

## RESUME

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**DR. GAURAV MANIK**

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### PROFESSIONAL SUMMARY

**Dr. Gaurav Manik is presently serving as Associate Professor and Head of the Department of the Department of Polymer and Process Engineering at IIT Roorkee.** He joined IIT Roorkee in January 2013 as Assistant Professor in the same department. He holds a Ph.D. (IIT Bombay), M.Tech (IIT Kanpur) and B.Tech (HBTI Kanpur) in Chemical Engineering. 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 protecting IP through significant number of patents and record of inventions.** His **research interests** include: Development of novel and industrially significant sustainable hybrid polymer composites and environmentally benign nanocomposites, bio-based (lignin and oils-based) polymer adhesives/ carbon-fibers/composites/coatings/sealants and Quantum dots, Valorization of wastes, Applied molecular modeling and simulations of polymers/materials, Bio-sensing, Chemical process modeling and simulation. He has **~185 research publications** in international peer reviewed SCI journals, patent applications, conferences and book chapters. He has significantly valued ~88 publications in peer-reviewed Chemical Engineering, Biomedical Engg., Polymer Science & Engineering Journals of repute such as Renewable and Sustainable Energy Reviews, Energy, Microchimica Acta, Composites B: Engineering, Applied Surface Science, Polymer, Progress in Organic Coatings, ACS Applied Materials and Interfaces, to name a few, and holds **10** granted patents/patent applications of industrial commercial relevance, has contributed to **25** books and **59** conference publications. He has executed/supervised/supervising **11** research and consultancy projects and **2** post-doctoral, **8** Ph.D. (+3 ongoing), **16** M.Tech students and **25** B.Tech projects. In his department at IIT Roorkee, he has recorded amongst the highest average number of publications in journal /patent applications/books consistently in the last few years and maintained **amongst the highest avg. student appraisal score in teaching.** 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, and VICAL Award for Best Technical Paper by Institute of Chemical Engineers (IIChe), India.** He has been an **invited speaker, guest and sessions chair** at several national and international conferences and workshops in India and abroad, and serves as **Board of Director of STEM Research Society, India.**

## 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 INTERESTS

Advanced sustainable hybrid polymer Composites & nanocomposites; Energy storage and carbon neutrality; Upcycling of wastes and waste management; Polymer recycling; Industrial Process Modeling, Simulation, Optimization and Control; Biosourced industrially useful adhesives; Nano-materials and quantum-dots; Easy clean/self-clean coatings, Applied molecular modeling and simulations;

## ACADEMIC TEACHING INTERESTS

Modeling and simulations of materials; Industrial process dynamics and control; Mass Transfer; Heat Transfer, Chemical Engineering Thermodynamics.

## PROFESSIONAL EXPERIENCES

1. Head of Department, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, March 2022 onwards till date.
2. Visiting Researcher (Faculty), Department of Physics, **Khalifa University of Science and Technology, Abu Dhabi, UAE**, Dec2022-January2023.
3. Associate Professor, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, Dec 2018 onwards till date.
4. Visiting Assistant Professor, School of Environment Resource and Development (SERD), **Asian Institute of Technology (AIT), Thailand**, January-April 2016.
5. Assistant Professor, Department of Polymer and Process Engineering, **Indian Institute of Technology Roorkee (IITR)**, January 2013 till Dec 2018.
6. Deputy General Manager, **Classic-Stripes Private Limited**, September 2012-December 2012.
7. Senior Manager -Corporate Research Materials Lab, **3M India Ltd.**, June 2011-September 2012.
8. Manager –New Product Development Group, **3M India Ltd.**, August 2008-June 2011.
9. Project Staff- Chemical Engineering Department, IIT Bombay, Feb 2004-Aug 2008.
10. Lecturer, **Birla Institute of Technology and Science (BITS), Pilani**, Sept-2003-Feb 2004.
11. Lecturer, **Bundelkhand Institute of Technology and Science (BIET), Jhansi, India**, June-2000-Sept 2003.
12. Engineer T., **Indo Gulf Fertilizers and Chemicals Ltd.**, Jagdishpur, India, July 1997-June 1998.

## POST-DOCTORAL GUIDANCE

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. **Tulika Sharma** on “Value addition of wood and wood based composites using nanomaterial”, Jan 2023 onwards, ICFRE Sponsored project.

## 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; Pursuing Post-doctoral fellowship at Purdue University, USA).**
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).**
6. PhD Thesis on “Hybrid high impact PP based composites”, by Atul Kumar Maurya (**Status: AWARDED 2022**), **Post-doctoral at Pittsburg University and North Carolina 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.**
8. PhD Thesis on “Modeling, simulation, optimization and control of a desalination process integrated with solar energy utilization”, by Anubhav Goel (**Status: AWARDED 2023**)
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**)

### 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, Kerala, 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 i-TAPE, 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**), 2023
  15. M.Tech Thesis titled “Development and characterization of sustainable title adhesives” by Sumit, (**Status: ONGOING**), 2023.
  16. M.Tech Thesis titled “Development of lignin based resins for replacing phenol-formaldehyde in wood bonding applications”, Saurabh Maliyan, (**Status: ONGOING**), 2023.

