Curriculum Vitae

Dr. Suman Debnath
Post-Doctoral Fellow
School of Mechanical Engineering
Purdue University, West Lafayette, Indiana, 47907, USA
Email:debnath.suman295@gmail.com, debnath2@purdue.edu
Phone: +1 7657670437

Website:
https://sites.google.com/d/1WAoWK3A6rO5D1sOjHE2RTq7680QsRaxg/p/1I_Q2cGNIwQBzJWsSuoeSlAdExkLsCAIa/edit

Google Scholar: https://scholar.google.com.tw/citations?hl=en&pli=1&user=-0biHDsAAAAJ

Current Affiliation:

Postdoctoral Research Fellow (ETSL Lab) Nov. 2025-Till Date
School of Mechanical Engineering
Purdue University, West Lafayette, Indiana, 47907, USA
Email: debnath2@purdue.edu

Education:

Ph.D. (Doctor of Philosophy) Jan. 2017-Dec. 2020
Rajiv Gandhi Institute of Petroleum Technology, India
(Institution of National Importance, Government of India)
Thesis: Recyclable Thermosets Polymer Materials Based on Dynamic Covalent Linkage for Various Applications
Supervisor: Prof. Umaprasana Ojha

M.Sc. Chemistry (Organic Chemistry) Aug. 2011-Jul. 2013
Visva-Bharati University, Central University
Government of India, Santiniketan, West Bengal, India.

B.Sc. Chemistry (Honours) Aug. 2008-Jul. 2011
The University of Burdwan, Bardhaman, West Bengal, India

Research Experience:

POSTDOCTORAL RESEARCH ASSOCIATE Nov. 2025-Till Date
Purdue University, Mechanical Engineering Department
West Lafayette, Indiana, USA
URL: https://engineering.purdue.edu/ETSL/

POSTDOCTORAL RESEARCH ASSOCIATE Nov. 2021-Oct. 2025
Purdue University, Chemical Engineering Department
West Lafayette, Indiana, USA
URL: https://engineering.purdue.edu/Powerlab/Pages/MainPages/Home.html

RESEARCH ASSOCIATE Jan. 2021-July 2021

Rajiv Gandhi Institute of Petroleum Technology, India
(Institution of National Importance, Government of India)
URL: https://sites.google.com/view/polymer-materials-lab-rgipt

RESEARCH ASSISTANT Sep. 2016-Dec. 2017

Rajiv Gandhi Institute of Petroleum Technology, India
(Institution of National Importance, Government of India)
DAE Sponsored project (Bhabha Atomic Research Center, Mumbai, India)

PROJECT ASSISTANT LEVEL-II Oct. 2014-Aug. 2016

CSIR-Indian Institute of Petroleum
Mohkampur, Dehradun, Uttarakhand, India
Refining Technology Division under the guidance of Dr. Nagavatla Viswanadham (Chief Scientist)

SUMMER PROJECT May. 2014-Jul. 2014

Visva-Bharati University, Central University
Government of India, Santiniketan, West Bengal, India.
Nano metal-catalyzed organic reactions Under the guidance of Prof. Alakananda Hazra

M.S.C. PROJECT WORK May. 2012-Jul. 2013

Visva-Bharati University, Central University
Government of India, Santiniketan, West Bengal, India.
Oxidation of Benzene to Phenol using chromium based nano catalyst.
Under the guidance of Prof. Alakananda Hazra

Teaching Experience:

- **Teaching Assistantship**, **Under Graduate courses**: Examination Invigilation Duty at Rajiv Gandhi Institute of Petroleum Technology, 4 Year: 2017-2020 (Department of Basic Sciences and Humanities).
- Introduction to Polymer Chemistry, Advanced Polymer Chemistry, Basic Chemistry Courses, Chemistry & Materials Science Lab
- Operation and maintenance of Mechanical property of Polymer testing Lab (DMA, UTM, DSC, TGA, GPC), Spectroscopy Lab, NMR Lab, XPS Lab

---

Research Experience:

Post-Doctoral Work:

- Advanced Polymer Electrolytes for Enhanced Battery Safety and Performance
- Selective Lithium Extraction from Brine using Polymer Membrane
- Facilitating Ionic & Electronic Conduction in Radical Polymers through Controlled Assembly Overarching
- Synthesis of charge transport and magneto-responsive properties of open-shell single crystals, polymers, polyelectrolyte complexes, polymers in additive manufacture, conducting materials, electro-spinning, spin coating, sensing, Energy Materials, etc. applications.
- Synthesis of organic reaction-based bioinspired polymer materials by different polymerization techniques (Radical, ATRP, RAFT, and Living Polymerization).
- The synthesis of advanced polymers from recovered ocean plastic waste in close conjunction. Synthesizing High-Performance Renewable PET from Recovered Plastic

Waste.

