]*** *School of Biomedical Engineering, Indian Institute of Technology (BHU), Varanasi, Uttar Pradesh, India 221 002.* ** Corresponding author's E-mails: premsgupta.rs.bme17@iitbhu.ac.in; paik.bme@iitbhu.ac.in*
D12	**Surface Charge-Switchable Antifouling Polymeric Nanoparticle for Potential Bactericidal Activity** **A. Banerjee,1 B. Saha1 and P. De*1** *1Indian Institute of Science Education and Research Kolkata, Mohanpur - 741246, Nadia, West*

	Bengal, India. **Corresponding author's E-mail: p_de@iiserkol.ac.in*
D13	**pH-Induced Twisted Rod Shape Aggregation of Fluorescein-Derived Polynorbornene: A Unique Selective Sensor for NaOCl** **Narayan Das and Raja Shunmugam*** *Indian Institude of Science and Educational Research-Kolkata, Kalyani, India* **Corresponding author's E-mail:polyraja@gmail.com*
D14	**Pyridine-based polyurethane cationomers exhibiting antimicrobial properties** **K. Borah,[1] J. Mamilla[1], S. Misra[1], and P. Aruna*[1]** *[1]CSIR-Indian Institute of Chemical Technology, Hyderabad, India* **Corresponding author's E-mail: aruna@iict.res.in*
D15	**Glutathione S-Transferase Inhibition: An efficient Approach to Overcome Resistance to Nitrogen Mustard in Anticancer Therapy** **D. Pal, R. Shunmugam*** *Polymer Research Centre Institute, Department of Chemical Sciences,* *Indian Institute of Science Education and Research Kolkata* **Corresponding author's E-mail:polyraja@gmail.com*
D16	**Redox triggered activation of heavy atom free photosensitizer and implications in targeted photodynamic therapy** **T.Banerjee,[1]K. Dan [1]and S. Ghosh*[1]** *[1]School of Applied and Interdisciplinary Sciences, Indian Association for the Cultivation of Science2A and 2B Raja S. C. Mullick Road, Kolkata, India -700032* **Corresponding author's E-mail: psusg2@iacs.res.in*
D17	**Synthesis, characterization and application of carbon dots embedded crosslinked gelatin polyacrylamide hydrogel nanocomposite for controlled release of ciprofloxacin: An *in vitro* study** **A. Tanwar 1, 2 and D. Ottoor*1** *1Savitribai Phule Pune University, Pune, India* *2 Fergusson College (Autonomous), Pune, India* **Corresponding author's E-mail: divya.ottoor@unipune.ac.in*
D18	**Modulating poly (ethylene glycol) diacrylate hydrogel using egg albumin for improved mechanical properties and enhancing cell interactions for soft tissue applications** **Sravanya Konchadaac, Rathna V. N. Gundloori *[ac]Vaishnavi Tammara[ac]** *[a] Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune- 411008, Maharashtra, India, [c] Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, Uttar Pradesh, India* **Corresponding author's E-mail: k.sravanya@ncl.res.in*
D19	**Unique Random-Block Polymer Architecture Based Theranostic Polyprodrug Systems for Site-Specific Mitochondrial Sequestration-Aided Effective Chemotherapy and Magnetic Resonance Imaging** **D. Patra,[1]and R. Shunmugam*[1] ,** *Indian Institute of Science Education and Research Kolkata,* *Mohanpur, India* **Corresponding authors E-mail: sraja@iiserkol.ac.in*
D20	**Synthesis of Poly(amidoamine) (PAMAM) dendrimer functionalized Graphene oxide: Its application as a nanocarrier for biomedical application** **Dr. E. Murugan***& M. Kaviya Sri *Department of Physical Chemistry, School of Chemical Science, University of Madras,* *Guindy Campus, Chennai-25* **Corresponding author email: dr.e.murugan@gmail.com*
D21	**Mono- and poly-saccharide assisted growth of strontium substituted hydroxyapatite for the application of bone regeneration** **E. Murugan* and C. R. Akshata** *Department of Physical Chemistry, University of Madras, Guindy Campus, Chennai - 600025, Tamil Nadu, India* ** **Corresponding author's E-mail:** dr.e.murugan@gmail.com*
D22	**Protein-polypeptide Conjugate for the treatment of Lysosomal Storage Disorder** **Abinash Padhy, Isha Farooq, Tahiti Dutta, Supratim Datta* and Sayam Sen Gupta*** *Indian Institute of Science Education and Research, Kolkata, India* **Corresponding author's E-mail: sayam.sengupta@iiserkol.ac.in*
D23	**Unique Random-Block Polymer Architecture Based Theranostic Polyprodrug Systems for Site-Specific Mitochondrial Sequestration-Aided Effective Chemotherapy and Magnetic Resonance Imaging**

	D. Patra,[1] and R. Shunmugam*[1] *[1]Indian Institute of Science Education and Research Kolkata, Mohanpur, India* **Corresponding author's E-mail: sraja@iiserkol.ac.in*
D24	**Biodegradable Polymer Based Theranostic Probes for Antimicrobial Activity** **Ruma Ghosh and Manickam Jayakannan*** *Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune, Email: ruma.ghosh@students.iiserpune.ac.in* **Corresponding author's E-mail: jayakannan@iiserpune.ac.in*
D25	**Preparation and Characterization of Silk Sericin based Self-standing Three-dimensional Scaffold for Tissue Engineering Applications** **Keya Mondal, Sonia Agrawal, Anuya Nisal and Sayam Sen Gupta*** *1Indian Institute of Science Education and Research Kolkata, West Bengal, India* *2CSIR-National Chemical laboratory, Pune, India* **Corresponding author's E-mail: sayam.sengupta@iiserkol.ac.in*
D26	**Smart Crosslinked Glyco-Polypeptide based Nanocarrier for Eradication of Multidrug Resistant Bacteria & Biofilms** **Sabyasachi Das and Sayam Sen Gupta*** *Indian Institute of Science Education and Research, Kolkata, India* **Corresponding author's E-mail: sayam.sengupta@iiserkol.ac.in*
D27	**Biocompatible segmented polyurethanes using amino acid as drug delivery vehicle and its application for biomedical application** **S.Bauri,[1]P. Maiti*1** *1SMST, Indian Institute of Technology BHU,Varanasi,India* **Corresponding author's E-mail:* pmaiti.mst@iitbhu.ac.in
D28	**Multicompartmental Microcarriers with Controlled Release for Efficient Management of Parkinson's Disease** **Nidhi Gupta1-3 and Sampa Saha1*** *1Department of Materials Science & Engineering, Indian Institute of Technology Delhi, New Delhi, India.* *2 International College of Semiconductor and Technology, National Yang-Ming Chiao Tung University, Hsinchu, Taiwan (ROC).* *3 Department of Applied Chemistry, National Yang-Ming Chiao Tung University, Hsinchu, Taiwan (ROC).* **Corresponding author's E-mail: ssaha@mse.iitd.ac.in*
