ROHIT G. JADHAV, Ph.D.

Organic Electrosynthesis | Reductive Electrosynthesis |Electrodeposition| Electroanalysis | Bioelectrocatalysis | Redox-Active Molecules and Polymers

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RESEARCH MOTIVATION AND PROFILE

My research is motivated by the use of electrochemistry as a sustainable and tuneable platform for chemical synthesis, energy conversion, and functional materials development. I aim to design electroactive molecules and materials including redox polymers, catalyst-modified electrodes and bioelectrodes. These electrodes with different material architectures can control charge transfer, improve catalytic selectivity, and enable efficient electrochemical transformations suitable for chemical synthesis as well as energy storage and conversion.

EDUCATION

Ph.D., Organic Chemistry | Indian Institute of Technology Indore | Indore, India | 2021

- **Thesis:** Engineering of organic-inorganic nanohybrids for energy conversion and energy storage applications.
- **Advisor:** Prof. Apurba K. Das

M.Sc., Organic Chemistry | Dr. Babasaheb Ambedkar Marathwada University | Aurangabad, India | 2014

B.Sc. in Chemistry, Physics, Computer Science | Dr. Babasaheb Ambedkar Marathwada University | Aurangabad, India | 2012

RESEARCH APPOINTMENTS

Assistant Research Professor | Department of Chemistry | NSF Center for Synthetic Organic Electrochemistry | Kummer Institute Center for Resource Sustainability, Missouri University of Science and Technology | Rolla, MO | July 2026 - Present

Postdoctoral Research Associate | Kummer Institute Center for Resource Sustainability, Department of Chemistry, Missouri University of Science and Technology | Rolla, MO | Jan 2024-June 2026
Advisor: Prof. Shelley D. Minteer

Postdoctoral Researcher | Department of Chemistry, University of Utah | Salt Lake City, UT | Nov 2021-Dec 2023
Advisor: Prof. Shelley D. Minteer

Doctoral Researcher | Department of Chemistry, Indian Institute of Technology Indore | Indore, India | Jul 2015-Jan 2021
Advisor: Prof. Apurba K. Das

GRANTS AND FUNDING

- **Co-PI, DARPA FAARM Program (2024-2025), $173,000:** Innovative Bioelectrochemical Approaches for Sustainable Hydrazine (N_2H_4) Synthesis.

MENTORING, TRAINING, AND LABORATORY LEADERSHIP

- Mentored graduate students and junior researchers in electrochemical research design, literature analysis, experiment planning, electrochemical data interpretation, manuscript preparation, and troubleshooting.
- Trained researchers in electrochemical workflows, including three-electrode cell setup, H-cell operation, glovebox electrochemistry, cyclic voltammetry, chronoamperometry, chronopotentiometry, impedance spectroscopy, controlled-potential/current electrolysis, and charge-discharge testing.
- Guided students in catalyst/electrode optimization, enzyme bioelectrode fabrication, redox-material screening, membrane/electrolyte testing, and analysis of electrochemical performance metrics.
- Supported reproducible laboratory practice through method standardization, safe chemical handling and documentation of experimental protocols.

SELECTED PUBLICATIONS

Selected from full publication list; Google Scholar link included in header.