- Developing new saliva-based polymers & hydrogels (i.e., saliva-gels) for different applications with faculty and students in Speech, Language, and Hearing Sciences at Purdue and clinical collaborators at the University of Wisconsin–Madison.
- Development of nanomaterials as a functional layer for next-generation hydrogen sensors

Doctoral Work:

- Synthesis of organic reaction-based bioinspired polymer materials by different polymerization techniques (Radical, ATRP, RAFT, and Living Polymerization).
- Reversible, degradable, reprocessable, reusable, shape memorable, and self helable bio-based sustainable dynamic polymeric network synthesis and its various applications.
- Synthesis of dynamic, self-healable, degradable, moldable polyamide-based 3D printing materials.
- Hydrogels, Organogels, Hydrogel-Organogel hybrid material synthesis and its various applications (actuator, anisotropic behavior and shape memory behaviour, biological activities, low-temperature applications, and separations of aromatics from the azeotropic mixture, adhesives properties, etc.).

Research Interest: Polymer Electrolytes for Enhanced Battery Safety and Performance | Selective Lithium Extraction from Brine using Polymer Membrane | Conductive Polymer Materials | Ionic & Electronic Conduction in Radical Polymers | Bioinspired polymer materials | Stimuli-responsive Polymer materials | Reversible, degradable, reprocessable, reusable, shape-memorable, and self-helable bio-based sustainable dynamic polymeric network | Tough Hydrogels | Organogels, Hydrogel-Organogel hybrid material synthesis and its various applications | Saliva-Gel for Potential Xerostomia Treatment| Dynamic, self-healable, degradable, moldable polyamide-based 3D printing materials | Polymers for water Purification systems.

Publications

Publications in Peer-Reviewed Journal: (*Corresponding Author)

(1) Suman Debnath*, Yun-Fang Yang, Jayant Naga, and Bryan W. Boudouris, Facilitating Ionic & Electronic Conduction in Radical Polymers through Controlled Assembly Overarching, 2025 (**Manuscript Under Preparation**).

(2) Suman Debnath*, Cristina Paz, Dimitri Scofield, Nicole Rogus-Pulia, Randall J. Kimple, Georgia A. Malandraki, Bryan W. Boudouris*, Poly (hydroxyethyl methacrylate) Saliva-Gel: A Polymer-Based Breakthrough for Potential Xerostomia Treatment, **ACS Applied Polymer Materials**, 7, 2025, 9578–9584. (IF:4.8)

(3) Suman Debnath*, Mahesh Parit, Aidan P. Brown, Jayden Pearson, Basudeb Saha, and Bryan W. Boudouris*, Renewable PET from Recovered Plastic Waste. **Chemistry of Materials**, 36, 2024, 10259–10266). (IF:8.6)

(4) Suman Debnath*, Hyunki Yeo, Lukas Yi Peng, Denniell A. J. Hurboda, Zihao Liang, Matthias Zeller, and Bryan W. Boudouris*, Charge Transport and Magneto-Responsive Properties of Open-Shell Single Crystals. **Chemistry of materials,** 36, 2024, 5661–5670. (IF:8.6)

(5) Suman Debnath, Hyunki Yeo, Baiju Krishnan Pazhamkalathil, Bryan W. Boudouris*, Radical Polymers in Electronics & Spintronics Applications. **RSC Applied Polymers,** 2, 2024,7-25 (**Invited Article)**. (IF:NA)

(6) Suman Debnath, Carsten Flores-Hansen, Nikhil F. Carneiro, William A. Swann, Zachary A. Siefker, George T.-C. Chiu, James E. Braun, Jeffrey F. Rhoads*, Bryan W. Boudouris*. Nanoparticle-functionalized Microsensors for Room-Temperature Hydrogen Detection. **Journal of Materials Science,** 59, 2024, 6436-6445. (IF:3.9)