D29	**Development of biodegradable polymer gel using ayurvedic drug for wound healing** **Avishek Mallick Choudhury1,** **Pralay Maiti1*** *1School of Material Science & Technology, Indian Institute of Technology (BHU), Varanasi,India* **Corresponding author's E-mail:pmaiti.mst@itbhu.ac.in*
D30	**Functionalized Graphene Oxide Based Drug Delivery System** **Swikriti Tripathi1, P Maiti*1** *1School of Material Science & Technology, IIT BHU* **Corresponding author's E-mail: pmaiti.mst@iitbhu.ac.in*
D31	**Ethyl Hydroxy Ethyl Cellulose (EHEC): A Versatile Bio-polymer in Health Care Applications** **Ashwini Wali1,2 and Manohar V. Badiger*1** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory,Dr. Homi Bhabha Road, Pune - 411008, India* *2MVJ College of Engineering, near ITPB ,Whitefield, Bangalore - 560067, India* **Corresponding author's Email: mv.badiger@ncl.res.in*
D32	**Self-Assembly Instructed Modulation of Excitation Wavelength Dependent Emission in a D-A type ESIPT System for tracing Lysosome pH heterogeneity** **Mishika Virmani, M. Jayakannan** *Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune* **Corresponding author's Email: jayakannan@iiserpune.ac.in*
D33	**Star Polymer Based Unimolecular Micelle (UMM) Approach to Deliver MLN8237 for the Inhibition of AURKA to Study RalA Mediated Anchorage Independent Pathways in Cancer** **Kajal Singh1, Shahidkhan Pathan, Mayuresh Vishwas Konde, Nagaraj Balasubramanian, Manickam Jayakannan** *[1]Indian Institute of Science Education and Research (IISER), Pune, India* **Corresponding author's E-mail:nagaraj@iiserpune.ac.in, jayakannan@iiserpune.ac.in*
D34	**L-Amino acid-based Polymers for Drug Delivery in Cancer Cells** **Mohammed Khuddus, Utreshwar Gavhane** and **Manickam Jayakannan***

	Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune, **Corresponding author's E-mail: jayakannan@iiserpune.ac.in*
D35	**NSAIDs Based Metallogelators for *In-vitro* Drug-Delivery Applications** **A. Dutta,1 P. Biswas1 and P. Dastidar*1** *1IACS, Kolkata-700032, India* **Corresponding author's E-mail: ocpdastidar@gmail.com, ocpd@iacs.res.in*
D36	**Supramolecular Hydrogels Derived from Organic Salts of N-protected Amino Acids and Dipeptides for Self Drug-Delivery Applications.** **N. Roy,1 P. Dastidar*1** *1Indian Association for the Cultivation of Science, Kolkata, India* **Corresponding author's E-mail: ocpd@iacs.res.in*
D37	**Star Polymer Unimolecular micelles for Drug Delivery in Cancer Research**. **Shahidkhan I. Pathan, Mehak Malhotra, and Manickam Jayakannan** *Department of chemistry, Indian Institute of Science Education and Research (IISER), Pune.* **Corresponding author's E-mail: Jayakannan@iiserpune.ac.in*
D38	**Prevention of Cataract in rat pups by Quaternary Ammonium Poly (amidoamine) Dendrimer Encapsulated Nanocurcumin** **V. Yogaraj and E. Murugan*** *Department of Physical Chemistry, School of Chemical Science,* *University of Madras, Guindy Campus, Chennai-600025, Tamilnadu, India.* **Corresponding author's E-mail: dr.e.murugan@gmail.com*
Poster Presentations Under the Theme Polyolefin Science & Technology	
E1	**Functionalized Graphene Oxide-Carbon Black-Natural Rubber Hybrid Nanocomposites for Tire Tread Applications** **B. Ghosh*[1], S. Chattopadhyay[3] A. Adhikary,[1] V. K. Srivastava[2] and R.V. Jasra[1]** *[1] Research and Development Centre, Reliance Industries Limited, Vadodara-391345, Gujarat, India* *[2]Research and Development Centre, Reliance Corporate Park(RCP), Mumbai-40070, Maharastra, India* *[3]Rubber Technology Centre, IIT Kharagpur, West Bengal – 721302, India* **Corresponding author's E-mail: baitali.ghosh@ril.com*
E2	**Blending of HDPE with Dis-Entangled Ultra High Molecular Weight Polyethylene (D-UHMWPE) for enhancing its mechanical properties** **Devesh K. Shukla1*, Sateesh Bonda1, Sukdeb Saha1, Vivek K. Srivastava2, Rakshvir Jasra[1]** *[1]Reliance Research and Development Centre, Vadodara Manufacturing Division, Reliance Industries Ltd., Vadodara-391346, Gujarat, India* *[2] Reliance Research and Development Centre, Reliance Corporate Park (RCP), Reliance Industries Ltd., Navi Mumbai-400701Maharashtra, India* **Corresponding author's Email: devesh.shukla@ril.com*
E3	**Improved melt strength and processability of impact copolymer polypropylene by introducing long-chain branching via reactive extrusion with "ene" functionalized dendrimer** **Aanchal Jaisingh1, Vishal Goel2, GS Kapur2, Leena Nebhani1*** *1 Indian Institute of Technology, Delhi* *2 Indian Oil Corporation Limited R&D* **Corresponding author's E-mail: leena.nebhani@mse.iitd.ac.in*
E4	**Ti-Iminocarboxylate Catalyzed Polymerization of Ethylene to Highly Crystalline, Disentangled, Ultra-high Molecular Weight Polyethylene** **Dnyaneshwar V. Bodkhe, a, b Samir H. Chikkali*a,b** *a Polyolefin Lab, Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune 411008, India.* *b Academy of Scientific and Innovative Research (AcSIR), Sector 19, Kamla Nehru Nagar, Ghaziabad 201002, U. P., India.* *Correspondence to: Samir H. Chikkali (E-mail: s.chikkali@ncl.res.in)*
E5	**Palladium-Catalyzed Synthesis of Hyperbranched Ethylene Oligomer and Post-Functionalization** **Rajkumar Birajdar1 and Samir Chikkali*1** *1 Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune-411008, INDIA.* **Corresponding author's E-mail: s.chikkali@ncl.res.in*
Poster Presentations Under the Theme Rheology and Polymer Processing	
F1	**Concerted effect of boron and porosity on shear thickening behavior of hybrid**

	mesoporous silica dispersions **E.Islam, L.Nebhani*** *Department of Materials Science and Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, 110016, India* **Corresponding author's E-mail: leena.nebhani@mse.iitd.ac.in*
F2	**Development of Double-Network hydrogel with Strong Self-healing, High-Mechanically strength and Drug-Transport for Bio-application.** **Krishtan Pal1, Shere Afgan1, Paramjeet Yadav1, Sheetal Jaiswal1, Sandeep Kumar2, Rajesh Kumar1,*, Arbind Acharya2** *1Department of Chemistry, Institute of Science, Banaras Hindu University Varanasi, India* *1 *Corresponding author's E-mail:orajesh@bhu.ac.in* *2Department of Zoology, Institute of Science, Banaras Hindu University Varanasi, India*
