

Curriculum Vitae



Prof. GAURAV MANIK, Ph.D., FRSC, FIEI, FIChE

**Professor,
Department of Polymer and Process Engineering,
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Email: gaurav.manik@pe.iitr.ac.in;**

PROFESSIONAL SUMMARY

Prof. Gaurav Manik is presently serving as Professor and Head of the Department of Polymer and Process Engineering at IIT Roorkee. He joined IIT Roorkee in January 2013 and holds a Ph.D. (IIT Bombay), M.Tech (IIT Kanpur) and B.Tech (HBTI Kanpur) in Chemical Engineering. He is an elected Fellow of prestigious international societies namely Royal Society of Chemistry (RSC), Institute of Engineers (India) and Indian Institute of Chemical Engineers (IChE).

Prior to joining IITR, he has served extensively in industry (3M, Indo Gulf Fertilizers & Chemicals Ltd., Classic Stripes Pvt. Ltd.) and academia (BITS Pilani, BIET Jhansi) **totalling up his rich experience to ~20+ years.** In industry, he is credited with creating and **commercializing several innovative products and fostering IP through significant number of patents and record of inventions.** He is a prolific researcher with interests in Sustainable hybrid polymer composites and environmentally benign nanocomposites, Applied molecular modeling and simulations, Valorization of wastes, bio-based adhesives, easy-clean coatings, biosensing, Chemical process modeling and simulation. He has highly cited **235+ research publications** in international peer reviewed/ SCI journals, patents/patent applications, conferences and book chapters. He has significantly valued over **100** publications in peer-reviewed Chemical Engineering and Polymer Science & Engineering Journals of repute, holds **13** granted patents/patent applications of industrial commercial relevance, contributed to **31** books/book chapters and **92** conference publications/participations. He has executed/supervised/supervising **15** research and consultancy projects worth ~INR **800 Lakhs+** and **4** post-doctoral, **14** Ph.D., **18** M.Tech students and **25+** B.Tech projects. Among several awards received by him to disseminate professional knowledge and research, he has been awarded with the prestigious **APAC level TechForum Contribution Award at 3M in 2012**; received **Best Innovative Product Design Award twice in 2010 & 2011 at 3M**; **Secondment as Visiting Faculty sanctioned by the President of India for teaching at international platform at Asian Institute of Technology, Thailand, 2016, Visiting Faculty at Khalifa University (UAE) & KMUTNB (Thailand) and VICAL Award for Best Technical Paper by Institute of Chemical Engineers (IChE), India.** He has been an **invited speaker, guest and sessions chair at several national and international conferences and workshops in India and abroad.** He is a **life member of several distinguished professional societies (MRSI, ISTE), Board of Director of STEM Research Society, and guest editor of iScience Journal.**

ACADEMIC QUALIFICATIONS

1. **Ph.D. in Chemical Engineering**, *Indian Institute of Technology Bombay (IITB)*, India, 2004-2010.
2. **M. Tech in Chemical Engineering**, Indian Institute of Technology Kanpur (IITK), India, 1998-2000.
3. **B. Tech in Chemical Engineering**, Harcourt Butler Technological Institute (HBTI) Kanpur, India, 1993-1997.

RESEARCH AND ACADEMIC TEACHING INTERESTS

Waste-to-wealth; Advanced sustainable hybrid polymer composites and nanocomposites; Applied molecular modeling and simulations; Polymer recycling; Industrial Process Modeling, Simulation, Optimization and Control; Biosourced industrially useful adhesives; Nano-materials and quantum-dots for biosensing; Easy clean/self-clean coatings; Upcycling of wastes and waste management;

PROFESSIONAL EXPERIENCES

1. Professor, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, 10th Oct 2023 onwards till date.
2. Head of Department, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, 22 March 2022 to 21 March 2025.
3. Visiting Professor, **King Mongkut's University of Science and Technology (KMUTNB)**, Bangkok, Thailand, February 2025.
4. Visiting Researcher (Faculty), Department of Physics, **Khalifa University of Science and Technology**, Abu Dhabi, UAE, Dec 2022 - January 2023.
5. Associate Professor, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, Dec 2018 onwards till date.
6. Visiting Assistant Professor, School of Environment Resource and Development (SERD), **Asian Institute of Technology (AIT)**, Thailand, January-April 2016.
7. Assistant Professor, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, January 2013 till Dec 2018.
8. Deputy General Manager, **Classic-Stripes Private Limited**, September 2012-December 2012.
9. Senior Manager -Corporate Research Materials Lab, **3M India Ltd.**, June 2011-September 2012.
10. Manager –New Product Development Group, **3M India Ltd.**, August 2008-June 2011.
11. Project Staff- Chemical Engineering Department, IIT Bombay, Feb 2004-Aug 2008.
12. Lecturer, **Birla Institute of Technology and Science (BITS)**, Pilani, Sept-2003-Feb 2004.
13. Lecturer, **Bundelkhand Institute of Technology and Science (BIET)**, Jhansi, India, June-2000-Sept 2003.
14. Engineer T., **Indo Gulf Fertilizers and Chemicals Ltd.**, Jagdishpur, India, July 1997-June 1998.

POST-DOCTORAL GUIDANCE (04)

1. **Dr. Sushanta K. Sahoo** on “Development of Bio-based resins and composites from Non-edible Plant oils: A greener material for automotive Parts and coating application” **under DST NPDF Fellowship, May 2016-May 2018.**
2. **Dr. Tulika Sharma** on “Value addition of wood and wood based composites using nanomaterial”, Jan 2023 onwards, ICFRE Sponsored project.
3. **Dr. Chinmayee Dash** on “Value added composite parts through upcycling of waste Fly Ash”
4. **Dr. Sangeeta Tripathi** on “Development of a performance reinforced polymeric composite material and its characterization”, V.E Ltd. Mumbai

THESIS SUPERVISION

(PhD)

1. PhD Thesis on “Molecular Simulation of Hydrophobic and Oleophobic Environmental Friendly coatings”, by Sushanta Sethi (**Status: AWARDED, 2021**), **Post-doctoral at IIT Bombay, Currently Assistant Professor at IIT Dharwad**
2. PhD Thesis on “Energy optimization of heptads’ stage evaporator via Modeling, simulation & control”, by Om Prakash Verma, at IIT Roorkee (**Status: AWARDED, 2018**), **Currently Assistant Professor at NIT Jalandhar, India**
3. PhD Thesis on “Development of Polyaniline and Carbon Nano-materials filled epoxy conductive adhesives”, by Vinay Khandelwal, at IIT Roorkee (**Status: AWARDED, 2019**), **Currently serving at Reliance, Mumbai, as Scientist in Polymer division**
4. PhD Thesis on “Synthesis and characterization of nanomaterials for nanomedical applications”, by Sachin Kadian (**Status: AWARDED 2022**), **Selected for prestigious SERB-OVDF (Overseas Visiting Doctoral Fellowship) under the SERB-Alberta (Canada) Fellowship program; Post-doctoral fellowship at Purdue University, USA (QS Rank: 99); Pursuing post-doc. at North Carolina State University, USA, (QS Rank: 274)**
5. PhD Thesis on “Development of light-weight specialized hybrid polymer composites for industrial applications” by Rupam Gogoi (**Status: AWARDED 2022**), **Selected for the famous Newton-Bhabha fellowship at Cranfield University, UK; Pursuing Post-Doctoral Fellowship at Imperial College, London), (QS Rank: 6)**
6. PhD Thesis on “Hybrid high impact PP based composites”, by Atul Kumar Maurya (**Status: AWARDED 2022**), **Post-doctoral at Pittsburg University and UMASS Lowell, USA, (QS Rank: 245); Currently pursuing post-doc at Michigan State University, USA**
7. PhD Thesis on “Modeling, simulation, optimization, and control of reverse osmosis desalination plant using Artificial Neural Network”, by Rajesh Mahadeva (**Status: AWARDED 2022**), **Doing post-doctoral at Khalifa University, UAE, (QS Rank: 230)**
8. PhD Thesis on “Modeling, simulation, optimization and control of a desalination process integrated with solar energy utilization”, by Anubhav Goel (**Status: AWARDED 2023**), **Post-doctoral assignment at Erasmus University, Rotterdam, Netherlands (QS Rank: 176)**
9. PhD Thesis on “Combined theoretical and experimental approach towards the development of biobased pressure sensitive adhesives”, by Manjinder Singh (**Status: ONGOING**), **Selected for the famous Commonwealth Split-Site fellowship, at Birmingham University, UK.**
10. PhD Thesis on “Development of green composites for industrial applications” by Sachin Kumar (**Status: ONGOING**)
11. PhD Thesis on “Development of environmentally benign bio-sourced adhesives”, Abhinav K Singh, (**Status: ONGOING**)
12. PhD Thesis on “Upcycling and recycling of polymer wastes”, Ankita Chouhan, (**Status: ONGOING**)
13. PhD Thesis on “Microplastics Removal”, Nishi Gandha, (**Status: ONGOING**)
14. PhD Thesis on “Novel sustainable adhesives”, Akhil K, (**Status: ONGOING**)

Masters (M.Tech)

1. M.Tech Thesis Titled “Molecular dynamics simulations of PVA based anti-stain and easy-to-clean coatings”, submitted by Sanjay Krishna, at IIT Roorkee, June 2015. (**Status: AWARDED**), **Currently faculty at Shivnadar University.**
2. M.Tech Thesis Titled “Molecular dynamics simulations of acrylate based pressure sensitive adhesives”, submitted by Kapil Sharma, at IIT Roorkee, June 2015. (**Status: AWARDED**)