(7) **Suman Debnath**, Aaron B. Woeppel, Cristina Paz, Nicole Rogus-Pulia, Randall J. Kimple, Georgia A. Malandraki, Bryan W. Boudouris*, Acrylamide-based Saliva-gels as a Potential Xerostomia Treatment. **ACS Applied Polymer Materials,** 5, 2023, 7698–7704. (IF:4.5)
(8) Zihao Liang, Ying Tan, Sheng-Ning, Jacob F. Stoehr, Hamas Tahir, Aaron B. Woeppel, **Suman Debnath**, Matthias Zeller, Letian Dou, Brett M. Savoie, Bryan W. Boudouris*, Charge transport and antiferromagnetic ordering in nitroxide radical crystals. **Molecular Systems Design & Engineering,** 8, 2023**,** 464-472. (IF:3.2)
(9) **Suman Debnath**, Chandan Upadhyay, Umaprasana Ojha*. Healable, Recyclable, and Programmable Shape Memory Organogels Based on Highly Malleable Catalyst-Free Carboxylate Linkages. **ACS Applied Materials & Interfaces,** 14, 2022, 9618-9631. (IF:10.38)
(10) Subhankar Mandal**,** Abey Vignesh**,** **Suman Debnath**, Umaprasana Ojha*, Mechanically Robust Anisotropic Hydrogel–Organogel Conjugates for Soft Actuators with Fast Response Time and Diverse Bi-Axial Programmable Folding Ability. **Chemistry of Materials,** 34, 2022, 5125-5137. (IF:10.5)
(11) **Suman Debnath**, Saurabh Kr Tiwary, Umaprasana Ojha*, Dynamic Carboxylate Linkage Based Reprocessable and Self-Healable Segmented Polyurethane Vitrimers Displaying Creep Resistance Behavior and Triple Shape Memory Ability. **ACS Applied Polymer Materials**, 3, 2021, 2166-2177 (**Most Read Article April 2021**). (I.F: 4.7)
(12) **Suman Debnath**, Swaraj Kaushal, Subhankar Mandal, Umaprasana Ojha*, Solvent Processable and Recyclable Covalent Adaptive Organogels Based on Dynamic Trans-Esterification Chemistry: Separation of Toluene from Azeotropic Mixtures. **Polymer Chemistry**, 11, 2020, 1471-1480 (**Invited article and published as cover art**). (IF:5.58)
(13) **Suman Debnath**, Swaraj Kaushal, Umaprasana Ojha*, Catalyst-Free Partially Bio-Based Polyester Vitrimers. **ACS Applied Polymer Materials**, 2, 2020, 1006-1013 (**Most read article in February 2020**). (IF:5.0)
(14) **Suman Debnath**, Rewati Raman Ujjwal, and Umaprasana Ojha*, Self-Healable and Recyclable Dynamic Covalent Networks Based on Room Temperature Exchangeable Hydrazide Michael Adduct Linkages. **Macromolecules,** 51, 2018, 9961−9973 (**Most read Article 2018**). (IF:5.99)
(15) Rewati Raman Ujjwal, Chandan Sona, **Suman Debnath**, Prem Narayan Yadav, Umaprasana Ojha*, Dye Labelled Polyacryloyl Hydrazide−Ag Nanoparticle Fluorescent Probe for Ultra-sensitive and Selective Detection of Au Ion. **ACS Omega**, 2, 2017, 4278−4286. (IF:NA)
(16) **Suman Debnath**, Sandeep K. Saxena, Nagabhatla Viswanadham*, Facile synthesis of crystalline nano porous Mg3(PO4)2 and its application to aerobic oxidation of alcohols. **Catalysis Communications** 84, 2016, 129-133. (IF:3.4)
(17) Nagabhatla Viswanadham*, **Suman Debnath**, Sandeep K. Saxena, Ala's H. Al- Muhtaseb, Carbonized glycerol nanotubes as efficient catalysts for biofuel production. **RSC Advances**, 6, 2016, 41364-41368. (IF:3.1)
(18) Nagabhatla Viswanadham*, **Suman Debnath**, Peta Sreenivasulu, Devaki Nandan, Sandeep K. Saxena, Ala's H. Al-Muhtaseb, Nanoporous hydroxyapatite as a bi- functional catalyst for biofuel production. **RSC Advances**, 5, 2015, 67380-6 67383. (IF:3.3)