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

1. **Conference Chair**, 2<sup>nd</sup> International Conference on Recent Advances in Sustainable Environment (RAiSE), 3-4<sup>th</sup> March **2022**.
2. **Conference Session Chair**, APA-Bioforum-2022 organized by Asian Polymer Association in session “Biopolymers in wound care”, 16<sup>th</sup> July **2022**.
3. **Course Coordinator**, Tata Steels Ltd., Jamshedpur, sponsored short-term course on “Fundamentals of Polymers, Polymer Composites and Polymer Adhesives”, 13-22 Dec **2021**.
4. **General Program Chair**, 3<sup>rd</sup> 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 17-19<sup>th</sup> **2021**.
5. **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**.
6. **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**.

7. **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**.
8. **Convener, AICTE sponsored QIP Workshop** on “**Molecular Simulation Techniques**”, at Department of Polymer and Process Engineering, IIT Roorkee, 21<sup>st</sup> February, **2015**, as **Convenor**
9. **Member-Organizing Committee, Workshop on Advances in Packaging Technology**, 6-7<sup>th</sup> October **2015**, at Department of Paper Technology, IIT Roorkee.
10. **Member-Organizing Committee, International Conference on Emerging Materials and Applications (ICEMA)**, 5-6<sup>th</sup> April **2014**, at Department of Paper Technology, IIT Roorkee.
11. **Member-Organizing Committee, Workshop on “Clean Technologies for Process Industries”**, 27-28<sup>th</sup> March **2014**, at Department of Paper Technology, IIT Roorkee.

#### **PUBLICATIONS LIST (Publications in peer-reviewed journals): 88 Nos**

1. Rupam Gogoi, Interfacial shear strength of surface functionalized and functionalized CNT coated carbon fiber: A single fiber fragmentation study, *Journal of Thermoplastic Composite Materials (Impact Factor: 3.03)*, Accepted, **2023**.
2. 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)*, Accepted, **2023**.
3. Manjinder Singh, Sushanta Sahoo and Gaurav Manik, Computationally developed acrylated epoxidized methyl ester based pressure-sensitive adhesives, *Computational Material Science (Impact Factor: 3.572)*, Accepted, **2023**.
4. 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)*, Accepted, **2023**.
5. 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)*, **2023**.
6. 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)*, Accepted, **2023**.
7. 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)*, Accepted, **2023**
8. 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)*, **2023**
9. 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)*, Accepted, **2023**.