3. M.Tech Thesis Titled “Molecular simulations of industrially relevant poly (vinyl acetate) coatings”, submitted by Yash Singhvi, at IIT Roorkee, June 2014. **(Status: AWARDED)**
4. M.Tech Thesis Titled “Strength analysis of 3D printed polymer materials”, submitted by S. Gowri Shankar, at IIT Roorkee, June 2014. **(Status: AWARDED)**
5. M.Tech Thesis Titled “Degradation of Polyvinyl alcohol-Titania based Nanocomposite”, submitted by Varghese M. Issac, Department of Polymer Science and Rubber Technology, at Cochin University of Science and Technology, Kochi, Kerela, India, April 2011. **(Status: AWARDED, co-supervision)**
6. M.Tech Thesis Titled “Rheological behavior of long-chain branched poly (ethylene terephthalate)” under the DAAD-IIT Master Sandwich Program, by Rajas Shah, at IIT Roorkee **(Status: AWARDED, co-supervision)**, 2016, Pursuing PhD from USA.
7. M.Tech Thesis Titled “Study of elongational viscosity of polyacrylamide”, by Sandeep Garepally, in collaboration with TOTAL, Germany, at IIT Roorkee **(Status: AWARDED, co-supervision)**, 2016, **Currently serving as Scientist in TOTAL, Germany.**
8. M.Tech Thesis Titled “Development of functional bio-based polymers based on aromatic biomass” by Joginder Bansal, IIT Roorkee **(Status: AWARDED)**, 2016
9. M.Tech Thesis Titled “Development of Tamper Evident Packaging” by Anshuman Upadhyaya, at IIT Roorkee **(Status: AWARDED)**, 2017, Own start-up.
10. MTech Thesis titled “Development of PVA-essential oil based anti-microbial packaging film with desirable barrier properties” by Moin Khan at IIT Roorkee **(Status: AWARDED)**, 2021
11. M.Tech Thesis titled “Development of A New product: Hot-Melt Pressure Sensitive Adhesive Paper Tape for Carton sealing” by Satyanarayana Behera **(Status: AWARDED)**, 2022, **Currently Senior Process Engineering at IPG, Bharuch, Gujrat.**
12. M.Tech Thesis titled “Development and characterization of adhesives from bio-sources”, by Arpit Dubey **(Status: AWARDED)**, 2023, **Currently as Scientist at Tata Advanced Technologies, Bangalore/Nagpur.**
13. M.Tech Thesis titled “Development and characterization of composites from bio-sources”, by Suvidha Khaire **(Status: AWARDED)**, 2023, **Senior Manager at Kung-fa, Pune.**
14. M.Tech Thesis titled “Valorization of non-edible oils based adhesives as bio-sourced binders for printing inks for packaging applications” by Rahul Lodhi, (Status: **ONGOING**), 2024
15. M.Tech Thesis titled “Development, Characterization and Optimization of Performance Structural Adhesives for Construction Tile Applications” by Sumit Kumar (Status: **ONGOING**), 2024.
16. M.Tech Thesis titled “Development and characterization of lignin-based adhesives for wood binding applications”, Saurabh Maliyan, (Status: **ONGOING**), 2024.
17. M.Tech Thesis titled “Development of carbon nanomaterials decorated carbon fibres and their characterization”, Dipanshu Sharma (Status: **ONGOING**), 2024.
18. M.Tech Thesis titled “Development, Characterization and Optimization of Sustainable Structural Adhesives for Construction Tile Applications”, Ankita Patel (Status: **ONGOING**), 2024.

DETAILS OF EDUCATIONAL PROGRAMS ORGANIZATION/PARTICIPATION **(Short Term/Continuing Education/Specialist Courses/Conferences/Workshops)**

1. **Convener**, Research Scholars Day, Department of Polymer and Process Engineering, IIT Roorkee, 2024.
2. **Conference Chair**, 2nd International Conference on Recent Advances in Sustainable Environment (RAiSE), 3-4th March 2022.

3. **Conference Session Chair**, APA-Bioforum-2022 organized by Asian Polymer Association in session “Biopolymers in wound care”, 16th July **2022**.
4. **Course Coordinator**, Tata Steels Ltd., Jamshedpur, sponsored short-term course on “Fundamentals of Polymers, Polymer Composites and Polymer Adhesives”, 13-22 Dec **2021**.
5. **General Program Chair**, 3rd International Congress on Advances in Mechanical and Systems Engineering (CAMSE-2021) in association with STEM-Research Society, organized by Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, July 17-19th **2021**.
6. **Convener, Workshop** on “Importance of Product Design Innovation: Generating and Protecting IP in Current Scenario” **sponsored by Design Innovation Centre**, to be held in March **2020**.
7. **Resource Person, TEQIP-III Sponsored Short Term Course** on Optimization and Control Design Techniques: Innovation and Challenges, Organized by Department of Instrumentation and Control Engineering, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, Punjab, 10-14 January, **2019**.
8. **Resource Person, TEQIP-III Sponsored Faculty Development Program**, on Recent Advances in Chemical Engineering, Organized by Department of Chemical Engineering, School of Chemical Technology, Harcourt Butler Technological Institute (HBTI), Kanpur, 23-27 July, **2018**.
9. **Convener, AICTE sponsored QIP Workshop** on “Molecular Simulation Techniques”, at Department of Polymer and Process Engineering, IIT Roorkee, 21st February, **2015**, as **Convenor**
10. **Member-Organizing Committee, Workshop on Advances in Packaging Technology**, 6-7th at Department of Paper Technology, IIT Roorkee, October **2015**,
11. **Member-Organizing Committee, International Conference on Emerging Materials and Applications (ICEMA)**, at Department of Paper Technology, IIT Roorkee, 5-6th April **2014**,
12. **Member-Organizing Committee, Workshop on “Clean Technologies for Process Industries”**, at Department of Paper Technology, IIT Roorkee, 27-28th March **2014**,

PUBLICATIONS LIST (Publications in peer-reviewed journals):

100 Nos.: 8 Hot Access /Outstanding/ Featured Articles

1. Manjinder Singh, Brahma Prakash, Rahul Lodhi, Anurag Kulshreshtha, **Gaurav Manik**, Eco-friendly ink formulations with acrylated epoxidized linseed oil binders: Balancing performance and sustainability, *Progress in Organic Coatings (Impact Factor: 6.5)*, Vol. 204, pp 109199, July **2025**.
2. PA Parvathy, Sriparna De, Manjinder Singh, **Gaurav Manik**, Sushanta K Sahoo, “RAFT polymerization assisted P(NIPAm-co-AAc)-AEMR integrated PVA hydrogels: Dual responsive features, texture analysis, and cytotoxicity studies” *Reactive and Functional Polymers (Impact Factor: 3.98)*, Elsevier, Vol. 205, 106052, Dec **2024**
3. Tulika Sharma and **Gaurav Manik**, Sustainable UV-resistant and anti-bacterial wood coating reinforced with cellulose nanofibers (CNF) and titanium dioxide nanoparticles: Synthesis, characterization and properties, *International Journal of Biological Macromolecules (Impact Factor: 8.4)*, Vol. 303, pp 140533, April **2025**.
4. Piyush Kumar, Hariome Sharan Gupta, Manjinder Singh, Arjun K. Chaudhari, Atul Kumar Maurya and **Gaurav Manik**, Mechanical, Thermal, and Morphological Analysis of Himalayan Agave Fiber /GO Coated Fly Ash Hybrid Polypropylene Composites, *Chemistry - A European Journal*, e202402393, Nov, **2024**. <https://doi.org/10.1002/chem.202402393>
5. Rajesh Mahadeva, Mahendra Kumar, Anjali Diwan, **Gaurav Manik**, Saurav Dixit, Gobind Das, Vinay Gupta, Anuj Sharma, “Improvised grey wolf optimizer assisted artificial neural network

- (IGWO-ANN) predictive models to accurately predict the permeate flux of desalination plants”, *Heliyon*, Vol 10, Issue 13, e34132 July 15, **2024**
6. Atul Kumar Maurya, Sachin Kumar, Arjun S Chaudhari, and **Gaurav Manik** ‘Sisal fiber reinforced and cenosphere hybridized polypropylene-sebs composite: an insight into crystallographic, dynamic mechanical and rheological behavior’, *Chem. An Asian J.* 19(19), Sept **2024**, e202400151, <https://doi.org/10.1002/asia.202400151>
 7. Arulmozhivarman Joseph Chandran, Sanjay Mavinkere Rangappa, Indran Suyambulingam, **Gaurav Manik**, Suchart Siengchin, Marine Waste as a Resource: Developing Bio-Epoxy Composites for a Sustainable Future, *Materials Today Sustainability*, Volume 27, 100908, September **2024**.
 8. Tulika Sharma, Shubham Bawa, Sachin Kumar, **Gaurav Manik** and Yuvraj S. Negi, Bioactive enhancement of PVA films through CNC reinforcement and Ficus auriculata fruit extract: A novel synthesis for sustainable applications, *International Journal of Biological Macromolecules (Q1, Impact Factor 8.4)*, Volume 275, Part 1, 133338, Aug **2024**
 9. Manjinder Singh, Sushanta Sahoo and **Gaurav Manik**, Combined computational and experimental approach for bio-sourced monomers to design green pressure-sensitive adhesives, *Molecular System Design and Engineering by Royal Society of Chemistry (Impact Factor: 4.92)*, Issue 12, Sept **2023**, DOI: 10.1039/D3ME00080J
 10. Rupam Gogoi and **Gaurav Manik**, Interfacial shear strength of surface functionalized and functionalized CNT coated carbon fiber: A single fiber fragmentation study, *Journal of Thermoplastic Composite Materials (Impact Factor: 3.6)*, *SAGE Journals*, Vol 37, Issue 3, July **2023**. <https://doi.org/10.1177/08927057231187520>
 11. Smitarani Pati, Nikhil Pachori, **Gaurav Manik**, Om Prakash Verma, Design and optimal tuning of fraction order controller for multiple stage evaporator system, *Digital Chemical Engineering, Elsevier*, Vol 9, 100125, Dec **2023**
 12. Anubhav Goel, **Gaurav Manik**, Integration of a parabolic trough solar collector with an energy-intensive multi-effect evaporator: A move towards industrial decarbonisation, *Energy (Impact Factor: 8.857)*, *Elsevier*, Vol 279, 128058, Sept **2023**.
 13. Smitarani Pati, Nikhil Pachauri, Om Prakash Verma and **Gaurav Manik**, “Design and Optimal Tuning of Fraction Order Controller for Multiple Stage Evaporator System”, *Digital Chemical Engineering, Elsevier*, Vol 9, 100125, Dec **2023**
 14. Manjinder Singh, Sushanta Sahoo and Gaurav Manik, *Computationally developed acrylated epoxidized methyl ester based pressure-sensitive adhesives*, *Computational Material Science (Impact Factor: 3.572)*, *Elsevier*, Vol 228, 112329, Sept **2023**.
 15. Rupam Gogoi, Sushanta K Sethi, Atul Kumar Maurya and **Gaurav Manik**, A molecular dynamics assisted insight on the enhancement of interfacial adhesion of carbon fiber with polypropylene matrix via a combination of surface functionalization and defect laden carbon nanotube coating, *Colloids and Surfaces A: Physicochemical and Engineering Aspects (Impact Factor: 5.518)*, *Elsevier*, Vol 668,131455, July **2023**.
 16. Atul Kumar Maurya, Rajesh Mahadeva, Shashikant Patole, **Gaurav Manik**, “An Investigation into Performance Properties of Sustainable Polypropylene Composites Reinforced with Basalt Fiber and Fly Ash”, *Polymer Composites (Impact Factor-3.531)*, *Wiley*, Vol 44, 5104-5120, June **2023**.
 17. Sachin Kadian, Narendra Chaulagain, Kai Cui, N Joshi, Kaji Alam, Karthik Shankar and **Gaurav Manik**, Probe sonication-assisted rapid synthesis of highly fluorescent sulfur quantum dots, *Nanotechnology (Impact Factor: 3.953)*, Vol 34, No. 30, May **2023**.
 18. Sushanta K. Sethi, Sachin Kadian, Rupam Gogoi and **Gaurav Manik**, Layer-by-layer fabrication of self-cleaning superhydrophobic surface made from Carboxymethylcellulose and ZnO quantum