F3	**Preparation and characterization of mechano-adaptive thermoplastic elastomeric materials** **Pratiksha Awasthi1* and Shib Shankar Banerjee1** *1Department of Materials Science and Engineering, Indian Institute of Technology Delhi, New Delhi-110016, India* **Corresponding author's E-mail: pratiksha.awasthi@mse.iitd.ac.in*
F4	**Foam processability and characterization of pristine Ultra-high molecular weight polyethylene (UHMWPE) using supercritical carbon dioxide (sc-CO2)** **P.M. Shandilya1 and Anup. K. Ghosh*1** *Department of Materials Science and Engineering* *Indian Institute of Technology Delhi, New Delhi 110016, India* **Corresponding author's E-mail: msz188508@iitd.ac.in (12 font, Times New Roman)*
F5	**Morphological Evolution During Thermal Annealing of an immiscible PS/PMMA Blend Thin Film** **Madhumita Choudhuri* and Rabibrata Mukherjee** *Instability and Soft Patterning Laboratory, Department of Chemical Engineering, Indian Institute of Technology Kharagpur, Kharagpur, WB, India 721302* **Corresponding author's E-mail:* madhumita09.10@gmail.com
F6	**Controlling the Hydrophobicity of Cross-linked PDMS Films by a combination of UV Ozone Treatment and Silanization** **Anu M G,1 Rabibrata Mukherjee *1** *1Instability and Soft Patterening Laboratory,Department of Chemical Engineering,* *Indian Institute of Technology Kharagpur, Kharagpur-721302, India* **Corresponding author: Dr.Rabibrata Mukherjee ,(Email: rabibrata@che.iitkgp.ac.in)*
F7	**Processibility and physico-mechanical properties of ultra-high molecular weight polyethylene using low molecular weight olefin wax** **Ashok Kumar Bakshi, Anup K.Ghosh *** *Department of Materials Science and Engineering, Indian Institute of Technology Delhi,* *Hauz Khas, New Delhi, 110016, India* **Correspondence Author: Prof. Anup K. Ghosh, Email: anupkghosh@gmail.com*
F8	**Dewetting and Stability of Thermally Annealed Cadmium Sulfide (CdS) Quantum Dot (QD) Containing Polystyrene (PS) Thin Films** **Hemant kumar1*, Madhumita Choudhuri1, Rabibrata Mukherjee1,2 and Pallab Banerji1,3** *1School of Nano-Science and Technology, Indian Institute of Technology, Kharagpur, India* *2Department of Chemical Engineering, Indian Institute of Technology, Kharagpur, India* *3Materials Science Centre, Indian Institute of Technology, Kharagpur, India* **Corresponding author's E-mail: hemant3481@gmail.com*
F9	**Effect of Repeated Thermal Cycling and Reversible Phase Transition on The Texture of Thermotropic 5CB Thin Films** **Ipsita Sahoo1, Rabibrata Mukherjee1, *** *1Instability and Soft Patterning Lab, Department of Chemical Engineering, Indian Institute of Technology, Kharagpur, 721302, India* **Corresponding Author's Email: rabibrata@che.iitkgp.ac.in*
F10	**Ordering of Dewetted Features over Topographically Patterned Substrate by a Combination of Thermal and Spin Dewetting** **Sushree Ritu Ritanjali,1 Nandini Bhandaru2, and Rabibrata Mukherjee*1** *1 Instability and Soft Patterning Laboratory, Department of Chemical Engineering, Indian Institute of Technology Kharagpur, 721-302, India* **Corresponding author's E-mail: rabibrata@che.iitkgp.ac.in*
F11	**Controlling Material & Process Defects in Extrusion Film Casting Using Polymer Composites** **Dhammaraj Rokade,1,2 and Harshawardhan V. Pol*1,2**

	1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, Maharashtra- 411008, India *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad- 201002, India* **E-mail: hv.pol@ncl.res.in*
F12	**Preserving silk I conformation and fabricating solvent free silk liquid through bioconjugation with polymer** **R. Kumar,1 E. Joseph2, A Chaudhari3, A. Nisal2* and K. P. Sharma*1** *1Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai-400076,* *2Polymer Science and Engineering Division, CSIR-NCL, Pune-411008, India* ***E-mail:** k.sharma@chem.iitb.ac.in*
Poster Presentations Under the Theme Structure-Property Relations in Polymers (Theory and Experiment)	
G1	**Identifying structural signature of dynamical heterogeneity via the local softness parameter** **Mohit Sharma,1 Manoj kumar Nandi2 and Sarika Maitra Bhattacharyya1,3,*** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune-411008, India* *2Department of Engineering, University of Campania "Luigi Vanvitelli" 81031 Aversa (Caserta), Italy* *3 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India* **Corresponding author's E-mail: mb.sarika@ncl.res.in*
G2	**Effective structure of a system with continuous polydispersity** ***Palak Patel 1,2, Manoj Kumar Nandi 1, Ujjwal Kumar Nandi 1,2, and Sarika Maitra Bhattacharyya 1,2,**** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune 411008, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India* **Corresponding author's E-mail: mb.sarika@ncl.res.in*
G3	**Crystallization-Driven Controlled Two-Dimensional (2D) Assemblies from Chromophore-Appended Poly(L-lactides)** **A. Rajak1 and A. Das*1** *1Indian Association for the Cultivation of Science (IACS), Jadavpur, Kolkata-700032, India* **Corresponding author's E-mail: psuad2@iacs.res.in.*
G4	**Super-hydrophilic" poly(2-oxazoline)** **Somdeb Jana, Milan Roles and Richard Hoogenboom*** *Supramolecular Chemistry Group, Centre of Macromolecular Chemistry (CMaC), Department of Organic and Macromolecular Chemistry, Ghent University, Krijgslaan 281-S4, 9000 Ghent, Belgium* **Corresponding author: Richard.hoogenboom@ugent.be*
G5	**Water-Soluble Fluorescent Perylene Bisimide-Based Conjugates with Imidazole Polymers: Vesicular assembly, Stimuli-responsiveness and Biological Applications** **M. Kar1, M. Anas1, P. Banerjee1, A. Basak1 and T. K. Mandal*1** *1School of Chemical Sciences, Indian Association for the Cultivation of Science, Jadavpur, Kolkata 700 032, India* **Corresponding author's E-mail: psutkm@iacs.res.in*