10. 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: 4.38)*, 13, 2901, **2023**.
11. 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)*, **2022**.
12. 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)*, **2022**; <https://doi.org/10.1177/08927057221147825>
13. 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, *Industrial & Engineering Chemistry Research (Impact Factor: 4.326)*, **2022**.
14. 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)*, **2022**. <https://doi.org/10.1557/s43578-022-00865-y>
15. 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)*, Vol 37, 101539, **2022**.
16. Anubhav Goel and Gaurav Manik, Analysis and optimization of parabolic trough solar collector to improve its optical performance, *Journal of Solar Energy Engineering: Including Wind Energy and Building Energy Conservation (Impact Factor: 2.238)*, 145(3), 031009, **2022**.
17. 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)*, **2022**.
18. Rupam Gogoi, Atul K. Maurya and **Gaurav Manik**, A Review On Recent Development In Carbon Fiber Reinforced Polyolefin Composites" *Composites Part C: Open*, Vol 8, August 2022, 100279, **2022**.
19. 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**
20. 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)*, Volume 223, Part B, 31, Pages 1653-1666, **2022**
21. Narendra Chaulagain, Kazi Alam, Sachin Kadian, Navneet Kumar, John Garcia, **Gaurav Manik**, Karthik Shankar, Synergistic Enhancement of the Photoelectrochemical Performance of TiO<sub>2</sub> Nanorod Arrays Through Embedded Plasmon and Surface Carbon Nitride Co-Sensitization, *ACS Applied Materials & Interfaces (Impact Factor: 10.383)*, 14, 21, 24309–24320, **2022**
22. 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.
23. Rupam Gogoi and **Gaurav Manik**, Development and characterization of surface functionalized hierarchical carbon fiber reinforced hybrid polypropylene composites, *Journal of Thermoplastic Composite Material*, Accepted 2022. (Impact Factor: 3.330)
  24. 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)
  25. 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)
  26. 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)
  27. 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)
  28. 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*, 2022. (Impact Factor: 2.807)
  29. 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)
  30. Atul Kumar, Rupam Gogoi and **Gaurav Manik**, Recycling and Reinforcement Potential for the fly ash and sisal fiber reinforced hybrid polypropylene composite, *Polymer Composites*. 2022, 43, 1060–1077. (Impact Factor: 3.171)
  31. 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)
  32. 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)
  33. Ramesh Kumar, Jitendra Kumar, Sachin Kadian, Priya Shrivastava, **Gaurav Manik** and Monojit Bag, Tunable Ionic Conductivity and Photoluminescence in Quasi-2D CH<sub>3</sub>NH<sub>3</sub>PbBr<sub>3</sub> Thin Film Incorporating Sulphur Doped Graphene Quantum Dots, *Phys. Chem. Chem. Phys.*, 2021, 23, 22733-22742. (Impact Factor: 3.676)
  34. 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: 3.189)
  35. 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)
36. 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)
  37. Uday Shankar, Sushanta K. Sethi, Bhanu P. Singh, Ashok Kumar, **Gaurav Manik** and Anasuya Bandyopadhyay, Optically Transparent and Lightweight Nanocomposite Substrate of Poly(methyl methacrylate)-co-Acrylonitrile/MWCNT for Optoelectronic Applications: An Experimental and Theoretical insight, *Journal of Materials Science*, 56, 17040–17061, **2021**. (Impact Factor: 4.682)
  38. Atul Kumar Maurya, Rupam Gogoi, **Gaurav Manik**, Mechano-chemically activated fly-ash and sisal fiber reinforced PP hybrid composite with enhanced mechanical properties, *Cellulose*, 28, 8493–8508, **2021**. (Impact Factor: 5.044)
  39. Sachin Kadian, Naveen Kumar Tailor, Narendra Chaulagain, Karthik Shankar, Soumitra Satapathi, **Gaurav Manik**, Effect of sulfur-doped graphene quantum dots incorporation on morphological, optical and electron transport properties of CH<sub>3</sub>NH<sub>3</sub>PbBr<sub>3</sub> perovskite thin films, *Journal of Materials Science: Materials in Electronics*, 32, 17406–17417, **2021**. (Impact Factor: 2.478)
  40. Rajesh Mahadeva, Mahindra Kumar, Shashikant Patole, **Gaurav Manik**, Modeling, simulation and optimization of the membrane performance of seawater reverse osmosis desalination plant using neural network and fuzzy based soft computing techniques, *Desalination and Water Treatment*. 229 (July), 17-30, **2021**. (Impact Factor: 1.254)
  41. Rupam Gogoi, Sushanta K. Sethi and **Gaurav Manik**, Surface functionalization and CNT coating induced improved interfacial interactions of carbon fiber with polypropylene matrix: A molecular dynamics study, *Applied Surface Science*, 539, 148162, **2021**. (Impact Factor: 7.392)
  42. Sushanta K. Sethi and **Gaurav Manik**, A combined theoretical and experimental investigation on the wettability of PVAc-g-PDMS/MWCNT based easy clean coating, *Progress in Organic coatings*, Vol. 151, 106092, Feb **2021**. (Impact Factor: 6.206)
  43. Rupam Gogoi and **Gaurav Manik**, Development of thermally conductive and high specific strength polypropylene composites for thermal management applications in automotive, *Polymer Composites*, 42, 1945–1960, **2021**. (Impact Factor: 3.171)
  44. Atul Kumar Maurya, Rupam Gogoi, **Gaurav Manik**, Study of the moisture mitigation and toughening effect by fly-ash particles on sisal fiber-reinforced polymer composites, *Journal of Polymer and Environment*, 29, 2321–2336, **2021**. (Impact Factor: 3.667)
  45. Sachin Kadian and **Gaurav Manik**, Recent advancements in synthesis and property control of graphene quantum dots for biomedical and optoelectronic applications, *Materials Chemistry Frontiers, a journal published by the Royal Society of Chemistry*, 5, 627-658, **2021**. (Impact Factor: 8.683)
  46. Rajesh Mahadeva, Romil Mehta, Amit Bhattacharya, **Gaurav Manik**, An experimental and computational investigation of poly(piperizinamide) thin film composite membrane for salts separation from water using Artificial Neural Network, *Desalination and Water Treatment*. 224 (June), 106-121, **2021**. (Impact Factor: 1.254)
  47. Sachin Kadian, **Gaurav Manik**, Neeladrisingha Das and Partha Roy, Targeted bioimaging and sensing of folate receptor positive cancer cells using folic acid-conjugated sulfur doped



- graphene quantum dots, *Microchimica Acta*, 187 (458), 2020. **Announced as an Outstanding Article by the Journal.** (Impact Factor: 6.408)
48. Sushanta K. Sethi, Anubhav Goel and **Gaurav Manik**, A multi-scale modeling and simulation study to investigate the effect of roughness of a surface on its self-clean performance, *Molecular System Design and Engineering by Royal Society of Chemistry*, 5, 1277-1289, 2020. **Announced as a Hot Access/Outstanding Article by the Journal.** (Impact Factor: 4.920)
  49. Sushanta K Sethi, Lokesh Soni, Uday Shankar and **Gaurav Manik**, Fabrication and Analysis of ZnO Quantum Dots Based Easy Clean Coating: A Combined Theoretical and Experimental Investigation, *Chemistry Select*, 5, 8942–895, 2020. (Impact Factor: 2.307)
  50. Sachin Kadian, **Gaurav Manik**, Poonam Nehra, Rishi Pal Chauhan, Neeladrisingha Das and Partha Roy, Synthesis, characterization and investigation of synergistic antibacterial activity and cell viability of silver-sulfur doped graphene quantum dots (Ag@S-GQDs) nanocomposite, *Journal of Materials Chemistry B, published by the Royal Society of Chemistry*, Issue 15, 8, 3028, 2020, **Featured in a themed collection of top 50 most popular articles published in 2020.** (Impact Factor: 7.571)
  51. Sachin Kadian, **Gaurav Manik**, Ashish Kalkal, Manjinder Singh, Rishi Pal Chauhan, Sulfur doped Graphene Quantum Dots as a Potential Sensitive Fluorescent Probe for the Detection of Quercetin, *Food Chemistry*, Vol. 317, 126457, 2020. (Impact Factor: 9.231)
  52. Sushanta K. Sethi, Lokesh Soni, Uday Shankar, Rishi Pal Chauhan, **Gaurav Manik**, A molecular dynamics simulation study to investigate poly(vinyl acetate)-poly(dimethyl siloxane) based easy-clean coating: An insight into the surface behavior and substrate interaction, *Journal of Molecular Structure*, 1202, 127342, 2020. (Impact Factor: 3.196)
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20. 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**.