- dots: A combined experimental and computational study, *Surfaces and Interfaces (Impact Factor-6.137)*, *Elsevier*, Vol 37, 102752, April **2023**
19. Rajesh Mahadeva, Vinay Gupta, Shashikant Patole, **Gaurav Manik**, Water Desalination using PSO-ANN Techniques: A Critical Review, *Digital Chemical Engineering Journal, Elsevier*, Vol 9, 100128, Dec **2023**.
 20. Anubhav Goel, Rajesh Mahadeva, Shashikant Patole and **Gaurav Manik**, Dynamic modeling and controller design for a parabolic trough solar collector, *IEEE Access (Impact Factor: 4.34)*, PP(99), 1-1, Jan **2023**.
 21. Rajesh Mahadeva, Shashikant Patole, Anubhav Goel and **Gaurav Manik**, A Novel AGPSO3 based ANN Prediction Approach: Application to the RO Desalination Plant *Arabian Journal for Science and Engineering, (Impact Factor: 2.807)*, *Springer-Nature*, Vol. 48, pages 15793-15804, Feb, **2023**.
 22. Rajesh Mahadeva, Mahendra Kumar, Vinay Gupta, **Gaurav Manik** and Shashikant P. Patole, Modified Whale Optimization Algorithm based ANN: a novel predictive model for RO desalination plant, *Scientific Reports (Impact Factor: 4.6)*, 13, 2901, Feb **2023**.
 23. Atul Kumar and **Gaurav Manik**, "Advances towards development of industrially relevant short natural fiber reinforced and hybridized polypropylene composites for various industrial applications: A Review", Vol 30, Issue 1, Page 101, *Journal of Polymer Research (Impact Factor: 3.061)*, *Springer*, **2022**.
 24. Atul Kumar and **Gaurav Manik**, Development and characterization of a recycled nylon fiber reinforced and nano-fly ash hybridized high impact performance polypropylene composite for sustainability, *Journal of Thermoplastic Composite Materials (Impact Factor: 3.027)*, *SAGE*, **2022**; <https://doi.org/10.1177/08927057221147825>
 25. Rhiya Paul, Manjinder Singh, V J. Vidhya, **Gaurav Manik**, Sushanta Sahoo, Bio-based pressure sensitive adhesives derived from cardanol, vanillin and sebacic acid for removable non-structural applications, 62, 1, pp 423-434, *ACS Industrial & Engineering Chemistry Research (Impact Factor: 4.326)*, **2022**.
 26. Ankita Dhiman, Aastha Gupta, Sushanta Kumar Sethi, **Gaurav Manik** and Garima Agarwal, Encapsulation of Wax in Complete Silica Microcapsules, *Journal of Materials Research (Impact Factor: 2.95)*, *Springer*, **2022**. <https://doi.org/10.1557/s43578-022-00865-y>
 27. Anubhav Goel and **Gaurav Manik**, "Techno-economic optimization of a parabolic trough solar collector using multi-objective genetic algorithm", *Thermal Science and Engineering Progress (Impact Factor: 4.63)*, *Elsevier*, Vol 37, 101539, **2022**.
 28. Anubhav Goel and Gaurav Manik, Analysis and optimization of parabolic trough solar collector to improve its optical performance, *ASME Journal of Solar Energy Engineering: Including Wind Energy and Building Energy Conservation (Impact Factor: 2.238)*, 145(3), 031009, **2022**.
 29. Sushanta K. Sethi, Rupam Gogoi and **Gaurav Manik**, How can the geometry of a rough surface affect its wettability? -A coarse-grained simulation analysis, Vol 172, pp 107062, *Progress in Organic Coatings (Impact Factor: 6.206)*, *Elsevier*, **2022**.
 30. Rupam Gogoi, Atul K. Maurya and **Gaurav Manik**, A Review On Recent Development In Carbon Fiber Reinforced Polyolefin Composites" *Composites Part C: Open, Elsevier*, Vol 8, August 2022, 100279, **2022**.
 31. Manisha Chatterjee, Prathul Nath, Sachin Kadian, Anshul Kumar, Vishal Kumar, Partha Roy, **Gaurav Manik** and Soumitra Satapathi, Highly Sensitive and Selective Detection of Dopamine with Boron and Sulphur co-doped Graphene Quantum Dots, *Scientific Reports (Impact Factor: 4.38)*, 12, 9061, **2022**

32. Ajay Vishwakarma, Manjinder Singh, Bartosz W., V J Reddy, Baljinder Kandola, **Gaurav Manik**, Arvind Dasari and Sujay Chattopadhyay, Construction of hydrophobic fire retardant coating on cotton fabric using a layer-by-layer spray coating method, *International J. of Biological Macromolecules (Impact Factor: 8.2), Elsevier*, Volume 223, Part B, 31, Pages 1653-1666, **2022**
33. Narendra Chaulagain, Kazi Alam, Sachin Kadian, Navneet Kumar, John Garcia, **Gaurav Manik**, Karthik Shankar, Synergistic Enhancement of the Photoelectrochemical Performance of TiO₂ Nanorod Arrays Through Embedded Plasmon and Surface Carbon Nitride Co-Sensitization, *ACS Applied Materials & Interfaces (Impact Factor: 10.383)*, 14, 21, 24309–24320, **2022**
34. Tushar Kanti Maiti, Jitendra Singh, Subrata Kumar Maiti, Jagannath Majhi, Arihant Ahuja, Manjinder Singh, Anasuya Bandyopadhyay, **Gaurav Manik**, Sujay Chattopadhyay, Molecular dynamics simulations and experimental studies of the perfluorosulfonic acid-based composite membranes containing sulfonated graphene oxide for fuel cell applications, *European Polymer Journal (Impact factor: 5.546)*, Vol 174, 111345, July **2022**.
35. Rupam Gogoi and **Gaurav Manik**, Development and characterization of surface functionalized hierarchical carbon fiber reinforced hybrid polypropylene composites, *Journal of Thermoplastic Composite Material*, Vol. 26, Issue 7, May **2022**. (**Impact Factor: 3.330**)
36. Rajesh Mahadeva, Mahendra Kumar, Shashikant Patole and **Gaurav Manik**, Employing artificial neural network for accurate modeling, simulation and performance analysis of an RO-based desalination process, *Sustainable Computing: Informatics and Systems*. 35, 100735, **2022**. (**Impact Factor: 4.028**)
37. Rajesh Mahadeva, Mahendra Kumar, Shashikant Patole and **Gaurav Manik**, Desalination Plant Performance Prediction Model Using Grey Wolf Optimizer based ANN Approach, *IEEE Access Vol. 10*, 34550-34561, **2022**. (**Impact Factor: 4.34**)
38. Rajesh Mahadeva, Mahendra Kumar, Shashikant Patole and **Gaurav Manik**, An optimized PSO-ANN model for improved prediction of water treatment desalination plant performance”, *Water Supply*, 22 (3), 2874-2882, **2022**. (**Impact Factor: 1.275**)
39. Sushanta K. Sethi, Sachin Kadian and **Gaurav Manik**, “A review of recent progress in molecular dynamics and coarse-grain simulations assisted understanding of wettability”, *Archives of Computational Methods in Engineering*, **2022**. (**Impact Factor: 9.18**)
40. Anubhav Goel, Om Prakash Verma and **Gaurav Manik**, “Designing a robust analytical model of a parabolic trough solar collector through in-depth analysis of convective heat transfers”, *Arabian Journal for Science and Engineering, Springer*, **2022**. (**Impact Factor: 2.807**)
41. Ashish Kalkal, Sachin Kadian, Sumit Kumar, Prosenjit Sen, Saurabh Kumar, P. Gopinath, **Gaurav Manik**, Ti₃C₂-MXene decorated with nanostructured silver as a dual-energy acceptor for the fluorometric Neuron Specific Enolase detection, *Biosensors and Bioelectronics*. 195 (2022) 113620. **The work was highlighted in Atlas of Science on March 24, 2022**. (**Impact Factor: 10.618**)
42. Atul Kumar, Rupam Gogoi and **Gaurav Manik**, Recycling and Reinforcement Potential for the fly ash and sisal fiber reinforced hybrid polypropylene composite, *Polymer Composites, Wiley*, **2022**, 43, 1060–1077. (**Impact Factor: 3.531**)
43. Anubhav Goyal, Om Prakash Verma and **Gaurav Manik**, “Combinatorial and geometric optimization of a parabolic trough solar collector, *Korean Journal of Chemical Engineering*, 39, 284–305, **2022**. (**Impact Factor: 3.309**)
44. Arun Yadav, Chandravati, Sushanta Sethi, Bailiang Xue, Yuanyuan Xia, Ke Li, **Gaurav Manik**, Xinping Li, Micro-designed Nanocellulose Based Flexible Antibacterial Aerogel Architectures

- Impregnated with Bioactive Cinnamomum cassia, *ACS Applied Materials & Interfaces*. **2021**, 13 (4), 4874-4885. (*Impact Factor: 10.383*)
45. Ramesh Kumar, Jitendra Kumar, Sachin Kadian, Priya Shrivastava, **Gaurav Manik** and Monojit Bag, Tunable Ionic Conductivity and Photoluminescence in Quasi-2D CH₃NH₃PbBr₃ Thin Film Incorporating Sulphur Doped Graphene Quantum Dots, *Phys. Chem. Chem. Phys.*, **2021**, 23, 22733-22742. (*Impact Factor: 3.676*)
 46. Manjinder Singh, Sushanta K Sethi and **Gaurav Manik**, Pressure-sensitive adhesives based on acrylated epoxidized linseed oil: A computational approach, *International Journal of Adhesion and Adhesives*, 103031, Vol. 112, **2021**. (*Impact Factor: 3.4*)
 47. Ashish Kalkal, Sachin Kadian, Rangadhan Pradhan, P. Gopinath, **Gaurav Manik**, Photoluminescent Graphene Quantum dots for optical and electrochemical biosensors: An insight, *Materials Advances, Royal Society of Chemistry*, **2**, 5513 – 5541, **2021**; (*Impact Factor: 3.18*)
 48. Atul Kumar Maurya, Rupam Gogoi, **Gaurav Manik**, A combined theoretical and experimental investigation of the valorization of mechanical and thermal properties of the fly ash reinforced polypropylene hybrid composites, *Journal of Materials Science*, 56, 16976–16998, **2021**. (*Impact Factor: 4.682*)
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31. Om Prakash Verma, SonuVerma and **Gaurav Manik**, “Analysis of Hybrid Temperature Control for Non-linear Continuous Stirred Tank Reactor, in *Springer’s book on Advances in Intelligent Systems and Computing*, Proceedings of the Fourth International Conference on Soft Computing and Problem Solving, K. N Das, 336, *Springer*, Published Feb 2015.