G6	**Polyelectrolyte chains can undergo a hierarchical self-assembly process on their own: A molecular dynamics investigation** **Raju Kumar Singh1, Kamendra P. Sharma, *2 and Jyoti R. Seth*3** *1Centre for Research in Nanotechnology and Science, Indian Institute of Technology Bombay, Powai, Mumbai-400076, India* *2Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai-400076, India* *3Department of Chemical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai-400076, India* **Corresponding author's E-mail: k.sharma@chem.iitb.ac.in, jyotiseth@che.iitb.ac.in*
G7	**Tuneable UCST behaviour of a dextran-based copolymer in aqueous media** **S. Dey1 and S. Pal*1** *1Department of Chemistry and Chemical Biology, IIT(ISM) Dhanbad, Dhanbad, India* **Corresponding author's E-mail: sagarpal@iitism.ac.in*
G8	**Folding of aromatic polyamides and prospective uses of the folded scaffold in guest molecule selectivity and through space conductivity by host-guest complexation** **S. Samanta**1**, D. Mallick***2 **and R. K. Roy***1 *1 Department of Chemical Sciences, IISER Mohali, 140306, Punjab, India.* *2 Department of Chemistry, Presidency University, 86/1 College Street, Kolkata-700073, West*

	Bengal, India. **Corresponding author's E-mail: raj@iisermohali.ac.in*
G9	**Self-assembly of randomly-grafted amphiphilic linear and branched polymers and their bio-recognition at liquid crystal-water interface** **A. Kumari$, I. Pani$, S. K. Pal*, and R. K. Roy*** *Indian institute of science education and research Mohali, 140306, Punjab, India* *$: equally contributed* **Corresponding author's E-mail: raj@iisermohali.ac.in*
G10	**Role of Entropy in Charged Polymers - A Theoretical Perspective** **Arindam Kundagrami1,2*, Soumik Mitra1, Souradeep Ghosh1** *Department of Physical Sciences (1) and Centre for Advanced Functional Materials (2) , IISER Kolkata, Mohanpur, India 741 246.* **Corresponding author's E-mails: arindam@iiserkol.ac.in*
G11	**Synthesis of Hydroxyl Terminated Fatty Ester Amide (DFEAm) from Dehydrated CastorOil (DCO)and its utilization in various Polyurethane Coating Applications** **D. Maity1, A. Borkar 1, S. Ghosh1 and Dr. A. S. Sabnis*1** *1Institute of Chemical Technology, Mumbai, India* **Corresponding author's E-mail: as.sabnis@ictmumbai.edu.in*
G12	**Dynamic crystallization behaviour of bio-PBS: non-isothermal kinetics Approach** **Harshal Peshne,[1]Bhabani K. Satapathy*1** *[1]Department of Materials Science and Engineering* *Indian Institute of Technology Delhi, Hauz Khas, New Delhi,110016, India* **Corresponding author's Email: bhabani@mse.iitd.ac.in*
G13	**Emergence of Aggregation Induced Emission (AIE), Room Temperature Phosphorescence (RTP) and Multi-stimuli Response from a Single Organic Luminogen by Directed Structural Modification** **Abhijit Chatterjee,1Joy Chatterjee,1 Subrahmanyam Sappati,2 Tariq Sheikh,1 Rintu M. Umesh,3 Madan D. Ambhore,1 Mayurika Lahiri 3 and Partha Hazra*1,4** *1Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune. Dr. Homi Bhabha Road, Pashan, Pune, India 411008.* *2Soft Condensed Matter, Raman Research Institute, C. V. Raman Avenue, Sadashivanagar, Bengaluru, Karnataka, India 560080.* *3Department of Biology, Indian Institute of Science Education and Research (IISER), Pune. Dr. Homi Bhabha Road, Pashan, Pune, India 411008.* *4Centre for Energy Science, Indian Institute of Science Education and Research (IISER), Pune. Dr. Homi Bhabha Road, Pashan, Pune, India 411008.* **Corresponding author's E-mail: p.hazra@iiserpune.ac.in*
G14	**Electrostatic interactions and conformations of polyelectrolyte chains** **Souradeep Ghosh,1,2 and Arindam Kundagrami*1,2** *1Department of Physical Sciences, IISER Kolkata, Mohanpur, India 741246* *2 Centre for Advanced Functional Materials, IISER Kolkata, Mohanpur, India 741246* **Corresponding author's E-mail: arindam@iiserkol.ac.in*
G15	**Low pH self assembly behavior of Polyethylenimine** **Shivalika Sharma,1andKamendra P. Sharma*** *[1]Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai, India* *[*]Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai, India* **Corresponding author's E-mail: k.sharma@iitb.ac.in*
G16	**Functional modifications of poly(lactic acid) for catalytic and bio-medical applications** **G. Unnikrishnan** *Polymer Science and Technology laboratory,* *National Institute of Technology Calicut, Kerala-673 601, India* **Corresponding author's E-mail: unnig@nitc.ac.in*
G17	**Isotropic and Directionally Ice-Templated Nylon 11 Aerogels: Structure and Piezoelectric Properties** **Ashitha George,1,2 Achu Chandran,1,2 K. P. Surendran1,2 and E. Bhoje Gowd*,1,2** *1Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
G18	**Temperature-Induced Structural Changes in Poly(3- hydroxybutyric acid) Aerogels** **Akhila N S,1, 2 Vipin G Krishnan,1, 2 Jefin Parukoor Thomas1, 2 and E. Bhoje Gowd*1,2** *1Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary*

	Science and Technology, Thiruvananthapuram-695019, Kerala, India *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
G19	**Lightweight, Mechanically Robust and Flame Retardant PVDF-MXene Aerogels for High-Efficiency Electromagnetic Interference Shielding** **Sruthi Suresh,1, 2 Vipin G Krishnan,1, 2 K. P. Surendran1,2 and E. Bhoje Gowd*1,2** *1Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
G20	**Silk fibroin-surfactant interaction: Molecular, structural and rheological insights** **S. Hirlekar1,5, D. Ray2, V. K. Aswal2, A. Prabhune3,5, S. Ravindranathan4 and A. Nisal1,5*** *1 Polymer Science and Engineering division, 3 Biochemical Sciences Division, 4 Central NMR facility, CSIR- National Chemical Laboratory, Homi Bhabha Road, Pashan, Pune, India* *2 Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai, India* *5Academy of Science and Innovative Research (AcSIR), Gaziabad, India* **Corresponding Author E-mail: aa.nisal@ncl.res.in*
G21	**Molecular Dynamics Simulations of Conductive Polymer Immersed In Ionic Liquid Water Mixtures** **Chaitanya Dharmendrakumar Gandhi*; Praveenkumar Sappidi** *Department of Chemical Engineering, Indian Institute of Technology Jodhpur* ** presenting author; Email: gandhi.4@iitj.ac.in*
Poster Presentations Under the Theme Sustainable Polymers and Composites	