- Housseini W. E.; Gerulskis R.; Behera N.; Guan H.; **Jadhav R. G.**; Nguyen Z. A.; Baiarashov E.; Pence M.; Kamaja V. K.; Larkin T.; Luo L.; Minteer S. D. Employing AC and DC electrolysis to modulate electroenzymatic pathways for efficient and stereoselective H–D exchange. *Journal of the American Chemical Society* **2026**, 148, 22641. https://doi.org/10.1021/jacs.6c02284
- **Jadhav, R. G.**; Kamaja, V. K.; Housseini, W. E.; Brachi, M.; Minteer, S. D. Electroenzymatic cascades for nitrogen upgrading: Beyond ammonia towards value-added nitrogen chemicals. *ChemCatChem* **2026**, 18 (7). https://doi.org/10.1002/cctc.202501835.
- Brachi, M.; Housseini, W. E.; Beaver, K.; **Jadhav, R.**; Dantanarayana, A.; Boucher, D. G.; Minteer, S. D. Advanced electroanalysis for electrosynthesis. *ACS Organic & Inorganic Au* **2023**, 4 (2), 141–187. https://doi.org/10.1021/acsorginorgau.3c00051.
- Boucher, D. G.; Pendergast, A. D.; Wu, X.; Nguyen, Z. A.; **Jadhav, R. G.**; Lin, S.; White, H. S.; Minteer, S. D. Unraveling hydrogen atom transfer mechanisms with voltammetry: Oxidative formation and reactivity of cobalt hydride. *Journal of the American Chemical Society* **2023**, 145 (32), 17665–17677. https://doi.org/10.1021/jacs.3c03815.
- Boucher, D. G.; Carroll, E.; Nguyen, Z. A.; **Jadhav, R. G.**; Simoska, O.; Beaver, K.; Minteer, S. D. Bioelectrocatalytic synthesis: Concepts and applications. *Angewandte Chemie* **2023**, 135 (46). https://doi.org/10.1002/ange.202307780.
- Mazumder, Md. M. R.; **Jadhav, R. G.**; Minteer, S. D. Phenyl acrylate-based cross-linked anion exchange membranes for non-aqueous redox flow batteries. *ACS Materials Au* **2023**, 3 (5), 557–568. https://doi.org/10.1021/acsmaterialsau.3c00044.
- Kori, D. K. K.; **Jadhav, R. G.**; Dhruv, L.; Das, A. K. A platinum nanoparticle doped self-assembled peptide bolaamphiphile hydrogel as an efficient electrocatalyst for the hydrogen evolution reaction. *Nanoscale Advances* **2021**, 3 (23), 6678–6688. https://doi.org/10.1039/d1na00439e.
- Singh, D.; **Jadhav, R. G.**; Das, A. K. Electrodeposition of binder-free peptide/$Co(OH)_2$ nanohybrid electrodes for solid-state symmetric supercapacitors. *Energy & Fuels* **2021**, 35 (19), 16152–16161. https://doi.org/10.1021/acs.energyfuels.1c01850.
- **Jadhav, R. G.**; Singh, D.; Krivoshapkin, P. V.; Das, A. K. Electrodeposited organic–Inorganic nanohybrid as robust bifunctional electrocatalyst for water splitting. *Inorganic Chemistry* **2020**, 59 (11), 7469–7478. https://doi.org/10.1021/acs.inorgchem.0c00227.
- **Jadhav, R. G.**; Das, A. K. Pulse electrodeposited, morphology controlled organic–inorganic nanohybrids as bifunctional electrocatalysts for urea oxidation. *Nanoscale* **2020**, 12 (46), 23596–23606. https://doi.org/10.1039/d0nr07236b.
- **Jadhav, R. G.**; Singh, D.; Mobin, S. M.; Das, A. K. Engineering of electrodeposited binder-free organic-nickel hydroxide based nanohybrids for energy storage and electrocatalytic alkaline water splitting. *Sustainable Energy & Fuels* **2019**, 4 (3), 1320–1331. https://doi.org/10.1039/c9se00483a.
- Konda, M.; Maiti, S.; **Jadhav, R. G.**; Das, A. K. Redox-active peptide-functionalized quinquethiophene-based electrochromic π-gel. *Chemistry - an Asian Journal* **2017**, 13 (2), 204–209. https://doi.org/10.1002/asia.201701460.
- Bhowmik, S.; **Jadhav, R. G.**; Das, A. K. Nanoporous conducting covalent organic polymer (COP) nanostructures as metal-free high performance Visible-Light photocatalyst for water treatment and enhanced CO_2 capture. *The Journal of Physical Chemistry C* **2017**, 122 (1), 274–284. https://doi.org/10.1021/acs.jpcc.7b07709.

SCHOLARLY AND PROFESSIONAL SERVICE

Editorial Service

- Guest Editor, Special Issue "Materials for Energy Storage and Conversion," for research journal “Results in Engineering”, Elsevier.

Ad Hoc Peer Review

- Ad hoc reviewer for peer-reviewed journals including ACS Measurement Science Au, Catalysis Science & Technology, Scientific Reports, and RSC Advances.
- Reviewed manuscripts in electrochemistry, materials chemistry, energy conversion/storage, electrocatalysis, nanomaterials, and bioelectrochemistry.

Conference Service

- Session Chair with Prof. Ethan J. Crumlin, I02 Flow Battery Morning Session, 242nd ECS Meeting, Atlanta, GA, October 9-13, 2022.

SELECTED PRESENTATIONS AND WORKSHOPS

- Oral presentation: Rohit G. Jadhav, Wassim El Housseini, Monica Brachi, Linda Ifediora, Shelley D Minteer “Bioelectrocatalytic Electrosynthesis: From Small-Molecule Activation to Precision Organic Synthesis” NSF Center for Synthetic Organic Electrochemistry 2026 All-Hands Meeting,Providance, RI, August 9-13, 2026.
- Oral presentation: Conjugated Bipolar Redox-Active Electrolyte for Symmetric Redox Flow Battery, 242nd ECS Meeting, Atlanta, GA, October 9-13, 2022.
- Oral presentation: Pyrene-TEMPO-Modified Carbon Electrodes for Organic Radical Lithium-Ion Batteries, 243rd ECS Meeting and SOFC-XVIII, Boston, MA, May 28-June 2, 2023.
- Workshop participation: 1st International Workshop of the Bioelectrochemical Society, Salt Lake City, UT, June 14-16, 2023.

AWARDS AND FELLOWSHIPS

- Best Oral Presentation, CHEM 2020, Indian Institute of Technology Indore, 2020.
- Senior Research Fellowship, University Grants Commission, New Delhi, India, 2017-2020.
- Junior Research Fellowship, University Grants Commission, New Delhi, India, 2015-2017.

PATENT APPLICATIONS AND BOOK CHAPTER

- Das, A. K.; Mukherjee, S.; Jadhav, R. G.; Kumar, A. π-Conjugated Compound for Resistive Switching, Device and Method of Fabrication. Patent application no. 201921027542, July 10, 2019.
- Mukherjee, S.; Das, A. K.; Patel, C.; Mandal, B.; Jadhav, R. G. Ultrasensitive NO_2 Sensor Based on S- and N-Doped Carbon-Dot-Functionalized Tungsten Oxide. Patent application no. 202021041967, September 28, 2020.
- Jadhav, R. G.; Das, A. K. Four Dimension Printing in Healthcare. In 3D Printing in Medicine; Woodhead Publishing/Elsevier, 2017.