PUBLICATIONS IN CONFERENCE PROCEEDINGS/PAPER PRESENTATIONS:

91 No. Total; 5 Conference Best Paper Awards

1. Manjinder Singh, Rahul Lodhi, Brahma Prakash, Ankita Patel, Anurag Kulshreshtha, **Gaurav Manik**, Development of a sustainable adhesive binder sourced from modified linseed oil for printing ink application, accepted for presentation in APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October **2024**, Jaipur, India.
2. Abhinav K. Singh, Rahul Gautam, **Gaurav Manik**, Production, Extraction, and Characterization of Exopolysaccharides via sustainable bacterial-driven route for potential industrial applications, accepted for presentation in APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October **2024**, Jaipur, India.
3. Tulika Sharma, **Gaurav Manik**, Sustainable Wood Coatings: Enhancing UV-Resistance and Antibacterial Properties with Cellulose Nanofibers and Titanium Dioxide Nanoparticles, accepted for presentation in APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October, **2024**, Jaipur, India.
4. Ankita Chauhan, Madhuparna Ray, Manjinder Singh, **Gaurav Manik**, Sujay Chattopadhyay, β -cyclodextrin derived IPNs to generate superior proton conductivity in polymeric blend electrolytes: An experimental and molecular simulation-assisted approach, accepted for presentation in APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October **2024**, Jaipur, India.
5. Manjinder Singh, Siddhartha D. Pramanik, Abhinav K. Singh, Sushanta K. Sahoo, Partha Roy, **Gaurav Manik**, Development of removable pressure-sensitive adhesives from modified linseed oil with tunable properties, presented in International Conference on Sustainable Materials for Engineering Applications during February 1-3, **2024**, IIT Madras, Chennai, India.
6. Sangita Tripathi, Anurag Kulshreshtha and **Gaurav Manik**, A sustainable and green route for the synthesis of carbon nanomaterials, India International Science Festival (IISF), IIT Guwahati, Nov 30 to Dec 03, **2024**.
7. Abhinav K. Singh, Ankita Chauhan, **Gaurav Manik**, Development of performance hot melt adhesives through recycling of waste PET bottles, presented in International Chemical Engineering Conference on Energy, Environment and Sustainability, February 15-17, **2024**, IIT Roorkee, India.
8. Tulika Sharma and **Gaurav Manik**, Sustainable and environmental-benign coatings for wood and wood-based substrates, presented in International Conference on Composite Materials for Environment Protection and Remediation (ICMEPR-2024), 2-3 July **2024**, IIT Patna, India.
9. Sachin Kumar, Sumit Kumar, Gaurav Manik. An approach towards management of waste plastic and waste fly ash produced from thermal power plants and other industrial sources, presented in International Chemical Engineering Conference on Energy, Environment and Sustainability, February 15-17, **2024**, IIT Roorkee, India.
10. **Gaurav Manik** and Manjinder Singh, Sustainable and performance adhesives for healthcare and packaging applications: An experimental development and molecular simulation perspective, ICSMEA 2024-IIT Madras, 1-3 Feb **2024**.
11. Manjinder Singh, **Gaurav Manik**, UV-curable linseed oil-based pressure sensitive adhesives for healthcare and food packaging applications, accepted for presentation in 5th International Conference on Emerging Advanced Nanomaterials (ICEAN 2024) November 4-8, **2024**, Newcastle, Australia, (Accepted)
12. Abhinav K. Singh, Rahul Gautam, **Gaurav Manik**, Optimal production and characterization of Exopolysaccharides from the sustainable bacterial-driven route for potential industrial

applications, accepted for presentation in 77th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON 2024), during December 27-30, **2024**, NIT Jalandhar, India.

13. Ankita Chauhan, **Gaurav Manik**, “Synthesis of sustainable PEA-PANI/MWCNTs-based anticorrosive conductive coating for metallic bipolar plates in hydrogen fuel-cell application, accepted for presentation in 3rd International Conference on Electrochemical Science and Technology-2024 (ICONEST-24), September 18-20, **2024**, CSIR-NPL, New Delhi, India.
14. Chinmayee Dash, **Gaurav Manik**, Dillip Kumar Bisoyi. Dielectric Study of Microwave Irradiated Sunn Hemp Reinforced Composite in Connection with Fine Structure of the Fiber, APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October **2024**, Jaipur, India, (Accepted)
15. **Gaurav Manik**, Development and characterization of sustainable and performance coatings, adhesives and composites for targeted industrial applications, accepted for presentation in APA-EPNOE-GFL International Conference on Polymers for Advanced Technology (APA 2024), 16-18 October **2024**, Jaipur, India, (Accepted)
16. Rahul Lodhi and **Gaurav Manik**, “Preparation of formaldehyde-free lignin-based valuable wood adhesive” International Conference on Energy, Environment and Sustainability (ICEES), Department of Chemical Engineering, IIT Roorkee, February, **2024**.
17. Saurabh Maliyan and **Gaurav Manik**, International Conference on Energy, Environment and Sustainability (ICEES), Department of Chemical Engineering, IIT Roorkee, February, **2024**.
18. Manjinder Singh, Alessio Alexiadis, Michael J. Adams, **Gaurav Manik**, Computationally Developed Bio-Based Pressure- Sensitive Adhesives for Healthcare Applications, presented in 2023 MRS Fall Meeting during November 26- December 1, **2023**, Boston, Massachusetts, USA.
19. Manjinder Singh, Sushanta K. Sahoo, Alessio Alexiadis, Michael J. Adams, **Gaurav Manik**, A comparative study of low Tg monomers to develop a bio-based pressure-sensitive adhesives, presented in E-MRS 2023 Fall Meeting during September 18-20, **2023**, University of Technology in Warsaw, Poland.
20. Manjinder Singh, Alessio Alexiadis, Michael J. Adams, **Gaurav Manik**, Bio-based pressure-sensitive adhesives based on acrylated epoxidized methyl ester sourced from linseed oil, presented in 5th Annual Environmental Biotechnology Network Early Career Researcher Conference (EBNet ECR 2023) during 30th August – 1st September **2023**, Edinburgh, UK.
21. Sachin Kumar, Abhishek Tripathi and **Gaurav Manik**, “Carbon fiber synthesis from various sources for the development of high-performance reinforced polymer composite: A short review”, International Hybrid Conference on Nano Structured Materials and Polymers (ICNP-2023), Mahatma Gandhi University, Kottayam, Kerala, India. May **2023**.
22. Sushanta Sethi and **Gaurav Manik**, Exploring the Impact of Orientation and Nature of Filler Material on Water Droplet Bouncing: Insights from Molecular Dynamics Simulations, **SPSI-MACRO-2023, IIT GUWAHATI, Dec 10-13, 2023**.
23. **Gaurav Manik**, Rupam Gogoi and Sushanta K. Sethi, Molecular simulation-inspired development of hierarchical carbon fibres-reinforced high-strength light-weight hybrid polymer composites, **SPSI-MACRO-2023, IIT GUWAHATI, Dec 10-13, 2023**.
24. **Abhinav K. Singh**, Sachin Kumar, **Gaurav Manik**. A review of the synthesis and applications of polyhydroxyalkanoates (PHA): An environmentally benign alternative to petrochemical-based polymers, presented in International Conference on Optoelectronic and Bio-Inspired Nanomaterials, December 4-6, **2023**, IIT Roorkee, India.
25. **Sachin Kumar**, Atul K. Maurya, **Gaurav Manik**. Development and Characterization of high-performance and Sustainable Polymer Composite Reinforced with Natural and Synthetic Fibers: A Review, presented in International Conference on Optoelectronic and Bio-Inspired Nanomaterials, December 4-6, **2023**, IIT Roorkee, India.

26. **Sachin Kumar**, Abhinav K. Singh, Suvidha Rajendra Khaire, Atul K. Maurya, **Gaurav Manik**. Development and characterization of hybrid recycled polymer composite reinforced with naturally sourced basalt fiber and groundnut shell powder, presented in 17th International Conference on Polymer Science and Technology (SPSI-MACRO-2023), December 10-13, **2023**, Guwahati, India.
27. Sachin Kumar, and **Gaurav Manik**, “Environmentally benign utilization of waste fly ash for industrial construction application” The International Seminar "Young 4 Soft Matter" 2023 , 2nd Polish-Slovenian Edition – International Seminar on Soft Matter. June **2023**.
28. Saurabh Maliyan, Sumit Rahar, Rahul Lodhi, **Gaurav Manik**, Preparation of lignin-based formaldehyde-free wood adhesive, International Conference on Optoelectronics and Bioinspired Materials (ICOBIN), IIT Roorkee, 4-6 Dec **2023** (Accepted)
29. Sachin Kumar, Atul Kumar Maurya, **Gaurav Manik**, Development and characterization of high-performance and Sustainable Polymer Composite Reinforced with Natural and Synthetic Fibres: A Review, International Conference on Optoelectronics and Bioinspired Materials (ICOBIN), IIT Roorkee, 4-6 Dec **2023**.
30. Sachin Kumar and **Gaurav Manik**, “Value added utilization of fly ash from thermal power plants and metal manufacturing industries”, International Conference on Convergence of Interdisciplinary Science, February 25 and 26, **2023**.
31. Abhinav K. Singh, Manjinder Singh, Sachin Kumar, Rahul Lodhi, **Gaurav Manik**, Versatile Applications of Polyacrylates and their Derivatives: A review, International Conference on Polymer Science and Technology, **SPSI-MACRO-2023, IIT GUWAHATI, Dec 10-13, 2023**.
32. Sachin Kumar, Abhinav Kumar Singh, Suvidha Rajendra Khaire, Atul Kumar Maurya, and **Gaurav Manik**, Development and characterization of hybrid recycled polymer composite reinforced with naturally sourced basalt fiber and groundnut shell powder, **SPSI-MACRO-2023, IIT GUWAHATI, Dec 10-13, 2023**, (Accepted)
33. Sachin Kumar, Atul Kumar Maurya, **Gaurav Manik**, Development and characterization of fly-ash reinforced polymer composites for effective industrial waste valorization, APA 2024 International Conference on Polymers for Advanced Technology, Kuala Lumpur, Malaysia, 23-25 Jan, **2024** (Accepted)
34. Sachin Kumar and **Gaurav Manik**, Upcycling of industrial waste fly-ash for developing reinforced polymer composites, Indo-South Korea-Thailand 3rd International Conference on Nanoscience and Nanotechnology for Energy, Environment and Biomedical Applications (iNEEBA-2023), Oct 1-2 **2023**. **Received Best Paper Award**.
35. Atul Kumar Maurya, Sachin Kumar, Arjun S Chaudhari, **Gaurav Manik**, Impact of Recycling on the Aspect Ratio and Mechanical Properties of the Short Fiber Reinforced Polypropylene Composites, International conference on eco-friendly fibers and polymeric materials, King Mongkut's University of Technology (North Bangkok Conference), 19-20th February **2024** (Accepted)
36. Sachin Kumar, and **Gaurav Manik**. “Value-added utilization of fly ash waste from industries: A step towards sustainability”, International Conference on Innovative Research in Science and Technology (IRST-2023), Shobhit Institute of Engineering and Technology, Meerut , India. May **2023**.
37. Atul Kumar Maurya, Sachin Kumar, Manjinder Singh and **Gaurav Manik**, Polyamide fiber reinforced polymeric composites: A Short Review, 3rd International Congress on Advances in System and Mechanical Engineering (CAMSE-2022), National Institute of Technology, Jalandhar, India. 14-16 July **2022**; Materials Today: Proceedings, Oct **2022**.
38. Manjinder Singh and **Gaurav Manik**, Pressure-sensitive adhesives derived from bio-sourced materials, 3rd International Congress on Advances in System and Mechanical Engineering (CAMSE-2022), National Institute of Technology, Jalandhar, India. 14-16 July **2022**;