Conference Publications:

(1) **Suman Debnath**, Umaprasana Ojha*, R. M. Tripathi, S.K. Sahoo, Spatial distribution of uranium and associated water quality parameters in Sultanpur district of Uttar Pradesh, Proceeding of Twentieth National Symposium on Environment, (NSE-20) IIT Gandhinagar, Gujarat, Dec 13-15, 2018, page 407.
(2) Niharika Pandey, **Suman Debnath**, Umaprasana Ojha*, R. M. Tripathi, S.K. Sahoo, Spatial distribution of uranium and associated water quality parameters in Pratapgarh district of Uttar Pradesh Proceeding of Twentieth National Symposium on Environment, (NSE-20) IIT Gandhinagar, Gujarat, Dec 13-15, 2018, page 441.

(3) Subhankar Mandal, **Suman Debnath**, Umaprasana Ojha*, R. M. Tripathi, S.K. Sahoo, Spatial distribution of uranium and associated water quality parameters in Faizabad district of Uttar Pradesh Proceeding of Twentieth National Symposium on Environment, (NSE-20) IIT Gandhinagar, Gujarat, Dec 13-15, 2018, page 403.

Oral Presentations at International & National Conferences/ Workshop:

(1) **Suman Debnath**, Nicole Rogus-Pulia, Georgia A. Malandraki*and Bryan W. Boudouris*, Bioinspired Saliva-gels: an Improved Potential Xerostomia Relief Solution, Dysphagia Research Society at the 32nd DRS Annual Meeting at Puerto Rico, U.S.A, March 12-15, 2024.

(2) Suman Debnath, Hyunki Yeo, Bryan W. Boudouris*, Liquid Crystalline Nonconjugated Open-Shell Organic Molecules, **APS Spring Meeting, Minneapolis**, **U.S.A**, March 4-8, 2024.

(3) Suman Debnath, Mahesh Parit, Basudeb Saha*, and Bryan W. Boudouris*, Synthesizing High-Performance Renewable PET from Recovered Plastic Waste, **ACS Spring Meeting, Indianapolis**, **U.S.A**, March 26-30, 2023.

(4) Suman Debnath, Georgia A. Malandraki*and Bryan W. Boudouris*, Tailored Saliva Release using Hydrogels: First Steps for an Emerging Xerostomia Solution, Dysphagia Research Society at the **World Dysphagia Summit & 31st DRS Annual Meeting at San Francisco, California, U.S.A,** March 13-17, 2023.

(5) Suman Debnath, Umaprasana Ojha*, Solvent Processable and Recyclable Covalent Adaptive Networks Based on Dynamic Trans-esterification of β-keto Esters. **Suman Debnath**, Swaraj Kausal, Subhankar Mandal, Umaprasana Ojha*, **Rajiv Gandhi Institute of Petroleum Technology (National Symposium,** October 31-November 1, 2019).

(6) Suman Debnath, Umaprasana Ojha*, Self-Healable and Recyclable Dynamic Covalent Networks Based on Room Temperature Exchangeable Hydrazide Michael Adduct Linkages**. Rajiv Gandhi Institute of Petroleum Technology (National Symposium**, April 13, 2019).

(7) Suman Debnath, Umaprasana Ojha*, Statistical Analysis of data generated under National Uranium Project, Sept. 26 - 27, 2018, **Bhabha Atomic Research Centre (BARC)**, Mumbai.

(8) Suman Debnath, Umaprasana Ojha*, Dynamic Polyamides with Tailored Curing Times for Real-Time 3D Printing Application. **Rajiv Gandhi Institute of Petroleum Technology (National Symposium,** March 17-18, 2018).

(9) Suman Debnath, Umaprasana Ojha*, Generation of National database on Uranium in drinking water under National Uranium Project, Feb. 8-10, 2017, **Bhabha Atomic Research Centre (BARC)**, Mumbai.

Poster Presentations at International & National Conferences/ Workshop:

(1) **Suman Debnath**, R. R. Ujjwal & Umaprasana Ojha*, Dynamic polyamides with tailored curing times for real-time 3D printing application. **ACS Meetings & Expositions, U.S.A**. April 5-30, 2021.

