

Saikat Banerjee

612.707.3365 | saikatban91@gmail.com | Detroit, MI | Willing to Relocate

Relevant Experience

DuPont, Automotive Adhesives

Senior Scientist & Analytical Lab Manager

Apr 2022 – Present

- Trusted partner for analytical problem-solving utilizing HPLC, GPC, GC, Thermal, FTIR and other tools for internal & external customer requests spanning a range of problems with varying complexity and urgency; process owner for analytical requests driving progress as the main focal point for the business.
- Communicated with Auto OEM customer teams about analytical testing at different product life cycle stages; developed & presented an alternative thermal management testing solution to a Fortune 500 client team for buy-in during an EV product launch resulting in over 55% increase in efficiency and cost-effectiveness by 75%.
- Founded & led the global analytical cluster to align analytical instrumentation resources across business sites that improved test process efficiency by >85% and a roadmap to guide leadership for strategic investments.
- Spearheaded digital transformation through Lab Informatics Projects and GenAI programs boosting productivity, with projected cost savings of >\$2M while improving data security standards.
- Achieved "Exceeding Expectations" ratings in consecutive annual performance review cycles.

Northwestern University

Research Associate, Department of Chemical Engineering

Sep 2020 – Jan 2022

- Managed 3 collaborative R&D projects aligned with Northwestern's Center for Catalysis and Surface Science and Advanced Materials for Energy-Water Systems at the University of Chicago and Argonne National Lab.
- Heterogeneous catalysis using supported nanoparticles and zeolites with characterization through UV-vis absorption, FTIR and Raman, NMR, XRD, TGA, SEM-EDS, XRF, and XPS to elucidate structural parameters and using HPLC-UV to monitor catalysis reactions.
- Lab safety leader implementing safety and efficiency measures, boosting group productivity by more than 50%, and lab safety by 90% and improving overall safety awareness of the team.

University of Minnesota – Twin Cities

Consultant, University Economic Development Office

Jan 2018 – Mar 2019

- Collaborated with a team of 6 consultants for 3 business projects involving market research including interviewing Key Opinion Leaders (KOLs) in the healthcare industry, competitive landscape analysis, and presentations of findings to diverse stakeholders, including business leadership.
- Collected, analyzed and visualized data using R programming scripts, resulting in a more data-driven execution of the project deliverables and codes published on the GitHub platform for broader access.

University of Minnesota – Twin Cities

Graduate Research Assistant, Department of Chemistry

Dec 2014 – Aug 2020

- Managed 5 collaborative and self-driven projects that involved studying nonheme iron complexes as experimental analogs of oxidative enzymes to develop structure-property relationships.
- Established an improved delivery system for the ^{18}O labeled oxygen gas supply for the research group that proved safer and increased gas usage efficiency by 250% and cost by 20%.
- Utilized analytical techniques, such as UV-vis/NIR, multi-nuclear and multi-dimensional NMR at variable temperatures, EPR, FTIR and Raman, X-ray absorption, and mass spectrometry to characterize small molecules, and understanding reactivity product analyses by quantitative GC-FID, and NMR.

Education

University of Minnesota – Twin Cities

Ph.D. in Chemistry; GPA: 3.7/4.0

Aug 2020

- Managed collaborative R&D projects leading to 6 publications with 4 in the top 10% of journals in the field (*Journal Citation Reports, Clarivate*) and 5 presentations on research findings in local & national conferences.
- Self-learning coder with 10+ certifications, successful implementation of web scraping scripts for clients in consulting and related activities.

Additional Information

Toastmasters International, Member and VP of Public Relations

Apr 2020 – Present

- Refined public speaking and leadership skills through Toastmasters training and expert feedback; served on an executive team of 8 as the VP of Public Relations, increasing prospect guests by >2x through digital channels.

DuPont GOLD Seminar Competition 2021, Winner

Sep 2021

- Chosen to present research accomplishments to DuPont leaders and awarded the first-place prize for the research seminar competition.

Northwestern Postdoctoral Association, Admin Coordinator

Jun 2021 – Dec 2022

- Elected to the executive committee of 8 leaders to serve the postdoctoral community; drove synergies by joining a regional postdoc association with a larger pool of resources.

Center for Leadership at Northwestern University, Coachee

Apr 2021 – Jun 2021

- Refined leadership skills and emotional intelligence through Kellogg expert coaching.

Conference Travel Grant Awards

Mar 2019 – Apr 2019

- Awarded 2 travel grants worth \$800 by the Minnesota section of the American Chemical Society and Council of Graduate Students at the University of Minnesota for the ACS national conference.