39. Anubhav Goel, Om Prakash Verma and **Gaurav Manik**, Inspection of dynamic modelling and control of a parabolic trough solar collector, 3rd International Congress on Advances in System and Mechanical Engineering (CAMSE-2022), National Institute of Technology, Jalandhar, India. 14-16 July **2022**; Materials Today: Proceedings, Oct **2022**.
40. Anubhav Goel, Om Prakash Verma, and **Gaurav Manik** “Analytical modeling of parabolic trough solar collector”, In proceedings titled Soft Computing: Theories and Applications under series Lecture Notes in Networks and Systems, SPRINGER. 6th International conference on Soft-computing: Theories and applications (SoCTA-2021), Indian Institute of Information Technology Kota, Rajasthan, December 17 – 19, **2021**. https://doi.org/10.1007/978-981-19-0707-4_34
41. Anubhav Goel, Om Prakash Verma, and **Gaurav Manik** “Flow rate optimization of a parabolic trough solar collector using multi-objective genetic algorithm”, In proceedings titled Recent Advances in Mechanical Engineering under series Lecture Notes in Mechanical Engineering, SPRINGER. 2nd Congress on Advances in Mechanical and Systems Engineering (CAMSE-2021), Dr B R Ambedkar National Institute of Technology, Jalandhar, Punjab, July 17 – 19, **2021**. https://doi.org/10.1007/978-981-19-0707-4_34
42. Atul Kumar Maurya, Rupam Gogoi, and **Gaurav Manik**. “Sisal fiber/fly ash reinforced hybrid polypropylene composite: An investigation into the thermal, rheological and crystallographic properties”. 2nd International Congress on Advances in System and Mechanical Engineering (CAMSE-2021), National Institute of Technology, Jalandhar, India. 17-19 July **2021**.
43. Atul Kumar Maurya, Rupam Gogoi, and **Gaurav Manik**. “Effect of nano fly ash hybridization on thermomechanical and thermal degradation properties of sisal fiber reinforced polypropylene composite”, International Online Conference on Nano Materials (ICN 2021), Mahatma Gandhi University, Kottayam, Kerala, India. 9-11 April **2021**.
44. Sachin Kadian and **Gaurav Manik**, Das, N., Nehra. P., et al., One-step synthesis of biocompatible sulfur-doped graphene quantum dots decorated silver nanoparticles for synergistic antibacterial activity, presented in *International Online Conference on Nano Materials (ICN 2021)* 9-11th April **2021**, at Mahatma Gandhi University, Kottayam, Kerala, India.
45. R. Mahadeva, M. Kumar, S.P. Patole, **Gaurav Manik**, “Employing Artificial Neural Network for accurate modeling, simulation and performance analysis of an RO-based desalination process”, 12th Inter. Green and Sustainable Computing Conference (IGSC’21)”, **USA (Due to Covid-19 Online)**, 18-21 Oct. **2021**.
46. Sachin Kadian, Chaulagain, N., Rajashekhar, H., Vrushabendrakumar, D., **Gaurav Manik**, and Shankar, K., “An ultrasensitive fluorescent paper based acidic gas sensing platform” presented in *International virtual Conference “IEEE Sensors 2021”* held during Oct 31 - Nov 4th, **2021**.
47. Manjinder Singh, **Gaurav Manik**, A computational approach towards the development of pressure-sensitive adhesives based on acrylated epoxidized methyl ester, presented in Second International Virtual **Conference on Recent Trends in Clean Technologies for Sustainable Environment (CTSE-2021)** during 06-07 May **2021**, SSN College of Engineering, Chennai, India.
48. Atul Kumar Maurya, Rupam Gogoi, and **Gaurav Manik**, “Study of the effect of multiple recycling on the mechanical properties of Sisal Fiber and Fly ash Reinforced hybrid Composites”. Fifth International Conference on Reuse and Recycling of Materials (ICRM-2020), Mahatma Gandhi University, Kottayam, Kerala, India, December **2020**.
49. Sachin Kadian and **Gaurav Manik**, “Effect of Heteroatom Doping on Fluorescence Quantum Yield of Graphene Quantum Dots for Optical Sensing Probe” presented in *SPECTRUM 2020, 3rd International Students’ Conference on Current Advancements in Science & Technology*, held on 9-11th October, **2020** organized by Institute of Engineering & Management, Kolkata, India, in

association with Society of Physics Students' Chapter, American Institute of Physics. **(Received Best paper award)**

50. Sachin Kadian and **Gaurav Manik**, "Selective sensing of a highly mutagenic nitro-explosive compound picric acid to safeguard the environment, wildlife and civilians" presented in *National Conference on Nanoscience and Instrumentation Technology (NCNIT-2020)*, 13-15th March, 2020, organised by Department of Physics, NIT Kurukshetra, Haryana, India. **(Received Best Paper Award)**
51. Atul K. Maurya and **Gaurav Manik**, "Study of effect of multiple recycling on the mechanical properties of Sisal Fiber and Fly ash Reinforced hybrid Composites" in Fifth International Online Conference on Reuse and Recycling of Materials and their products (ICRM – 2020), at Mahatma Gandhi University Kottayam, Kerala, India, 11-13 December 2020.
52. Smitarani Pati, **Gaurav Manik**, Rajesh Singla and Om Prakash Verma, "Energy optimization of nonlinear optimization models of Multiple Stage Evaporator using GA and PSO", CTSE-2019, being held in SSN College of Engineering, Chennai from September 26–27, 2019.
53. Rajesh Mahadeva, Romil Mehta, **Gaurav Manik** and Amit Bhattacharya, "An experimental and computational investigation of poly (piperizinamide) thin film composite membrane for the separation of monovalent and bivalent salts from water using artificial neural network" at 4th International Conference on Desalination using Membrane Technology, Perth Australia, 1-4th December 2019.
54. Rupam Gogoi, Sushanta K. Sethi and **Gaurav Manik**, "Study of the effects of CNT growth over carbon fibre on interfacial properties using Molecular Dynamics simulations", 30th International Conference on Diamond and Carbon Materials, Seville, Spain, 8-12th September, 2019.
55. Rupam Gogoi, Shubham Mireja, Sushanta K. Sethi and **Gaurav Manik** "Natural fibre based hybrid polypropylene composites: an insight into thermal properties" in 22nd International Conference on Composite Materials (ICCM22), Melbourne, Australia, 11-16th August, 2019.
56. Sushanta K. Sethi, Manjinder Singh and **Gaurav Manik**, "Impact of carbon nanotube on PVAc-g-PDMS based transparent self-clean coating: A molecular simulation approach", 30th International Conference on Diamond and Carbon Materials, Seville, Spain, 8-12th September, 2019.
57. Rajesh Mahadeva, **Gaurav Manik**, Anubhav Goel, Poster Presentation at Indo-German Joint Scientific Workshop on Membranes for Water and Energy, at CSIR-Central Marine Chemicals Research Institute, Bhavnagar, Gujrat, sponsored by Indo-German Science & Technology Center, 18-20th February, 2019.
58. Rajesh Mahadeva, **Gaurav Manik**, Anubhav Goel and Sanjeev Kumar, Modelling of reverse osmosis desalination process using PSO-ANN prediction technique, 3rd *International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, 2018.
59. Rajesh Mahadeva, **Gaurav Manik** and Anubhav Goel, A review of the artificial neural network based modeling and simulation approaches applied to reverse osmosis desalination techniques, in International Conference on Desalination (InDACon-2018), held at Department of Chemical Engineering, NIT Tiruchirapalli, 20-21st April, 2018.
60. Smitarani Pati, Drishti Yadav, **Gaurav Manik**, Rajesh Singla and Om Prakash Verma, Generalized Mathematical modeling of MEE for calculation of steam efficiency and steam consumption, 3rd *International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, 2018.

61. Anubhav Goel, **Gaurav Manik** and Rajesh Mahadeva, A review of parabolic trough collector and its modeling, *3rd International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**
62. Varun Sharma, Suneel Dutt, Afzal Sikander, **Gaurav Manik** and Om Prakash Verma, Industrial simulation of PID & modified-MPID controllers for Interconnecting coupled system, *3rd International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**.
63. Sushanta K Sethi, Lokesh Soni and **Gaurav Manik**, “Computational approach towards the development of pressure – sensitive adhesives based on acrylated epoxidized linseed oil, under submission to COMPFLU, IIT Roorkee, December, **2018**.
64. Manjinder Singh[#], Sushanta Kumar Sethi and **Gaurav Manik**, A molecular simulation approach for the development of pressure–sensitive adhesives based on acrylated epoxidized linseed oil, COMPFLU, IIT Roorkee, 6-9th December, **2018**.
65. Sushanta K Sethi, Lokesh Soni, **Gaurav Manik**, Blend compatibility studies using atomistic and mesoscale molecular dynamics simulations, *5th International Conference on Material Science, Metals and Manufacturing*, Singapore, 12-13th March, **2018**.
66. Sushanta K Sethi, Lokesh Soni, **Gaurav Manik**, Exploring surface characteristics and substrate interfacial adhesion of PDMS-b-PVAc and PDMS-b-PVOH block copolymer, *ACS on Campus*, IIT Roorkee, 7th February, **2018**.
67. Rajesh Mahadeva, Om Prakash Verma and **Gaurav Manik**, *3rd International Conference on Recent advances in Chemical, Environmental and Energy Engineering*, SSN College of Engineering, Chennai, 15-16 Feb **2018**, **Received Best Paper Award**
68. Vinay Khandelwal, Sushanta K Sahoo, **Gaurav Manik**, Development of electrically conductive novel hybrid epoxy composites containing polyaniline and carbon nanotubes, *ACS on Campus*, IIT Roorkee, 7th February, **2018**.
69. Rupam Gogoi and **Gaurav Manik**, Morphology and crystallinity study of novel polypropylene hybrid composites, *ACS on Campus*, IIT Roorkee, 7th February, **2018**.
70. Sushanta K Sahoo, Vinay Khandelwal and **Gaurav Manik**, Synthesis and characterization of low viscous and highly acrylated epoxidized methyl ester based green oligomers derived from linseed oil, *ACS on Campus*, IIT Roorkee, 7th February, **2018**.
71. Rupam Gogoi and **Gaurav Manik**, Morphology and crystallinity study of novel polypropylene hybrid composites, *Fourth International Symposium on Advances in Sustainable Polymers (ASP 17)*, IIT Guwahati, January 8-12, **2018**.
72. Sushanta K Sethi and **Gaurav Manik**, Study of self-cleaning and blend compatibility of PDMS-PVAc system using molecular dynamics simulations, *Fourth International Symposium on Advances in Sustainable Polymers (ASP 17)*, IIT Guwahati, January 8-12, **2018**.
73. Sushanta K Sethi, Nityanshu Kumar and **Gaurav Manik**, Effect of chain length and branching on properties predicted by Molecular Dynamics simulations, *MACRO-2017*, held at Tiruvanthapuram, January 8-12, **2017**.
74. Sushanta K Sethi, Nityanshu Kumar and **Gaurav Manik**, Molecular Dynamics simulations of hydrolyzed PVAc-PFO based anti-stain self-clean coatings, in *MACRO-2017*, held at Tiruvanthapuram, January 8-12, **2017**.
75. Vinay Khandelwal, Sushanta Sahoo and **Gaurav Manik**, Development and characterization of renewable resource based bio-epoxy/PANI conducting composite-A greener material for future generation, *Advancements in Polymeric Materials (APM-2017)*, held at Bangalore, 11-13th February **2017**.