21. 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 4<sup>th</sup> International Conference on Desalination using Membrane Technology, Perth Australia, 1-4<sup>th</sup> December **2019**.
22. 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”, 30<sup>th</sup> International Conference on Diamond and Carbon Materials, Seville, Spain, 8-12<sup>th</sup> September, **2019**.
23. Rupam Gogoi, Shubham Mireja, Sushanta K. Sethi and **Gaurav Manik** “Natural fibre based hybrid polypropylene composites: an insight into thermal properties” in 22<sup>nd</sup> International Conference on Composite Materials (ICCM22), Melbourne, Australia, 11-16<sup>th</sup> August, **2019**.
24. 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”, 30<sup>th</sup> International Conference on Diamond and Carbon Materials, Seville, Spain, 8-12<sup>th</sup> September, **2019**.
25. 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, 18-20<sup>th</sup> February, **2019**.
26. Rajesh Mahadeva, **Gaurav Manik**, Anubhav Goel and Sanjeev Kumar, Modelling of reverse osmosis desalination process using PSO-ANN prediction technique, *3<sup>rd</sup> International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**.
27. 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, 20-21<sup>st</sup> April, **2018**.
28. 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, *3<sup>rd</sup> International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**.
29. Anubhav Goel, **Gaurav Manik** and Rajesh Mahadeva, A review of parabolic trough collector and its modeling, *3<sup>rd</sup> International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**.
30. Varun Sharma, Suneel Dutt, Afzal Sikander, **Gaurav Manik** and Om Prakash Verma, Industrial simulation of PID & modified-MPID controllers for Interconnecting coupled system, *3<sup>rd</sup> International Conference on Soft Computing: Theory and Applications*, Dr B R Ambedkar National Institute of Technology, Dec 21-23, **2018**.
31. 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**.
32. Manjinder Singh<sup>#</sup>, 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, 6-9<sup>th</sup> December, **2018**.
33. Sushanta K Sethi, Lokesh Soni, **Gaurav Manik**, Blend compatibility studies using atomistic and mesoscale molecular dynamics simulations, *5<sup>th</sup> International Conference on Material Science, Metals and Manufacturing*, Singapore, 12-13<sup>th</sup> March, **2018**.

34. 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, 7<sup>th</sup> February, **2018**.
35. Rajesh Mahadeva, Om Prakash Verma and **Gaurav Manik**, *3<sup>rd</sup> International Conference on Recent advances in Chemical, Environmental and Energy Engineering*, SSN College of Engineering, Chennai, 15-16 Feb **2018**, **Received Best Paper Award**
36. 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, 7<sup>th</sup> February, **2018**.
37. Rupam Gogoi and **Gaurav Manik**, Morphology and crystallinity study of novel polypropylene hybrid composites, *ACS on Campus*, IIT Roorkee, 7<sup>th</sup> February, **2018**.
38. 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, 7<sup>th</sup> February, **2018**.
39. 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**.
40. 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**.
41. 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**.
42. 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**.
43. 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, 11-13<sup>th</sup> February **2017**.
44. 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, 11-13<sup>th</sup> February **2017**.
45. 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: *3<sup>rd</sup> International Conference on Computing Sciences (ICCS16)*, held at LPU, Jalandhar, Punjab, 8-9 April **2016**.
46. 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**.
47. 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.



48. 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**.
49. 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, 26-28<sup>th</sup> August **2014**.
50. 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 20<sup>th</sup>, **2014**.
51. 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, 66<sup>th</sup> Annual Session of Institute of Chemical Engineers*, at UICT, Mumbai, 27<sup>th</sup> December **2013**.
52. **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**.
53. **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 58<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2005)*, at Indian Institute of Technology Delhi (IITD), Delhi, December, **2005**.
54. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of Performance Polyesters and Polyisophthalates”, presented/ published in *Proceedings at 58<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2005)*, at Indian Institute of Technology Delhi (IITD), Delhi, December, **2005**, **Received Best Paper Award**
55. **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*, Thiruvananthapuram, **2004**.
56. **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.
57. **Gaurav Manik**, Upendra Natarajan and Hemant Nanavati, “Coarse-grained Molecular Dynamics Simulation of Polycarbonate Systems”, presented/Published in *Proceedings at 58<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers, CHEMCON-2004*, Delhi, Dec-27-30, **2004**.
58. **Gaurav Manik** and Goutam Deo, “Chemical Characterization of Supported Rhenium Oxide Catalysts”, in *56<sup>th</sup> Annual Session of Indian Institute of Chemical Engineers (CHEMCON-2003)*, at Bhubaneshwar, 19-22<sup>nd</sup> December, **2003**.
59. **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/PRIZE/CERTIFICATE/FELLOWSHIPS RECEIVED