H1	**Multifunctional nitrogen enriched bio-sourced benzoxazine resins destined for high performance adhesive application.** **P. Sharma*,1 and L.Nebhani*1** *1Indian Institute of Technology Delhi, Delhi, India* **Corresponding author's E-mail: pratibhasharma.venky@gmail.com, leena.nebhani@mse.iitd.ac.in*
H2	**Fast relaxing siloxane containing fiber-reinforced vitrimer composite** **Tapas Debsharma1*, Virginia Amfilochiou2, Ola Wróblewska1, Ives De Baere2, Wim Van Paepegem2 and Filip Du Prez1** *1Department of Organic and Macromolecular Chemistry, Ghent University, Ghent, Belgium* *2Department of Materials Science and Engineering, Ghent University, Ghent, Belgium* **Corresponding author's E-mail: Tapas.Debsharma@UGent.be*
H3	**An investigation of the ternary blends of PVA/CMC/Aloe vera biofilm's linear optical characteristics for UV protection** **N. R. Dhineshbabu** *Department of Electronics and Communication Engineering, Aditya Engineering College, Suramaplem-533437* **Corresponding author's E-mail: babudhinesh2009@gmail.com*
H4	**Bioinspired Mechanically Robust Ternary Nanocomposites based on Polydopamine Coated Cellulose Nanocrystals/Sodium Carboxymethylcellulose** **Paramita Das* and Roop Singh Lodhi** *Department of Chemical Engineering, Indian Institute of Science Education and Research (IISER) Bhopal, Madhya Pradesh, India* **Corresponding author's E-mail: paramita@iiserb.ac.in* and *paramitadas.iitd@gmail.com*
H5	**Influence of Compositional Gradient on Microstructure and Mechanical Properties of PLA/ASCNC Nanocomposites** **Roop Singh Lodhi, Ankit Rathaur, and Paramita Das*** *Department of Chemical Engineering, Indian Institute of Science Education and Research (IISER) Bhopal, Bhopal Bypass Road, Bhopal 462066, Madhya Pradesh* **Corresponding author's E-mail: paramita@iiserb.ac.in*
H6	**High-Solid Acrylic Latex by Mini-emulsion Polymerization for Fluorine-free Coatings with Improved Water Resistance** **Punugupati Neelambarama,b, Abhay Shankara, Kesavarao Sykama, D. B. Rohini Kumara, Arindam Chakrabartya*, and Ramanuj Narayana,b*** *aPolymers & Functional Materials Division, CSIR-Indian Institute of Chemical Technology, Uppal Road, Tarnaka, Hyderabad-500 007, Telangana, India* *bAcademy of Scientific and Innovation Research (AcSIR), Ghaziabad, -201 002, Uttar Pradesh, India* **Correspondence: ramanuj@iict.res.in (Dr. Ramanuj Narayan), arindam@iict.res.in (Dr. Arindam Chakrabarty)*
H7	**Experimental model to optimize the properties of nitroxide functionalized silica**

	against high molecular weight polymers for composite application. **N. Lukkumanul Hakkim,1 L. Nebhani*1** *1 Department of Materials Science and Engineering, Indian Institute of Technology Delhi, New Delhi, India* **L. Nebhani E-mail: leena.nebhani@mse.iitd.ac.in*
H8	**Ordered Macro-Microporous Ionic Organic Framework as Versatile Platform for Efficient Physical Removal of Pollutants from Water** **Sahel Fajal,1 Atikur Hassan,2 Writakshi Mandal,1 Mandar M. Shirolkar,3 Sumanta Let,1 Neeladri Das,2 and Sujit K. Ghosh,1,*** *1Department of Chemistry, Indian Institute of Science Education and Research Pune, Dr. Homi Bhabha Road, Pashan, Pune 411008, India.* *2Department of Chemistry, Indian Institute of Technology Patna, Patna 801106, Bihar, India.* *3Symbiosis Center for Nanoscience and Nanotechnology (SCNN), Symbiosis International (Deemed University) (SIU), Lavale, Pune 412115, India.* **Corresponding author's Email: sghosh@iiserpune.ac.in*
H9	**Unveiling the Impact of Diverse Morphology of Ionic Porous Organic Polymers with Mechanistic Insight on the Ultrafast and Selective Removal of Toxic Pollutants from Water** **W. Mandal,1 S. Fajal1 , S. Mollick1, M. M. Shirolkar2, Y. D. More1, S. Saurabh1, D. Mahato1, S. K. Ghosh*1** *1Institute, Town, Country, Department of Chemistry, and Centre for Water Research, Indian Institute of Science Education and Research, Dr. Homi Bhabha Road, Pashan, Pune 411008, India.* *2Symbiosis Center for Nanoscience and Nanotechnology (SCNN) Symbiosis International (Deemed University) (SIU), Lavale, Pune 412115, India.* **Corresponding author's E-mail: sghosh@iiserpune.ac.in*
H10	**Fluorinated Polymer Brush *grafted* Silica Nanoparticles: A Self-cleaning Surface** **Somdatta Rudra1 and Tushar Jana1*** *1School of Chemistry, University of Hyderabad, Hyderabad, India* **Corresponding author's Email: tusharjana@uohyd.ac.in*
H11	**Biodegradable and biocompatible non-isocyanate polyurethanes with unique aggregation-induced emission** **Arunava Dutta,1 and Tushar Jana*1** *1School of Chemistry, University of Hyderabad, Hyderabad, India* **Corresponding author's E-mail: tusharjana@uohyd.ac.in*
H12	**Soybean Oil based Non-isocyanate Polyurethanes for Coating Applications** **Nikhil Dhore, Ramanuj Nayayan*, Aruna Palanisami*** *Polymers and Functional Material Division, Indian Institute of Chemical Technology, Tarnaka, Hyderabad 500007, India* **Corresponding author's E-mail: aruna@iict.res.in*
H13	**Calcium ion crosslinking to zwitterionic polymer scaffolds: Effect on stability, swelling, morphology and dye removal potential** **Uttara Joshi,1 Ritwika Roy1 and P. Gursumeeran Satsangi*1** *1Department of Chemistry, Savitribai Phule Pune Umiversity, Pune, India-411007* **Corresponding author's E-mail: pgsatsangi@unipune.ac.in*
H14	**Preparation and Characterization of Multifunctional Elastomeric Materials for Flexible Electronics Applications** **D. K. Rana,*1 P. S. Banerjee1 and S. S. Banerjee1** *1Indian Institute of Technology Delhi, New Delhi, India* **Corresponding author's E-mail: ird13574@iitd.ac.in*
H15	**Design and development of double encapsulated bioactive agent as nano drug delivery system to regulate release of drug** **T. R. Gautam,1 G. V. N. Rathna1*** *1ICSIR-National Chemical Laboratory, Pune, India* **Corresponding author's E-mail: gt.rao@ncl.res.in*
H16	**Enhancing the mechanical integrity and sustained release behaviour of polyurea microcapsules reinforced with nano clay.** **Yogeshwar Aher,1 Prashant Yadav,2 and Kadhiravan Shanmuganathan*1** *1CSIR-National Chemical Laboratory, Pune, India* **Corresponding author's E-mail*:k.shanmuganathan@ncl.res.in.