76. Sushanta Sahoo, Vinay Khandelwal and **Gaurav Manik**, Synthesis of bio-based epoxy network based on non-edible plant oils cured with bio-based curing agent: an eco-friendly material for coating application, *Advancements in Polymeric Materials (APM-2017)*, held at Bangalore, 11-13th February **2017**.
77. Om Prakash Verma, Toufiq. H. Mohammed, Shubham Mangal and **Gaurav Manik**, “Modeling the Dynamics of Heptads’ Effect Evaporator System in the Kraft Recovery Processes,” Shannon 100: *3rd International Conference on Computing Sciences (ICCS16)*, held at LPU, Jalandhar, Punjab, 8-9 April **2016**.
78. Om Prakash Verma, Toufiq. H. Mohammed, Shubham Mangal and **Gaurav Manik**, “Mathematical Modeling of Multistage Evaporator System (MSE) in Kraft Recovery Process”, in *Proceedings of the Fifth International conference on Soft Computing and Problem Solving (SoCProS-2015)*, held at Saharanpur Campus of IIT Roorkee, Dec-18-20, **2015**.
79. Om Prakash Verma, Sonu Verma and **Gaurav Manik**, “Analysis of Hybrid Temperature Control for Non-linear Continuous Stirred Tank Reactor”, *Fourth International Conference on Soft Computing and Problem Solving (SoCProS-2014)*, Dec **2014** & *Proceedings in Advances in Intelligent Systems and Computing, SCOPUS*, 336, pp103, 2015.
80. Vivek Pandey, Meeta Trivedi and **Gaurav Manik**, Molecular simulation of “Green” pressure sensitive adhesives, *Proceedings of International Conference on Emerging Materials and Applications*, IIT Roorkee Saharanpur Campus, page 32, April 5-6, **2014**.
81. Yash Singhvi, I.V. N. Tejasvini and **Gaurav Manik**, “Molecular simulations of anti-stain polymeric coatings”, *SETCOR International Conference on Smart Materials and Surfaces (SMS-14)*, SETCOR, Bangkok, Thailand, 26-28th August **2014**.
82. Yash Singhvi and **Gaurav Manik**, “Molecular simulations of industrially relevant polyvinyl acetate based coatings”, *International Conference on Polymers: Vision and Innovations, organized by Asian Polymer Association (APA)-2014*, Delhi, February 20th, **2014**.
83. Vivek Pandey, Meeta Trivedi, **Gaurav Manik**, “Synthesis of industrially important pressure sensitive adhesives (PSAs) using naturally sourced raw materials”, presented/published in *Proceedings of CHEMCON-13, 66th Annual Session of Institute of Chemical Engineers*, at UICT, Mumbai, 27th December **2013**.
84. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of PET/PBT”, presented/ published in *Proceedings at 2nd International Congress on Computational Mechanics and Simulation (ICCMS-06)* jointly organized by Indian Institute of Technology Guwahati and Indian Association for Computational Mechanics (IndACM) at IIT Guwahati, India during 8-10, December **2006**.
85. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Conformational Analysis of Polybutylene Terephthalate and PolybutyleneIsophthalate Chains in Melt and Isolated Conditions”, presented/Published in *Proceedings at 58th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2005)*, at Indian Institute of Technology Delhi (IITD), Delhi, December, **2005**.
86. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of Performance Polyesters and Polyisophthalates”, presented/ published in *Proceedings at 58th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2005)*, at Indian Institute of Technology Delhi (IITD), Delhi, December, **2005**, **Received Best Paper Award-VICAL award from Indian Institute of Chemical Engineers.**
87. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of Polycarbonate Systems”, presented/Published in *Proceedings at International Conference on Polymers for Advanced Technologies, MACRO-2004*, Thiruvanthapuram, **2004**.

88. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulations and Analysis of Poly (L-lactic acid) (PLLA) Melt”, at the International Conference - *American Physical Society (APS) Annual Meeting, USA* (2008). Abstract selected and published; did not participate.
89. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of Polycarbonate Systems”, presented/Published in *Proceedings at 58th Annual Session of Indian Institute of Chemical Engineers, CHEMCON-2004*, Delhi, Dec-27-30, **2004**.
90. **Gaurav Manik** and Goutam Deo, “Chemical Characterization of Supported Rhenium Oxide Catalysts”, in *56th Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2003)*, at Bhubaneswar, 19-22nd December, **2003**.
91. **Gaurav Manik**, B. Mitra and Goutam Deo, “Chemical Characterization of Supported Rhenium Oxide Catalyst Using LPG Oxidation Reaction”, in *National Conference on Catalysis* held at Indian Institute of Chemical Technology (IICT), Hyderabad, January, **2000**.

PROFESSIONAL RECOGNITION / AWARD / FELLOWSHIPS RECEIVED

| S. No | Name of Award | Organization | Year |
|-------|---|---|---|
| 1 | Fellow | Indian Institute of Chemical Engineers (IICChE) | 2023 |
| 2 | Fellow | <i>Institute of Engineers, India</i> | 2023 |
| 3. | International Advisory Board Member | <i>“International Conference on Eco-friendly Fibers and Polymeric Materials (EFPM’24)”</i> , King Mongkut’s University of Technology North Bangkok, Thailand, February 19-20, 2024 | 2024 |
| 4. | International Advisory Board Member | ‘International Conference on Sustainable Materials for Engineering Applications (ISCMEA)’ , which will be conducted on 1-3 Feb 2024 , at IIT Madras, Chennai, India . | 2024 |
| 5. | National Advisory Committee | 17 th International Conference on Polymer Science and Technology, IIT Guwahati, SPSI-MACRO-2023 during 10–13 December, 2023. | 2023 |
| 6. | Guest of Honor Award | International Conference on the Science of Rudraksha , October 27th and 28th, 2023, and held at Shobhit University Meerut. | 2023 |
| 7. | Guest of Honor Award | 7 th International Conference on Soft Computing: Theory and Applications Organized by Himachal Pradesh University Institute of Technology, Shimla INDIA and STEM research society | 2022 |
| 8. | Board Director | STEM Research Society: A non-profit organization to exchange knowledge and ideas by organizing National and International events: Conferences, Seminars and Workshops that unite Science, Technology, Engineering and Management for empowerment of research and development. | 2020 onwards |
| 9. | Guest of Honor Award | Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, INDIA | 2019 |
| 10. | Member of International Advisory board for the 2nd International Conference on Research & Scientific Innovation (2ICRSI - 2016) and 3rd International conference on Multidisciplinary | Research and Scientific Innovation Society, Ahmedabad, Gujarat, India. | 24 th July 2016 & 27 th Nov 2016 |

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| | Research & Practice (3ICMRP-2016) | | |
| 11. | Guest of Honor Award | Institute of Management Studies, Ghaziabad, INDIA | 2014 |
| 12. | In panel of <i>National Advisory Committee</i> of UGC funded National Conference on "Green Chemistry " | P.G. Department of Chemistry, Govt. P.G. College, Dausa (Raj), INDIA | 18-19 Dec. 2014 |
| 13. | Award for Best (2 nd) (Team) Product Design and Product Demo during Annual Technical Events | 3M India (subsidiary of 3M, USA) | August- 2011 |
| 14. | APAC Tech Forum Excellence Award | 3M India (subsidiary of 3M, USA) | 2011 |
| 15. | Award for Best Product Design during Annual Technical Events | 3M India (subsidiary of 3M, USA) | May- 2010 |
| 16. | VICAL Award for Best Presentation | The Indian Institute of Chemical Engineers (IIChe) IIT Guwahati, , INDIA | Dec- 2005 |
| 17 | First Prize for Best Technical Paper Presentation in CHEMCON-05 | <i>58th Annual Session of Indian Institute of Chemical Engineers</i> , at Indian Institute of Technology Delhi (IITD), Delhi, INDIA | Dec- 2005 |
| 18 | First Prize for Best Technical Paper Presentation in CHEMCON-04 | <i>57th Annual Session of Indian Institute of Chemical Engineers</i> , at Grand Hyatt, Mumbai, INDIA | Dec- 2004 |
| 19 | Awarded Teaching Assistant Scholarships during M.Tech. | MHRD | 1998-2000 |
| 20 | Awarded the B. Tech degree in Chemical Engineering with Honors (Distinction) | <i>HBTI Kanpur</i> | 1997 |
| 21 | Merit Scholarships during B.Tech. | <i>HBTI Kanpur</i> | 1995-1996 |

MEMBER OF REVIEW PANEL/ADVISORY COMMITTEES

1. Reviewer of JOURNALS

- ❖ Biological Macromolecules; Applied Energy ; Applied Polymer Composites; Polymer Composites; Journal of Applied Polymer Science; Composite Science and Technology; Computational Material Science; Composite B: Engineering; Science and Engineering of Composite Materials; Analyst; Biotechnology Reports; Neural Computing and Applications; International Polymer Processing; Journal of Molecular Liquids; Journal of Molecular Graphics and Modeling; Journal of Packaging Technology and Research; Journal of Polymers and Environment; Macromolecular Theory and Simulations; Nanoscale advances; Nanotechnology; Applied Composite Materials; Journal of Applied Polymer Science; African Journal of Pure and Applied Chemistry.
- ❖ Guest Editor, *iScience* by Cell Press, Special Issue at iScience: Polymeric Materials for Transportation Sector
- ❖ and many more...