S. No	Name of Award	Organization	Year
1	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	<b>2024</b>
2.	Member, Scientific Committee	17 <sup>th</sup> International Conference on Polymer Science and Technology, IIT Guwahati, <b>SPSI-MACRO-2023</b> during 10–13 December, 2023.	<b>2023</b>
3.	Guest of Honor Award	7 <sup>th</sup> International Conference on Soft Computing: Theory and Applications Organized by Himachal Pradesh University Institute of Technology, Shimla INDIA and STEM research society	<b>2022</b>
4.	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.	<b>2020 onwards</b>
5.	Guest of Honor Award	Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, INDIA	<b>2019</b>
6.	Member of International Advisory board for the 2nd International Conference on Research & Scientific Innovation (2ICRSI - 2016) and 3rd International conference on Multidisciplinary Research & Practice (3ICMRP-2016)	Research and Scientific Innovation Society, Ahmedabad, Gujarat, India.	24 <sup>th</sup> July <b>2016</b> & 27 <sup>th</sup> Nov <b>2016</b>
7.	Guest of Honor Award	Institute of Management Studies, Ghaziabad, INDIA	<b>2014</b>

8.	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. <b>2014</b>
9.	Award for Best (2 <sup>nd</sup> ) (Team) Product Design and Product Demo during Annual Technical Events	3M India (subsidiary of 3M, USA)	August- <b>2011</b>
10.	APAC Tech Forum Excellence Award	3M India (subsidiary of 3M, USA)	<b>2011</b>
11.	Award for Best Product Design during Annual Technical Events	3M India (subsidiary of 3M, USA)	May- <b>2010</b>
12.	VICAL Award for Best Presentation	The Indian Institute of Chemical Engineers (IIChe) IIT Guwahati, , INDIA	Dec- <b>2005</b>
13.	First Prize for Best Technical Paper Presentation in CHEMCON-05	58 <sup>th</sup> Annual Session of Indian Institute of Chemical Engineers, at Indian Institute of Technology Delhi (IITD), Delhi, INDIA	Dec- <b>2005</b>
14.	First Prize for Best Technical Paper Presentation in CHEMCON-04	57 <sup>th</sup> Annual Session of Indian Institute of Chemical Engineers, at Grand Hyatt, Mumbai, INDIA	Dec- <b>2004</b>
15.	Awarded Teaching Assistant Scholarships during M.Tech.	MHRD	July <b>1998</b> - April <b>2000</b>
16.	Awarded the B. Tech degree in Chemical Engineering with Honors (Distinction)	<i>HBTI Kanpur</i>	<b>1997</b>
17.	Merit Scholarships during B.Tech.	<i>HBTI Kanpur</i>	<b>1995-1996</b>

## MEMBER OF REVIEW PANEL/ADVISORY COMMITTEES

### 1. 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.
- ❖ and many more...

## 2. ORGANIZATIONS

- ❖ Reviewer of Doctoral Thesis from Monash University-Australia; IIT Guwahati, IIT Madras and others.
- ❖ 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 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**.
- ❖ Advisory Committee for International Workshop of Polymer, Chemical and Petrochemical Industries held at Istanbul, Turkey, Aug. **2014**.

## PROFESSIONAL MEMBERSHIPS

1. Life Member - Material Research Society of India (MRSI)
2. Life Member - Indian Society for Technical Education (ISTE).
3. Life Member – Academy of Microscope Science and Technology (AMST), India
4. Member- American Chemical Society, **2018-19**.

## DETAILS OF TECHNICAL REPORTS PREPARED AND SUBMITTED

S. No	Details	Authored By	Submitted to	Year of Submission/ Publication
1.	Annual Report on Faculty Initiation Grant (FIG) project titled “Molecular Simulation and Development of Oleophobic-Sacrificial Coatings”	<b>Gaurav Manik</b>	IIT ROORKEE	June, <b>2015</b>
2.	A Summer Undergraduate Research Assistantship (SURA) report on “Synthesis of industrially important pressure sensitive adhesives (PSAs) using naturally sourced raw materials”	Vivek Pandey, Meeta Trivedi, and <b>Gaurav Manik</b>	IIT ROORKEE	June, <b>2013</b>

**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

#### **ADMINISTRATIVE RESPONSIBILITIES SHARED**

- 1) **Head of Department**, Department of Polymer and Process Engineering, IIT Roorkee, March 22, 2022 onwards till date.
- 2) **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.
- 3) **Chairman, Department Academic Program Committee (DAPC)**, Nov 2019 onwards till March 2022.
- 4) **Warden, Malviya Bhavan/Hostel**, IIT Roorkee, from June, 2015 to Jan 2016, and again from June, 2017 till June 2018.
- 5) **Professor-in-Charge: Games & Sports**, IIT Roorkee Saharanpur Campus, Oct, 2013 to Jan 2016 and Dec 2020 till date
- 6) **Member, Institute Academic Program Committee (IAPC)** for Department of Polymer and Process Engineering, IIT Roorkee, July, 2013 to Jan 2016.
- 7) **Professor-in-Charge: Polymer Characterization Lab**, Department of Polymer and Process Engineering, IIT Roorkee, June 2014 till now.
- 8) **Chairman: Technical Forum**, a technical body comprising 15 members for organizing Annual business-technical meet, 3M, 2009-2011.