(2) Suman Debnath, R. R. Ujjwal & Umaprasana Ojha*, Dye-Labeled Polyacryloyl Hydrazide−AgNanoparticle Fluorescent Probe for Ultrasensitive and Selective Detection of Au Ion Nov 1, 2018, Expanding Frontiers in Chemical Sciences-2018, **Indian Academy of Science & ACS Publications, Banaras Hindu University**, Banaras.

(3) Suman Debnath, Umaprasana Ojha* Recyclable Thermosets based on dynamic Amidation and Aza-Michael addition reaction, **Rajiv Gandhi Institute of Petroleum Technology (National Symposium**, January 4, 2017).

(4) Suman Debnath, Umaprasana Ojha*, R. M. Tripathi, S.K. Spatial distribution of uranium and associated water quality parameters in Sultanpur district of Uttar Pradesh Sahoo Dec 13-15, 2018, NSE-20, IIT Gandhinagar & Bhabha Atomic Research centre (BARC), IIT Gandhinagar, Gujarat.

(5) Suman Debnath, Sandeep K. Saxenaa, Amit Sharma, Rajeev Panwar, Nagabhatla Viswanadham*, Carbonized glycerol nanotubes as efficient catalysts for biofuel production. April 29, 2016, **Indian Scenario, Department of Chemistry Uttaranchal University**, Dehradun.

Awards/Fellowships:

(1) Recognized as the 2023 recipient of the Mark Nicosia award (2500 U.S.D) by the **Dysphagia Research Society** at the **World Dysphagia Summit & 31st DRS Annual Meeting at San Francisco**, California, U.S.A for my research work in the **treatment of Dry mouth or Xerostomia.** This award was designed for an early career scientist in the field of Biomedical Engineering pursuing innovative knowledge in the diagnosis and/or treatment of dysphagia.
(2) Senior Research Fellowship (SRF) award in 2019 from Human Resource Development Group, Council of Scientific & Industrial Research Government of India.
(3) Best Oral Presentation Award, Rajiv Gandhi Institute of Petroleum Technology, India (National Symposium 2019).
(4) Best Oral Presentation Award, Rajiv Gandhi Institute of Petroleum Technology, India (National Symposium 2018).
(5) Junior Research Fellowship from **Bhabha Atomic Research Centre (BARC)**, Mumbai, **2016-2018**.
(6) Junior Research Fellowship from **CSIR Indian Institute of Petroleum**, Dehradun, **2014-2016.**
(7) Best Poster Award in National Symposium on Biofuel: Indian Scenario **2016** at Department of Chemistry Uttaranchal University, Dehradun, Uttarakhand, India.
(8) National Scholarship, West Bengal Board of Education, India, during **2006-2008** & **2011-2013**.

Undergraduate Students Mentored (07 Total):

(1) Kathryn Ann Bingenheimer (2024-2025), Chemical Engineering, Purdue University, USA. (2) Jayden Perason (2022-2023), Chemical Engineering, Purdue University, USA. (3) Aidan P. Brown (2022-2023), Chemical Engineering, Purdue University, USA. (4) Saurabh Kr Tiwary, (2020-2021), Chemical Engineering, Rajiv Gandhi Institute of Petroleum Technology, India. (5) Swaraj Kaushal (2019-2020), Chemical Engineering, Rajiv Gandhi Institute of Petroleum Technology, India. (6) Brijesh Saini (2018-2019), Chemical Engineering, Rajiv Gandhi Institute of Petroleum Technology, India. (7) Harshvardhan Pande (2018-2019), Chemical Engineering, Rajiv Gandhi Institute of Petroleum Technology, India.

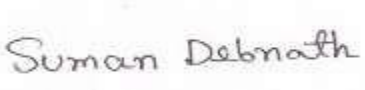
Professional Associations:

(1) Member of the **American Chemical Society** (ACS), (2) Member of the **Dysphagia Research Society** (DRS), (3) Member of the **American Physical Society** (APS)

Reviewer of the Journals: American Chemical Society (ACS), Royal Society of Chemistry (RSC), Elsevier, Multidisciplinary Digital Publishing Institute (MDPI), Taylor & Franciscan, Materials Plus (Universal Wiser Publisher), etc.

Declaration and Sign Off

I hereby declare that the all above-written particulars are true to the best of my knowledge.



(Signature)
Suman Debnath