2. Reviewer of International / National Funding Agencies / Universities

- ❖ Reviewer of Sponsored Research Project by Estonia Research Council, Estonia, **2021**.

- ❖ Reviewer of a sponsored research project invited by A-STAR, Singapore, **2020**.
- ❖ Reviewer of research and industrial proposals in Rajiv Gandhi Science and Technology Commission, Government of Maharashtra.
- ❖ Reviewer of Research project on “A Study on Insecticide and Pesticide Toxicity of Soil and Water Bodies in the Varanasi” under Design Hub and Innovation Scheme for Varanasi by MHRD, Govt. of India, July **2018**.
- ❖ Reviewer of Doctoral Thesis from Monash University-Australia; IIT Guwahati, IIT Madras, IIT Bombay, IIT-BHU and many others.
- ❖ Advisory Committee for International Workshop of Polymer, Chemical and Petrochemical Industries held at Istanbul, Turkey, Aug. **2014**.

PROFESSIONAL MEMBERSHIPS

- ❖ Fellow: Royal Society of Chemistry (RSC)
- ❖ Fellow: Indian Institute of Chemical Engineers (IICChE)
- ❖ Fellow: Institute of Engineers India (IEI)
- ❖ Life Member - Material Research Society of India (MRSI)
- ❖ Life Member - Indian Society for Technical Education (ISTE).
- ❖ Life Member – Academy of Microscope Science and Technology (AMST), India
- ❖ Member- American Chemical Society (ACS), **2018-19**.

NATIONAL/INTERNATIONAL RESEARCH COLLABORATION/TEACHING PARTICIPATION: 3M India Ltd. (Bangalore, India), National Physical Laboratory (New Delhi, India), Virginia Tech. USA, Asian Institute of Technology (Thailand), Central Salt & Marine Chemicals Research Institute (CSMCRI) Bhavnagar, India, Khalifa University, Abu Dhabi, UAE, IHE Delft, The Netherlands; King Mongkut's University of Technology North Bangkok, Thailand, Inha University;

SPONSORED RESEARCH PROJECTS with outlay of ~ Rs. 600 Lakhs +

| S. No | Project Title | Sponsoring Agency | Funding Amount (in INR) | PI/Co-PI/Mentor | Start | End |
|-------|---|---|-------------------------|-----------------|-------|------|
| 1. | Advancing Photoresist development for India's Semiconductor Mission | DST, Level-C category in Engineering Sciences domain. | 2,07,00,000 | PI | 2025 | 2029 |
| 2. | Value-addition to wood and wood-based composites | ICFRE | 16.64 Lakhs | PI | 2022 | 2025 |
| 3 | Integration of parabolic trough solar collectors with multi-effect evaporator/IPH for reducing the dependency of energy-intensive industries over fossil fuels | CHT & IOCL | 40.48 Lakhs | PI | 2023 | 2024 |
| 4 | Development of adhesives for tiles and other construction material | Kasper India Pvt. Ltd. | 21.40 Lakhs | PI | 2023 | 2024 |
| 5. | Development of micro-nano encapsulated PCM water slurry as heat transfer fluid | Center for high energy systems, CHESS | 37.86 Lakhs | co-PI | 2023 | 2024 |
| 6. | Molecular Simulation and Development of Oleophobic-Sacrificial Coatings | IIT Roorkee as FIG | 10.00 Lakhs | PI | 2013 | 2016 |
| 7 | Scale-up of treatment of black liquor from paper industries using electrodialysis | BEE, India | 251 Lakhs | co-PI | 2023 | 2025 |
| 8. | "Evaluation of Sustainable Additives from Fine Organics in Hot Melt Adhesive, Pressure Sensitive Adhesive, 3D Printing, Phase Change Material, and Non-Halogenated Flame Retardant" | Fine Organic Industries Limited, Mumbai | 22.50 Lakhs | co-PI | 2023 | 2024 |
| 9 | "Analysis of the Paper-based Sleeve Wrapping Process for Different Film Thickness" | SIG International Service GmbH | 25.0 Lakhs | co-PI | 2024 | 2024 |
| 10. | Development of a performance reinforced polymeric composite material and its characterization | Vanson Engineering Pvt. Ltd., | 35.0 Lakhs | PI | 2024 | 2025 |
| 11. | Development of Adsorbent Material for Nitrogen-Oxygen Adsorption at Low Temperature and Pressure | DRDO, CHESS, Hyderabad | 45.61 Lakhs | co-PI | 2024 | 2025 |
| 12 | Self-Cleaning Sacrificial Coatings for Outdoor Applications | 3M USA Global | 27.00 Lakhs (33,000USD) | PI | 2009 | 2011 |
| 13. | Development of Bio-based resins and composites from Non-edible Plant oil: A greener material .. | DST NPDF Fellowship, | 19.20 Lakhs | Mentor | 2016 | 2018 |
| 14. | Development of sealants for self-repairing and puncture resistant tires with enhanced time performance and cost effectiveness | Industry: DENIAR Trading India LLP, Mumbai | 30.00 Lakhs | PI | 2016 | 2017 |

CONSULTANCY PROJECTS: (1) Short-term Course for Industry, Tata Steels Ltd., Jamshedpur, Dec 2021-22: 0.70 Lakhs

CONFERENCES/WORKSHOPS/SEMINARS PARTICIPATION

1. A two-day international conference on “International Forum on Sustainable Future in Asia: Converting Aspirations to Actions”, co-hosted by Asian Institute of Technology, National Institute for Environmental Studies (NIES) Japan, Integrated Research System for Sustainability Science (IRSSS) of the University of Tokyo Japan, and Alliance for Global Sustainability Asia, held at AIT Conference Center, AIT, Pathumthani, Bangkok, Thailand, January 27-28, **2016**.
2. Forum on “International perspectives on mobile health”, organized by the Yunus Center of Asian Institute of Technology, at AIT, Thailand, April 4th, **2016**.
3. Complex Fluids Symposium, Organized by National Chemicals Laboratory (NCL) Pune, held at NCL-Pune, Pune, Feb 21-22, **2008**.
4. 2nd International Congress on Computational Mechanics and Simulation (ICCMS-06) jointly organized by Indian Institute of Technology Guwahati and Indian Association for Computational Mechanics (IndACM), held at IIT Guwahati, India, December 8-10, **2006**.
5. COSMOL Users Conference by Innovative Software Solutions Pvt. Ltd., held at Leela Palace, Bangalore, Nov 17, **2006**.
6. Prabhat Advanced Computer Workshop on Linux Fundamentals and Parallel Programming Fundamentals, at KRESIT, IIT Bombay, August 19-20, **2006**.
7. Winter School on “Computational Approaches to Materials Science-2006 (CAMS-2006)” held at Jawaharlal Nehru Centre for Advanced Scientific Research, January 17-21, **2006**.
8. Biotechnology Symposium, organized by Bioschool Association and Research Scholar’s Forum, at IIT Bombay, December 3-4, **2005**.
9. National Symposium by Chemical Engineering Association (CHEA) of IIT Bombay on “Role of Chemical Engineering in Nanotechnology”, held at IIT Bombay, March 19, **2005**.
10. National Workshop on Advanced Methods for Materials Characterization (NWMC) organized by Materials Research Society of India (MRSI) Mumbai Chapter, held at Bhabha Atomic Research Centre, October 11-15, **2004**.
11. National Symposium on Nanotechnology, organized by Research Scholar’s Forum, held at Industrial Research and Consultancy Centre, IIT Bombay, October 2-3, **2004**.
12. International Conference on Polymers for Advanced Technologies (MACRO-2004), organized by Society for Polymer Science, held at Thiruvanthapuram, December **2004**.

ADMINISTRATIVE RESPONSIBILITIES SHARED

- 1) **Head of Department**, Department of Polymer and Process Engineering, IIT Roorkee, 22 March, 2022 onwards till date.
- 2) **Member-Senate**, IIT Roorkee, March 2022 onwards till date.
- 3) **Faculty-in-Charge: Training & Placement** for Department of Polymer and Process Engineering, IIT Roorkee, July, 2013 to Jan 2016 and May, 2017 till Dec 2020.
- 4) **Chairman, Department Academic Program Committee (DAPC)**, Nov 2019 onwards till March 2022.
- 5) **Warden, Malviya Bhavan/Hostel**, IIT Roorkee, from June, 2015 to Jan 2016, and again from June, 2017 till June 2018.
- 6) **Professor-in-Charge: Games & Sports**, IIT Roorkee Saharanpur Campus, Oct, 2013 to Jan 2016 and Dec 2020 till date
- 7) **Member, Institute Academic Program Committee (IAPC)** for Department of Polymer and Process Engineering, IIT Roorkee, July, 2013 to Jan 2016.
- 8) **Professor-in-Charge: Polymer Characterization Lab**, Department of Polymer and Process Engineering, IIT Roorkee, June 2014 till now.

- 9) **Chairman: Technical Forum**, a technical body comprising 15 members for organizing Annual business-technical meet, 3M, 2009-2011.