## DETAILS OF SPONSORED RESEARCH PROJECTS

S. No	Project Title	Sponsoring Agency	Funding Amount (in INR)	PI/Co-PI/ Mentor	Start Date	End Date
1.	Development of sealants for self-repairing and puncture resistant tires with enhanced time performance and cost effectiveness	Industry: DENIAR Trading India LLP, Mumbai	30.0 Lakhs (13.0 Released)	As PI	August 2016	Sept-2017
2.	Value-addition to wood and wood-based composites	ICFRE	16.64 Lakhs	As PI	Dec 2019	Dec 2024
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	As PI	2023	2024
4	Development of adhesives for tiles and other construction material	Kasper India Pvt. Ltd.	21.4 Lakhs	As PI	2023	2024
5.	Development and characterization of lignin-based adhesives for abrasive to substrate bonding applications	Luit Renewables Solutions Private Limited	11.8 Lakhs	PI	2023	2024
6.	Development of micro-nano encapsulated PCM water slurry as heat transfer fluid	Center for high energy systems, CHESS	37.86 Lakhs	As co-PI	2023	2024
7	Molecular Simulation and Development of Oleophobic-Sacrificial Coatings	IIT Roorkee as FIG	10 Lakhs	As PI	June 2013	Aug 2016
8.	Scale-up of treatment of black liquor from paper industries using electrodialysis	BEE, India	251 Lakhs	As co-PI	2023	2025
9	Self-Cleaning Sacrificial Coatings for Outdoor Applications	3M USA Global	27.0 Lakhs (33,000USD)	As PI (Co-PI: Purushotham Adoni & Sujatha Narayan)	2009	2011
10.	Development of Bio-based resins and composites from Non-edible Plant oil: A greener material for automotive and coating application (as Advisor)	DST NPDF Fellowship,	19.2 Lakhs	Mentor	May 2016	May 2018

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

## EXPERT INVITED TALKS/ RESOURCE PERSON/ SESSIONS CHAIRED

1. A Talk on “Carbon Nano materials: Opportunities and Challenges in Products Development”, on webinar theme Application of Nanotechnology in Wood-Based Products Industry: Prospects and Potentials organized by ICFRE, Dehradun, 15<sup>th</sup> March 2023.
2. Talk on “Modeling, Simulation, Optimization of Solar Concentration Process and Integration with Industrial Process: Another Step towards Sustainability”, 2nd Short Term Course of one week on "Process Modeling, Simulation, Control, and Optimization (PMSCO 2023)" Organized by the Department of Chemical Engineering. Department of Electrical Engineering and Department of ICE, Dr. B R Ambedkar National Institute of Technology Jalandhar, **March 25, 2023**