H17	**Latex Nanocomposite of Styrene-Acrylic Copolymer and Cellulose Nanofibers for Paper Coating Application** **A. Shankar,1 A. Malik,1 P. Neelambaram,1,2 D.B. Rohini kumar,1 R. Narayan*1,2 and A. Chakrabarty*1** *1Polymers and Functional Materials Division, CSIR-Indian Institute of Chemical Technology,*

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H18	**Design and Synthesis of Photocrosslinker and Light Blocker based on L-Amino acid Polyester and Their Application in Solvent-free Resin Formulation for DLP/SLA 3D Printing** **Ganesh N. Kamble,1, 2 Dheeraj Chandra Joshi,3 and Asha Syamakumari*1, 2** 1*) Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pashan, Pune-411008, India.* *2) Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, 201002 India.* *3) Department of Chemistry, Indian Institute of Science Education and Research (IISER) Pune,* Dr. Homi Bhabha Road, Pune 411008 Maharashtra, India *Corresponding author's E-mail: sk.asha@ncl.res.in
H19	**Green Transformation of Poly(Vinyl Alcohol) to an Organic Soluble Polymer Using Dichloroacetic Acid** **Km Shelly,1 R. Kartik,1 and Raghavachari Dhamodharan*1** *1Department of Chemistry, Indian Institute of Technology Madras (IIT Madras), Chennai – 600 036, Tamil Nadu, India* **Corresponding author's E-mail: damo@iitm.ac.in*
H20	**Vitrimers derived from polybenzoxazines incorporating dynamic covalent bonds** **G. Rai, L. Nebhani*** *Department of Materials Science and Engineering* *Indian Institute of Technology Delhi* **E-mail: leena.nebhani@mse.iitd.ac.in*
H21	**Methylene Blue dye degradation by synthesized grafted copolymer of Gum-ghatti with acrylamide embedded silver nanoparticles** **Aishwarya Verma,[1]Neha Yadav[2]and Gauri Lohar*[1]** *Fergusson College (Autonomous), Pune, India* *E mail:gauri.lohar@fergusson.edu*
H23	**Dual Stimuli Controllable Multistate Photoswitches in Aqueous Medium** **Dipak Patra1, Satyajit Das1, Sreejith Shankar1* and Ayyappanpillai Ajayaghosh1*** *1Photosciences and Photonics Section, Chemical Sciences and Technology Division* *CSIR-National Institute for Interdisciplinary Science and Technology (NIIST)* *Thiruvananthapuram-695019, Kerala, India* *Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201002, India* **E-mail: sreejith.shankar@niist.res.in, ajayaghosh@niist.res.in*
H24	**Foam Processability and Characterization of PP/Sisal Fibre Composites** **A. B. Bhagat,1 and A. K. Ghosh*1** *1Department of Materials Science & Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi -110016, India.* **Correspondence to: Anup K. Ghosh (E-mail: anupkghosh@gmail.com)*
H25	**Effect of phosphate modified Fe3O4 nanoparticles on the functional and coating properties of bio-based polyurethane.** **S. Mohanty,1,2 R. Kumar3, T. M. Aminabhavi*3 and R. Narayan*1,2** *1Polymers and Functional Materials Division, CSIR-Indian Institute of Chemical Technology, Hyderabad, Telangana, 500007, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, Uttar Pradesh, 201002, India* *3 KLE Technological University, Hubli, Karnataka,580031, India* **Corresponding author's E-mail: ramanuj@iict.res.in*
H26	**Palladium anchored N-Heterocyclic Carbene on a Porous Polymer – An Efficient Heterogeneous Composite Catalyst for Eco-Friendly Suzuki-Miyaura Coupling** **S. Let,†1 G. K. Dam†1, P. Samanta1, S. Fajal1, S. Dutta1, S. K. Ghosh1,2** *1 Department of Chemistry, Indian Institute of Science Education and Research, Dr. Homi Bhabha Road, Pashan, Pune 411008, India* *2 Centre for Water Research, Indian Institute of Science Education and Research, Dr. Homi Bhabha Road, Pashan, Pune 411008* **Corresponding author's E-mail: sghosh@iiserpune.ac.in*
H27	**Instantaneous Synthesis of TiO2 Nanoparticles to Improve Thermal Stability of PP-TiO2 Nanocomposites** **M. Prakash*, A. K. Ghosh** *Indian Institute of Technology Delhi, New Delhi, India* **Corresponding author's E-mail: prakashmayank155@gmail.com*
H28	**Kinetically Regulated Bio-Nano Self-Assembly for Hybrid Materials**

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H29	**Surface modification of mesoporous silica materials and their application in hybrid coatings** **S.S. Kashyap,1 P. Basak,1,2 R. Narayan, *1,2 and M. Ahmed*1,2** *1Department of Polymers & Functional Materials* *CSIR- Indian Institute of Chemical Technology, Hyderabad-500007, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India.* **Corresponding author's email: maqsood@csir.iict.in*
H30	**Fluorescent Carbon Dot-PVA Nanocomposites for Anticounterfeiting Inks** **V Bavya, K. I. Suresh*** *Materials Science and Technology Division,* *CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* **Corresponding author's email: kisuresh@niist.res.in*
H31	**Development and Characterization of Waterborne Polyurethane/modified Graphene oxide Nanocomposites** **K S Devikrishna1,2 and K I Suresh*1,2** *1Materials Science and Technology Division, CSIR-National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram- 695019, Kerala, India.* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad - 201002, India* **Corresponding author's email: kisuresh@niist.res.in*
H32	**Dual responsive cellulose microspheres with high solid-state fluorescence emission** **P. Yadav1,2 K. P. Prajitha,1,2 V. Dhaware,1,2 M. Subramani 2,3 P. A. Joy, 2,3 S. K. Asha 1,2 and K. Shanmuganathan1,2** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, 411008, Maharashtra, India* *2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad- 201002, India* *3 Physical and Materials Chemistry Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, 411008, Maharashtra, India* **Corresponding author's E-mail: k.shanmuganathan@ncl.res.in*