Selected Publications and Presentations

- Rasheed, W.; Pal, N.; Aboelenen, A. M.; **Banerjee, S.**; Oloo, W. N.; Klein, J. E. M. N.; Fan, R.; Xiong, J.; Guo, Y.; Que, L., Jr. NMR and Mössbauer Studies Reveal a Temperature-Dependent Switch from S = 1 to 2 in a Nonheme Oxoiron(IV) Complex with Faster C–H Bond Cleavage Rates. *J. Am. Chem. Soc.* 2024, 146 (6), 3796–3804
- **Banerjee, S.**; Draksharapu, A.; Crossland, P. M.; Fan, R.; Guo, Y.; Swart, M.; Que, L. Sc³⁺-promoted O–O bond cleavage of a (μ-1,2-peroxo) diiron(III) species formed from an iron(II) precursor and O₂ to generate a complex with an FeIV (μ-O) core. *J. Am. Chem. Soc.* 2020, 142 (9), 4285-4297.
- **Banerjee, S.**; Rasheed, W.; Fan, R.; Draksharapu, A.; Oloo, W.; Guo, Y.; Que, L. NMR Reveals that a Highly Reactive Nonheme Fe(IV)=O Complex Retains its 6-coordinate Geometry and S = 1 State in Solution. *Chem. Eur. J.* 2019, 25 (41), 9608–9613.
- Dantignana, V.; Serrano-Plana, J.; Draksharapu, A.; Magallón, C.; **Banerjee, S.**; Fan, R.; Gamba, I.; Guo, Y.; Que, L.; Costas, M.; Company, A. Spectroscopic and reactivity comparisons between nonheme oxoiron(IV) and oxoiron(V) species bearing the same ancillary ligand. *J. Am. Chem. Soc.* 2019, 141 (38), 15078-15091.
- Rasheed, W.; Draksharapu, A.; **Banerjee, S.**; Young Jr, V. G.; Fan, R.; Guo, Y.; Ozerov, M.; Nehrkorn, J.; Krzystek, J.; Telser, J.; Que, L. Crystallographic Evidence for a Sterically Induced Ferryl Tilt in a Non-Heme Oxoiron(IV) Complex that Makes it a Better Oxidant. *Angew. Chem. Int. Ed.* 2018, 57 (30), 9387–9391.
- Maity, S. B.; **Banerjee, S.**; Sunwoo, K.; Kim, J. S.; Bharadwaj, P. K. A Fluorescent Chemosensor for Hg²⁺ and Cd²⁺ Ions in Aqueous Medium under Physiological pH and Its Applications in Imaging Living Cells. *Inorg. Chem.* 2015, 54 (8), 3929–3936.

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- **Banerjee, S.**; (*Represented DuPont externally and presented*) Material Science Solutions for Advanced Mobility Applications. **2024 Advanced Automotive Battery Conference**, Las Vegas, NV, December 12th, 2024. (**Oral**)
 - **Banerjee, S.**; Que, L.; Kung M.; Kung, H.; Bio-inspired Iron Complexes and Heterogeneous Catalysts for Structure-Activity Correlations. **2021 DuPont GOLD Seminar Competition**, Virtual, September 17th, 2021. (**Oral**)
 - **Banerjee, S.**; Que, L.; Kung M.; Kung, H.; Bio-inspired Model Complexes and Heterogeneous Catalysts for a Sustainable Future. **2021 BASF Virtual Research Forum**, Virtual, September 2nd, 2021. (**Poster**)
 - **Banerjee, S.**; Rasheed, W; Que, L. Spectroscopic insights into the unusually high reactivity of the S = 1 [FeIV(O)(Me₃NTB)]²⁺ complex that sheds light on the oxidation mechanism of ferryl complexes. **258th American Chemical Society Meeting**, San Diego, CA, August 27th, 2020. (**Oral**)
 - **Banerjee, S.**; Rasheed, W; Que, L. Synthetic model for “diamond” core intermediates in nonheme diiron enzymes **258th American Chemical Society Meeting**, San Diego, CA, August 27th, 2020. (**Poster**)
 - **Banerjee, S.**; Draksharapu, A.; Que, L. Modeling steps in the sMMO reaction cycle: Forming a diiron(IV) complex via acid-assisted O–O bond cleavage of a peroxodiiron(III) intermediate derived from O₂. **257th American Chemical Society Meeting**, Orlando, FL, March 31st, 2019. (**Oral**)