3. **Sessions Chair** in International e-Conference on Biopolymers, Asian Polymer Association (APA)-Bioforum 2022, July 16, **2022**.
4. *Resource Person* with talk on “Bio-sourced epoxies and light-weight sustainable polymer composites for engineering applications”, at KTU Sponsored one-week Faculty Development Program on “Recent Development of Biopolymer and Sustainable Polymer Composites for Engineering Applications” at Shree Buddha College of Engineering, 15<sup>th</sup> March **2021**.
5. **Expert Lecture** titled “Development of light-weight high strength HGM and carbon fiber based PP composites” in International Congress on Advances in Material Science and Engineering (CAMSE-2020), 28-30<sup>th</sup> Dec **2020**.
6. **Expert Lecture** titled “Molecular modelling and computational analysis: Applications in development of composites and coatings” in “Computational analysis and methods for engineers”, one week STTP organized by Department of Chemical Engineering, Dr. B R Ambedkar National Institute of Technology Jalandhar, 18-22 November **2020** (invited).
7. **Expert Lecture** titled “Modeling and Molecular Simulations of high specific strength polymer composites” in AICTE sponsored online STTP on “Recent Advances in Materials and Manufacturing- RAMM-2020”, Department of Mechanical Engineering, Gayatri Vidya Parishad College of Engineering (A), Visakhapatnam, Andhra Pradesh, Oct 5<sup>th</sup>, **2020**.
8. **Expert Lecture** titled “Modeling, Simulation, Control and Optimization of Multiple Effect Evaporator: A Case Study of Paper Industries” in e-Short Term Course (e-STC) on "Process Modeling, Simulation, Control, and Optimization" Organizing by Dr. B R Ambedkar National Institute of Technology Jalandhar, 16-20 September **2020**.
9. **Expert Lecture** on “An insight into development, characterization, modelling and simulations of next-generation high specific-strength fibre-reinforced polymer composite materials” during e-Short Term Course on 'Contemporary Material Technologies' being organized from September 8-12, **2020**, Dr. B R Ambedkar National Institute of Technology Jalandhar.
10. **Expert Lecture** on “Light-weight High-strength Polymer Composites: Modeling and Development” in Short Term Course on "Cryogenics and Composites: Theory and Applications (CCTA 2020), August **2020**, Dr. B R Ambedkar National Institute of Technology Jalandhar.
11. **Expert Lecture**, on “High Specific Strength Polymer Composites: Development, Characterization and Model Formulation”, at Indian Institute of Technology Guwahati, in the International Symposium on Sustainable Polymers held during 23-25 Aug **2019**.
12. **Expert lecture** on Optimization and Control Design Techniques: Innovation and Challenges, TEQIP-III Sponsored Short Term Course, Organized by Department of Instrumentation and Control Engineering, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, Punjab, 10-14 January, **2019**.
13. **Expert Lecture**, on Recent Advances in Chemical Engineering, in TEQIP-III Sponsored Faculty Development Program Organized by Department of Chemical Engineering, School of Chemical Technology, Harcourt Butler Technological Institute (HBTI), Kanpur, 23-27 July, **2018**.
14. **Session Chair: 2 technical sessions** in the International Conference on Soft Computing for Problem Solving (SoCProS-2015), held at IIT Roorkee Saharanpur Campus, December 18-20, **2015**.
15. **Delivered Invited Talk in Second Symposium on Advances in Sustainable Polymers (ASP)** in Department of Chemical Engineering, IIT Guwahati, January 21-22, **2015**.
16. **Delivered a Keynote Lecture in** Induction Program on “Corporate Challenges and Responsibilities in Global Scenario”, during the special session on Corporate Interface, was also honored as Guest of Honor, at IMS Ghaziabad, July 16, **2015**.

17. **Theme Paper/Invited Talk in First Symposium on Advances in Sustainable Polymers (ASP).** Lectures delivered on “Mesoscale simulations of sustainable polymers”, “Sustainable polymers in Coatings and Adhesives Industry”, Department of Chemical Engineering, IIT Guwahati, January 6-11, **2014**.
18. **Invited Talk on “Corporate Challenges on New Product Development and Environmental Sustainability”** at the ICSSR sponsored National Seminar on “Industrial Development in India: Relevance to Global Scenario & Challenges” at Sriram College of Management, Muzaffarnagar, March 22, **2014**.
19. **Invited Talk** on ‘Importance of IP Protection & Management’ and ‘Product Life Cycle Management’ at Chemical Engineering Department, Nirma University, Ahmedabad, INDIA, March 21-22, **2013**.
20. **Invited Talk** on “Technology Management at 3M” at NIIST-CSIR Lab, Tiruvanthapuram, INDIA (July **2012**).
21. **Invited Talk** on “New Product Development Cycle” and “IP Generation and Protection” during the 2 day workshop on “Managerial trends on chemical product design”, held in Chemical engineering department at VIT, Vellore, INDIA, August, **2012**.
22. **Invited Talk** on ‘Inspiring and Managing Innovation for the next generation’ at Symbiosis Institute of Business Management, Bangalore, INDIA, May **2011**.
23. **Invited Talk** on ‘Molecular modelling and Simulation of Polymers’ at IIT Kanpur (2007) and JNCASR, Bangalore, INDIA, January **2006**.

## 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 4<sup>th</sup>, **2016**.
3. Complex Fluids Symposium, Organized by National Chemicals Laboratory (NCL) Pune, held at NCL-Pune, Pune, Feb 21-22, **2008**.
4. 2<sup>nd</sup> 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**.

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

1. Supervised project on "Optimization of desalination process using machine learning", by Prabhat K., B.Tech IV<sup>th</sup> 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 III<sup>rd</sup> year Polymer Science & Engineering, **Jan-May 2019**.
4. Supervised **Major Project** on "Development of novel tire sealants" by Lokesh K Soni, BTech IV<sup>th</sup> year Polymer Science & Engineering, **July 2018-April 2019**.
5. Supervised major project on "Development of pressure sensitive adhesives from naturally derived oils", B.Tech IV<sup>th</sup> 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 III<sup>rd</sup> 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 III<sup>rd</sup> 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, 4<sup>th</sup> 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, 4<sup>th</sup> 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 Sanjiv Kasbe 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, BTech IV<sup>th</sup> 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, 4<sup>th</sup> 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, 4<sup>th</sup> year students of 4<sup>th</sup> 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. Syllabus of “**Modeling and Simulation of Polymers**”, Subject Code: PEN-302, Program of Polymer Science & Engineering.
2. Syllabus of “**Process Systems Analysis and Control**”, Subject Code: PEN-304, Class: III<sup>rd</sup> Year Polymer Science & Engineering.