H33	**High Performance vanillin derived epoxy vitrimers based on Schiff base chemistry** **T. Thakur1, A. Krishna1 and S. K. Asha*1** *1CSIR- National Chemical Laboratory, Pune, India* ** E-mail: sk.asha@ncl.res.in*
H34	**Bilayer barrier-resistant pH-responsive films as freshness indicators for intelligent food packaging** **V. Thakur*1 , B. Satapathy1** *1Department of Material Science and Engineering, Indian Institute of Technology, Delhi, India.* **Corresponding author's E-mail: msz198500@iitd.ac.in*
H35	**Protein encapsulated beads as a microcarrier for drug delivery** **D.Mishra1 C.Chinta2 and GVN Rathna*1** *1National Chemical Laboratory, Pune, India* **Corresponding author's E-mail: dn.mishra@ncl.res.in*
H36	**Synthesis & Characterization of PLA Based Green Composites** **Hans Raj1, P. Maiti*1** *1 School of Material Science & Technology, Indian Institute of Technology (BHU), Varanasi, India.* **Corresponding author's E-mail: pmaiti.mst@itbhu.ac.in*
H37	**Facile green synthesis of hyperbranched polymer and bio-based hybrids: Studies on fluorescence, sensing device, functional coating and corrosion inhibition** **R. Kumar,1,2,3 R. Narayan,*2,3 K.V.S.N. Raju2 and T. M. Aminabhavi*1** *1KLE Technological University, Hubballi, Karnataka, India* *2 CSIR-Indian Institute of Chemical Technology, Hyderabad, Telangana, India* *3 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, Uttar Pradesh, India* **Corresponding author's E-mail: aminabhavit@gmail.com*
H38	**Dynamic Covalent Networks with Tunable Dynamicity by Mixing Acylsemicarbazides and Thioacylsemicarbazides** **Ramkrishna Sarkar,1 ‡ Soumabrata Majumdar,2 Sierd Kuil,1 Jorg Mallens,1 Joost van der Tol,1 Rint P. Sijbesma,2 Johan P.A. Heuts,2 Anja R. A. Palmans1*** *1 Laboratory of Macromolecular and Organic Chemistry, Institute for Complex Molecular Systems, Eindhoven University of Technology, P.O. Box 513, 5600 MB, Eindhoven, The Netherlands* *2 Department of Chemical Engineering and Chemistry, Institute for Complex Molecular Systems, Eindhoven University of Technology, P.O. Box 513, 5600 MB, Eindhoven, The Netherlands* *‡ Present Addresses*

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H39	**Preparation and characterization of Starch-Poly Vinyl Alcohol composite films reinforced by Aloe vera** **S. Tambe,1 S. Zinjarde2 and A.A. Athawale*1** *1Department of Chemistry, Savitribai Phule Pune University, Pune, India* *2 Department of Biotechnology, Savitribai Phule Pune University, Pune, India* **Corresponding author's E-mail: dranjaliathawale@gmail.com*
H40	**Synthesis of zwitterions for cellulose dissolution and regeneration** **S. Jadhav1,2,3, V. Ganvir3, M.K. Singh3,*, and K. Shanmuganathan1,2,*** *1Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, 411008, Maharashtra, India.* *2Academy of Scientific and Innovative Research, Ghaziabad, 201002, India.* *3Aditya Birla Science and Technology Company Pvt Ltd, MIDC Taloja, Navi Mumbai, 410206, Maharashtra, India.* **Corresponding author's E-mail: madan.k.singh@adityabirla.com, k.shanmuganathan@ncl.res.in*
H41	**Biodegradable Polyhydroxyurethane as Electrocatalyst for Water Splitting** **Bantumelli Prasannatha,1 Sateesh Mulkapuri 1 and Tushar Jana 1*** *1School of Chemistry, University of Hyderabad, Hyderabad, India* *Corresponding author's Email: tusharjana@uohyd.ac.in; tjscuoh@gmail.com
H42	**Polymer Thermosets with Cleavable Bonds for Hydrogen Storage.** **Sarika Birajdar, Pooravi Purohit and K.Krishnamoorthy*** *Polymer Science and Engineering Division* *CSIR-National Chemical Laboratory, Pune 411008* **Corresponding author's E-mail: k.krishnamoorthy@ncl.res.in*
H43	**Room Temperature Knitting of Sulfur in Polybenzoxazine: Solution Processable Copolymers** **S. Sahu1 and B. Lochab[*1]** *[1]Department of Chemistry, School of Natural Sciences, Shiv Nadar Institution of Eminence Deemed to be University, Gautam Budh Nagar, Uttar Pradesh 201314, India* **Corresponding author's E-mail: bimlesh.lochab@snu.edu.in*
H44	**The Influence of Graft Copolymerization on the Mechanical Properties of Human hair Fiber Reinforced Poly Methyl methacrylate Composites.** **Honey Srivastava[1], Pozhil S N[2], Sachin Waigaonkar[2]and Rashmi Chauhan[1]*** *[1]Department of Chemistry, BITS Pilani, K. K. Birla Goa Campus, Goa, India* *[2]Department of Mechanical Engineering, BITS Pilani, K. K. Birla Goa Campus, Goa, India* **Corresponding author's E-mail: rchauhan@goa.bits-pilani.ac.in*
H45	**Luminescent 3D printed PLA nanocomposites with enhanced mechanical properties** **Premkumar A. Kothavade, [1,3,4] Prashant Yadav,[1,3] Aakash Nidhankar [2,3], Arun Torris[1], Sukumaran Santosh Babu [2,3,] Harshawardhan Pol [1,3,] Abdullah Kafi [4], Stuart Bateman [4], Kadhiravan Shanmuganathan *[1,3]** *[1]Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, 411008, Maharashtra, India* *[2]Organic Chemistry Division, CSIR-National Chemical Laboratory, Dr. Homi Bhabha Road, Pune, 411008, Maharashtra, India* *[3]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, 201002, India* *[4]Centre for Additive Manufacturing, School of Engineering, Royal Melbourne Institute of Technology University, Melbourne, Victoria, Australia* **Corresponding author's E-mail: k.shanmuganathan@ncl.res.in*
H46	**Sustainable Fillers for Biodegradable Polymers** **Jefin Parukoor Thomas, [1,2] C. V. Sijla Rosely, [1,2] Akhila N S,[1,2] and E Bhoje Gowd*[1,2]** *[1]Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *[2]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