B.TECH PROJECTS (Minor/Major/Others) SUPERVISION

1. Supervised project on “Optimization of desalination process using machine learning”, by Prabhat K., B.Tech IVth year Polymer Science and Engineering, **July 2020-Dec 2020**.
2. Supervised **major project** on “Techno-economic feasibility report for Plant design for production of 27000 MTPA Nylon 6”, by Bal Kishan Kasaudhan, Abhishek Gupta, Aryan Yadav, Chirag Maheshwari, Manish Kumar and Priyal Sharma, **2019-2020**.
3. Supervised **Minor Project/Industry Oriented Problem** on “Understanding structure-property relationships of industrially relevant engineering polymers”, by Pashupati K Gupta and Shubendu Kumar, BTech IIIrd year Polymer Science & Engineering, **Jan-May 2019**.
4. Supervised **Major Project** on “Development of novel tire sealants” by Lokesh K Soni, BTech IVth year Polymer Science & Engineering, **July 2018-April 2019**.
5. Supervised major project on “Development of pressure sensitive adhesives from naturally derived oils”, B.Tech IVth year Polymer Science & Engineering, **July 2018-April 2019**.
6. Supervised **summer project** on “Literature survey and development of novel polymer composites for light weight high strength requirements” by Tushar, Polymer Science & Engineering, **May-July 2018**.
7. Supervised **major project on** “Development of polyvinyl acetate based sealants” by Alok Yadav and Arun Kumar, **2017-2018**.
8. Supervised **industrial based (minor) project on** “Literature survey and development of novel light weight high strength polymer composites for automotive applications” by Adarsh Khandelwal, Chetan Suryavanshi and Pulkit Singh, BTech IIIrd year Polymer Science & Engineering, session **2017-2018**.
9. Supervised **industrial based (minor) project on** “Literature survey and development of bio based industrially useful pressure sensitive adhesives” by Chaitanya Ramananda Gupta, Lokesh K Soni and Ankit Saha, BTech IIIrd year Polymer Science & Engineering, session **2017-2018**.
10. Supervised a **major project** on “Molecular Dynamics Study of Epoxy and Polyaniline based adhesives” by Pratik Sanjiv Kasbe, B.Tech Polymer Science and Technology, **2016-2017**.
11. Supervised a **major project** on “Development of PVAc-PFO based anti-stain coating by molecular simulations: Effect of PFO content and hydrolysis of PVAc” by Punna Spandana, **2016-2017**.
12. Supervised **minor project** on “Molecular simulations & synthesis of perfluoro based anti-stain easy clean coatings” by Nityanshu Kumar, **2015-2016**.
13. Supervised **minor project** on “Comparative study on properties of epoxy composite with and without HGM” by Punna Spandana, **2015-2016**.
14. Supervised **minor project** on “Synthesis of polyaniline and CNT based Epoxy adhesives” by Prateek Kasbe, **2015-2016**.
15. Supervised **minor project** on “Mechanical and viscoelastic properties of Hybrid composite of PP, HGM and Natural Fillers”, by Shubham Mireja, **2015-2016**.
16. Supervised **summer project** on “Modeling and simulation of Multiple-effect evaporator” by Kunal Chakraborty, 4th year Process Engineering B.Tech with MBA students, **2015-2016**.
17. Supervised **summer project** on “Non-linear model development, its linearization and simulation of a multiple-effect evaporator” by Shubham Mangal and Mohd. Toufiq, 4th year Process Engineering B.Tech with MBA students, **2015-2016**.

18. Supervised **major project on** “Molecular simulations of self-cleaning coatings of hydrolyzed polyvinyl acetate (PVAc) in perfluorooctane (PFO)” by Ehtesham Shakeel and Devaspati Krishnatri, **2015-2016**.
19. Supervised a **Summer Undergraduate Research Assistantship (SURA) project** on “Modeling and simulation of properties of polyaniline and CNT based electrically conductive epoxy composites”, Undertaken by Pratik SanjivKasbe and Nityanshu Kumar, **May-July, 2015**, Funding Amount from SRIC-IIT Roorkee: Rs. 10,000.
20. Supervised a **Summer Undergraduate Research Assistantship (SURA) project** on “Mechanical and viscoelastic properties of PP, Hollow Glass microspheres and Natural Fillers composites” by Nityanshu Kumar, **May-July, 2015**, Funding Amount from SRIC-IIT Roorkee: Rs. 10,000.
21. Supervised **major project** on “Design of a double-absorption energy efficient plant for production of 2800 TPD sulphuric acid”, by Abhinav, Shubham Saurav and Monica Saini, B.Tech in Process Engineering and Management, **2014-2015**.
22. Supervised **major project** by Abhinav, Monica Saini and Shubham Saurav, BTechIVth year Process Engineering with MBA, **2014-2015**.
23. Supervised **minor project** on “Molecular simulations of super-hydrophobic surfaces inspired by nature” by Himanshu Manchanda, Akshay Jassal and Devaspati Krishnatri, 4th year Process Engineering B.Tech with MBA students, **2014-2015**.
24. Supervised **minor project** on “Synthesis of pressure sensitive adhesives from jackfruit sap”, by Ranu Amliyar and Boda Sampath Hela Sharon, **2014-2015**.
25. Supervised **minor project** on “Synthesis and molecular simulations of pressure sensitive adhesives from jackfruit sap”, by Ayush, **2014-2015**.
26. Supervised **major project on** “Designing a plant for production of 1,000 MT per year of Acetylsalicylic (Aspirin) acid” by Mudit Gurnani, Shashank Rawat, Sunit Arora and Virat Tiwari, **2014-2015**.
27. Supervised **major project on** “Design a plant for a capacity of 10,000 bpd to improve octane-barrel yield of Naphtha (feed) by using isomerization process with enhanced heat integration” by Siddharth Jindal, Prashant Gadpale, Tilak Agarwal and Dishant Sagar, 4th year students of 4th year of an Integrated Dual Degree course “B.Tech Process Engg & MBA”, **2013-2014**.
28. Supervised a **Summer Undergraduate Research Assistantship (SURA) project** on “Synthesis of industrially important pressure sensitive adhesives (PSAs) using naturally sourced raw materials”, Undertaken by Vivek Pandey and Meeta Trivedi, **May-July 2013**: Funding Amount from SRIC-IIT Roorkee: Rs. 6,000

COURSE SYLLABUS(S) PREPARED (UG/PG)

Prepared several syllabus for academic curriculum and schemes of the department-

1. “**Modeling and Simulation of Polymers**”, Subject Code: PEN-302, Program of Polymer Science & Engineering.
2. “**Process Systems Analysis and Control**”, Subject Code: PEN-304, Class: IIIrd Year Polymer Science & Engineering.
3. “**Numerical Methods in Chemical Engineering**”, Subject Code: PEN-414, Class: IVth Year Polymer Science.
4. “**Process Equipment Design**”, Subject Code: PEN-, Program of Polymer Science & Engineering.

5. **“Process Instrumentation and Control”**, Subject Code: PE-353, Class: IIIrd Year Process Engineering & MBA.
6. **“Polymer Processing”**, Subject Code: PE-305, Class: IIIrd Year Polymer Science & Engineering.
7. **“Adhesives and Sealants”**, Subject Code: PEN-426, Class: IVth Yr Polymer Science.
8. **“Polymer Testing and Characterization”**, Subject Code: PEN-206, Class: IIIrd Year Polymer Science & Engineering.
9. **“Polymer Rheology”**, Subject Code: PEN-208, Class: IIIrd Year Polymer Science & Engineering.
10. **“Properties of Polymers”**, Subject Code: PEN-202, Program of Polymer Science & Engineering.

DETAILS OF COURSES TAUGHT and TEACHING PERFORMANCE (STUDENTS' RESPONSE and APPRAISAL)

| S. No | Subject Name | Subject No. | Year | Class | Response Score (on scale of 5.0) |
|-------|--|-------------|--|---|-------------------------------------|
| 1. | Polymer Characterization | PP-355 | 2013-14/ Autumn | B.Tech 3 rd Year Polymer Science & Engg. | 4.792 |
| 2. | Process System Analysis & Control | PP-411 | 2013-14/ Autumn, 2015-16/ Autumn | B.Tech 4 th year Polymer Science/Process Engg. | 4.019, 4.345 |
| 3. | Industrial Instrumentation | CHN-210 | 2016-17/ Spring | B.Tech 2 nd Year Chemical Engg. | 3.923 |
| 4. | Material and Energy Balance | PP-102 | 2013-14/ Spring | B.Tech 1 st year Process Engg. | 4.164 |
| 5. | Mass Transfer | PPN-208 | 2014-15/ Spring | B.Tech 2 nd Year Polymer Sci./Process Eng./Paper Tech/ | 4.426 |
| 6. | Process System Analysis & Control | PE-413 | 2015-16/ Autumn | B.Tech 4 th year Polymer Science | 3.802 |
| 7. | Polymer Materials | PP-356 | 2013-14/ Spring | B.Tech 3 rd Year Polymer Science & Engg. | 4.28 |
| 8. | Polymer Properties & Characterization | PP-206 | 2014-15/ Spring | B.Tech 2 nd Year Polymer Science & Engg. | 4.388 |
| 9. | Polymer Product Technology | PEN-301 | 2015-16/ Autumn | B.Tech 3 rd Year Polymer Science & Engg. | 4.141 |
| 10. | Process Instrumentation and Control | PPN-523 | 2016-17/ Autumn | M.Tech Paper Technology | 4.589 |
| 11. | Process Instrumentation and Control | PEN-353 | 2016-17/ Autumn | B.Tech 3 rd Year Process Engg. | 4.944 |
| 12. | Elastomer Science and Rubber Technology | PP-453 | 2013-14/ Autumn | B.Tech 4 th year Polymer Science | 3.438 |
| 13. | Process System Analysis & Control | PEN-304 | 2016-17/ Spring | B.Tech 3 rd Year Process Engg. | 4.403 |
| 14. | Numerical Methods for Engineers | PEN-002 | 16-17/ 17-19,18-19 | B.Tech 4 th Year Process Engg. | 4.087 |
| 15. | Environment Auditing & Management | ED-79.06 | 2016-17/ Spring | M.Tech 1 st Year Urban Management at AIT, Thailand | 4.00 |
| 16. | Modeling and Simulation of Polymers | PEN-302 | 2017-18, 18-19, 19-20 | B.Tech IIIrd Year Polymer Science and Engineering | 4.175, 4.46 |

| | | | | | |
|-----|---|---------|------------------------------------|---|------------------------|
| 17. | Technical Communication | PEN-391 | 2017-2018 2018-19 | BTech IIIrd Year Polymer Science and Engineering | 4.294, 4.48 |
| 18. | Computer Programming and Numerical Methods | PEN-103 | 2019-20, Autumn | BTech Ist Year Polymer Science and Engineering | 4.14 |
| 19. | Polymer Product Technology | PEN-301 | 2015-16/ Autumn | B.Tech 3 rd Year Polymer Science & Engg. | 4.141 |
| 20. | Molecular Modeling and Simulation | PEN-521 | 2020-21 /21- 22/22-23 Autumn | M.Tech Polymer Science and Engineering | 4.84, 4.2, 4.45 |
| 21. | Polymer Rheology & Physics | PEN-502 | 21-22/ 22-23 Spring | M.Tech Polymer Science and Engineering | 4.88, 4.69 |
| | | | | AVERAGE SCORE | 4.31 (of 5.0) |

AVERAGE STUDENT APPRAISAL SCORE: 4.31 (of 5.0)

M.Tech/PhD: 4.612 (5.0)

B.Tech: 4.25 (5.0)

Versus *Average Department Score: ~3.99 (2013-22)

Versus *Average Institute Score: ~3.75 (2013-22)

Other Courses Taught Before Joining IIT Roorkee:

Chemical Engineering Thermodynamics; Chemical Reaction Engineering; Numerical Methods

LAB ESTABLISHMENT & DEVELOPMENT SUPPORT

1. Adhesives and Coatings Lab
2. Process Modeling and Simulation Lab
3. Advanced Polymer Composites Lab
4. Process Control Lab
5. Advanced Composites & ICFRE Lab: Swachhta Pakhwada on **October 1st** and 2nd to support the success of "Swachhta Hi Seva" and raise awareness about cleanliness and sanitation, **awarded the "Best Maintained Research Lab Competition"** scheduled on 02-10-2023.