3. Syllabus of “**Numerical Methods in Chemical Engineering**”, Subject Code: PEN-414, Class: IVth Year Polymer Science.
4. Syllabus of “**Process Equipment Design**”, Subject Code: PEN-, Program of Polymer Science & Engineering.
5. Syllabus of “**Process Instrumentation and Control**”, Subject Code: PE-353, Class: IIIrd Year Process Engineering & MBA.
6. Syllabus of “**Polymer Processing**”, Subject Code: PE-305, Class: IIIrd Year Polymer Science & Engineering.
7. Syllabus of “**Adhesives and Sealants**”, Subject Code: PEN-426, Class: IVth Yr Polymer Science.
8. Syllabus of “**Polymer Testing and Characterization**”, Subject Code: PEN-206, Class: IIIrd Year Polymer Science & Engineering.
9. Syllabus of “**Polymer Rheology**”, Subject Code: PEN-208, Class: IIIrd Year Polymer Science & Engineering.
10. Syllabus of “**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.	<b>Polymer Characterization</b>	PP-355	2013-14/ Autumn	B.Tech 3 <sup>rd</sup> Year Polymer Science & Engg.	<b>4.792</b>
2.	<b>Process System Analysis &amp; Control</b>	PP-411	2013-14/ Autumn	B.Tech 4 <sup>th</sup> year Polymer Science/Process Engg.	<b>4.019</b>
3.	<b>Industrial Instrumentation</b>	CHN-210	2016-17/ Spring	B.Tech 2 <sup>nd</sup> Year Chemical Engg.	<b>3.923</b>
4.	<b>Material and Energy Balance</b>	PP-102	2013-14/ Spring	B.Tech 1 <sup>st</sup> year Process Engg.	<b>4.164</b>
5.	<b>Mass Transfer</b>	PPN-208	2014-15/ Spring	B.Tech 2 <sup>nd</sup> Year Polymer Sci./Process Eng./Paper Tech/	<b>4.426</b>
6.	<b>Process System Analysis &amp; Control</b>	PE-413	2015-16/ Autumn	B.Tech 4 <sup>th</sup> year Polymer Science	<b>3.802</b>
7.	<b>Polymer Materials</b>	PP-356	2013-14/ Spring	B.Tech 3 <sup>rd</sup> Year Polymer Science & Engg.	<b>4.28</b>
8.	<b>Polymer Properties &amp; Characterization</b>	PP-206	2014-15/ Spring	B.Tech 2 <sup>nd</sup> Year Polymer Science & Engg.	<b>4.388</b>
9.	<b>Process System Analysis &amp; Control</b>	PP-411	2015-16/ Autumn	B.Tech 4 <sup>th</sup> year Process Engg.	<b>4.345</b>
10.	<b>Polymer Product Technology</b>	PEN-301	2015-16/ Autumn	B.Tech 3 <sup>rd</sup> Year Polymer Science & Engg.	<b>4.141</b>
11.	<b>Process Instrumentation and Control</b>	PPN-523	2016-17/ Autumn	M.Tech Paper Technology	<b>4.589</b>
12.	<b>Process Instrumentation and Control</b>	PEN-353	2016-17/ Autumn	B.Tech 3 <sup>rd</sup> Year Process Engg.	<b>4.944</b>
13.	<b>Elastomer Science and Rubber Technology</b>	PP-453	2013-14/ Autumn	B.Tech 4 <sup>th</sup> year Polymer Science	<b>3.438</b>

14.	<b>Process System Analysis &amp; Control</b>	PEN-304	2016-17/ Spring	B.Tech 3 <sup>rd</sup> Year Process Engg.	<b>4.403</b>
15.	<b>Numerical Methods for Engineers</b>	PEN-002	16-17/ 17-19,18-19	B.Tech 4 <sup>th</sup> Year Process Engg.	<b>4.087</b>
16.	<b>Environment Auditing &amp; Management</b>	ED-79.06	2016-17/ Spring	M.Tech 1 <sup>st</sup> Year Urban Management at AIT, Thailand	<b>4.00</b>
17.	<b>Modeling and Simulation of Polymers</b>	PEN-302	2017-18, 18-19, 19-20	BTech IIIrd Year Polymer Science and Engineering	<b>4.175, 4.46</b>
18.	<b>Technical Communication</b>	PEN-391	2017-2018 2018-19	BTech IIIrd Year Polymer Science and Engineering	<b>4.294, 4.48</b>
19.	<b>Computer Programming and Numerical Methods</b>	PEN-103	2019-20, Autumn	BTech Ist Year Polymer Science and Engineering	<b>4.14</b>
20.	<b>Polymer Product Technology</b>	PEN-301	2015-16/ Autumn	B.Tech 3 <sup>rd</sup> Year Polymer Science & Engg.	<b>4.141</b>
21.	<b>Molecular Modeling and Simulation</b>	PEN-521	2020-21 /21-22/22-23 Autumn	M.Tech Polymer Science and Engineering	<b>4.84, 4.2, 4.45</b>
22	<b>Polymer Rheology &amp; Physics</b>	PEN-502	21-22, 22-23 Spring	M.Tech Polymer Science and Engineering	<b>4.88, 4.69</b>
				<b>AVERAGE SCORE</b>	<b>4.31 (of 5.0)</b>

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

**\*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. Polymer Composites
4. Mass Transfer Lab