H47	**Co-crystalline Thermoreversible Gels of Poly(L-lactide)/Poly(D-lactide) Blends: A Strategy to Prepare α-Form and Stereocomplex Aerogels** **Vipin G. Krishnan,1,2 Praveena N. M,1,2 Amal Raj R. B,1 and E. Bhoje Gowd*1,2** *1Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *2Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
	Polymer Crystallization-Induced Emission Behavior in Curcumin-Appended Poly(L-

H48	**lactide)** **G.Virat,[1,3] Amal Raj R B[1], Kaustabh Kumar Maiti,[2,3] and E. Bhoje Gowd*[1,3]** *[1]Materials Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *[2]Chemical Science and Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram-695019, Kerala, India* *[3]Academy of Scientific and Innovative Research (AcSIR), Ghaziabad-201 002, India* **Corresponding author's E-mail: bhojegowd@niist.res.in*
H49	**Chemically Tuned Liquid Crystalline Nanocellulose Composites for Photonic Applications** **Shiva Singh,1 Shakshi Bhardwaj,1 Kaushik Ghosh,2 Pradip K. Maji1*** *1Department of Polymer and Process Engineering, Indian Institute of Technology Roorkee, Saharanpur Campus, Saharanpur- 247001, India* *2Department of Chemistry, Indian Institute of Technology Roorkee-247667, India* **Corresponding author's E-mail: pradip@pe.iitr.ac.in*
H50	**Microstructure driven magnetic composite for excellent microwaveabsorption in extended Ku-band** **Anurima De, Bhanu Bhusan Khatua*** *Materials Science Centre, Indian Institute of Technology Kharagpur, Kharagpur-721302, India* **Corresponding author's E-mail: khatuabb@matsc.iitkgp.ac.in*
H51	**Cellulose adsorbent is used to recycle phosphate nutrients from wastewater into plant growth** **Priya E a, Sudipta Sarkar b*, Pradip K Maji c*** *a Centre for Nanotechnology, Indian Institute of Technology Roorkee, Roorkee 247667, Uttarakhand, India, pe@nt.iitr.ac.in* *b Department of Civil Engineering, Indian Institute of Technology Roorkee, Roorkee 247667, Uttarakhand, India.* *c Department of Polymer & Process Engineering, Indian Institute of Technology Roorkee, Saharanpur Campus, Saharanpur 247001, Uttar Pradesh, India.* **Corresponding author's E-mail: sudipta.sarkar@ce.iitr.ac.in & pradip@pe.iitr.ac.in*
H52	**High functioning CNF/epoxy green nanocomposite enriched with urethane linkages: Valorization of waste tea fibers to engineering material** **Nobomi Borah1 and Niranjan Karak, *1** *1Advanced Polymer and Nanomaterial Laboratory (APNL), Department of Chemical Sciences, Tezpur University, Napaam, 784028, Tezpur, Assam, India.* **Corresponding author, E-mail: karakniranjan@gmail.com, Telephone: +91 3712-267009*
H53	**Citric acid based poly(ester amide urethane) thermoset as a sustainable coating material** **Annesha Kar1 and Niranjan Karak*1** *Advanced Polymer and Nanomaterial Laboratory (APNL), Department of Chemical Sciences, Tezpur University, Napaam, 784028, Tezpur, Assam, India.* **Corresponding author's E-mail: karakniranjan@gmail.com*
H54	**Development of BR based Nanocomposites** **Sukdeb Saha, Madhuchhanda Maiti, Ganesh Chandra Basak, Vivek K Srivastava, and Raksh Vir Jasra** *Research and Development Centre, Reliance Industries Limited, Vadodara-391345* *E-mail: sukdeb.saha@ril.com*
H55	**Dis-Entangled Ultra High Molecular Weight Polyethylene (D-UHMWPE) based synthetic Paper** **Sateesh Bonda[1]*, Devesh K. Shukla[1], Sukdeb Saha1, Vivek K. Srivastava[2], Rakshvir Jasra[1]** *1 Reliance Research and Development Centre, Vadodara Manufacturing Division, Reliance Industries Ltd., Vadodara-391346, Gujarat, India* *2 Reliance Research and Development Centre, Reliance Corporate Park (RCP), Reliance Industries Ltd., Navi Mumbai- 400701 Maharashtra, India* **Corresponding author's E-mail: sateesh.bonda@ril.com*
H 56	**Heavy metal ions sequestration from organic solvents using 2,2'-bipyridine containing chelating polymers** **S. Goyal1*, J. Jacob[1]** *[1] Department of Materials Science and Engineering, Indian Institute of Technology Delhi, New Delhi, India* **S. Goyal E-mail: Goyal.shivani95@gmail.com*
H57	**Synthesis of Nano hydrogel based Cellulose-g-Hema /Nano CaO using snails hell for removal of Cr (VI) from waste water** **C R Routray1, S P Mohanty2, B Tosh2,***

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H58	**Preparation and Characterization of Poly (Urea-Formaldehyde) Microcapsules with VO and probing their utility as Novel Self-HealingAgent for Anticorrosive Coatings** **Pradip S. Patil1 Omkar S. Kushwaha2 Priyanka S. Shisode1 Pramod P. Mahulikar3 Chetan B. Patil*1** *1 Department of Chemistry, S. S. V. P. Sanstha's L.K. Dr. P. R. Ghogrey, Science College, Deopur, Dhule-424005. Affiliated to KBCNMU, Jalgaon-425001, (M.S.), India.* *2Department of Chemical Engineering, IIT Madras, Chennai-600036, India.* *3School of Chemical Sciences, KBCNMU, Jalgaon-425001, (M.S.), India.* **Corresponding author's E-mail: cbpatil82@rediffmail.com*
H59	**Bio Innovation of a Circular Economy for Plastics** **Shaiju Parameswaran,1 Divya Rajesekhran1 Jasmina Nikodinovic-Runic2 and Ramesh Babu*[1]** *1School of Chemistry, Trinity College Dublin, Dublin 2, Ireland* *2 Institute of Molecular Genetics and Genetic Engineering, University of Belgrade, Serbia* **Corresponding author's E-mail: babup@tcd.ie*
H60	**Development of Polymeric Optical Sensors for Atmospheric Purification and Bio-Medical Applications** **Moumita Gupta and Raja Shunmugam*** *Indian Institute of Science Education and Research-Kolkata, Kalyani, India* *E-mail: polyraja@gmail.com*

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