

Meenesh R. Singh, Ph.D.

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<https://scholar.google.com/citations?user=NywQ5fsAAAAJ&hl=en>



Research Areas of Interest

- Electrochemical science and engineering for energy technologies
- Water and air treatment
- Materials chemistry – computational and experimental

Highlights of Accomplishments

Scientific Contributions

- H-index **27**, total citations **>4243**, and growing citation rate of **>700** per year (source: Google Scholar)
- Inventor of **8** technologies, out of which **4** technologies have been licensed.
- Co-authored **69+** peer-reviewed publications and **2** book chapters
- Delivered **32** invited talks
- Developed **5** open-source standalone software applications
- Co-authored **114** presentations at international conferences

Research Grants

- Awarded around **\$3.5 MM** in grant funding to his lab, with total project funding ~ **\$7.5 MM**.
- Research lab expenditures **>\$500 K** per year.
- Strong collaboration with **7+** multinational companies with continued funding support for several years.

Teaching

- Average teaching score of **3.8 ± 0.5** out of 5.
- Developed and taught **3** undergraduate courses – chemical reaction engineering, global climate engineering, and Chem-E-Car design.
- Developed and taught **2** graduate courses – advanced chemical reaction engineering and mathematical methods in chemical engineering.
- Developed and taught **3** elective courses – solar fuels engineering, and biopharmaceutical process R&D and manufacturing.
- Instructor for **22** courses over six years.

Mentoring

- **5** Ph.D. students graduated from PI's lab. They joined MIT, LLNL, AbbVie, and DTU.
- Advising **5** Ph.D. students.
- Supervising **3** postdocs.
- Advised **5** M.S. students. They joined Siemens, Chobani, GTI Energy, and Ph.D. programs.
- Advised **12** undergraduate students. They joined several industries and graduate programs.

Service

- Member of **4** college-level committees
- AIChE Chem-E-Car and ChemE Cube advisor at UIC
- Editorial board member for **5** scientific journals
- Organized **34** technical sessions at international conferences
- Reviewer of several top scientific journals
- Reviewer for NSF, DOE, ACS PRF, and National Labs

Entrepreneurship

- Chief Technology Officer at eN-RAMPS LLC. (UIC Start-up)
- Actively involved in prototyping and scale-up of 4 technologies developed in PI's lab.
- Raised **~\$1M** in industrial funding to scale up technologies.

Educational Background

Doctor of Philosophy , Chemical Engineering Purdue University, USA	<i>Jan 2009-March 2013</i>	GPA: 4.0/4.0
Master of Technology , Chemical Engineering Indian Institute of Technology-Bombay (IIT-B), India	<i>August 2006-08</i>	GPA: 9.18/10
Bachelor of Engineering , Chemical Engineering Sardar Patel University, Gujarat, India	<i>August 2001-05</i>	GPA: 8.41/10

Employment

Associate Professor Department of Chemical Engineering, University of Illinois Chicago	<i>Aug 2023 – present</i>
Joint Appointment Argonne National Laboratory	<i>April 2024 – present</i>
Visiting Faculty Department of Chemical Engineering, Indian Institute of Technology Roorkee	<i>Jan 2023 – present</i>
Chief Technology Officer eN-RAMPS LLC.	<i>July 2021 – present</i>
Assistant Professor Department of Chemical Engineering, University of Illinois Chicago	<i>Aug 2016 – July 2023</i>
Affiliate Scientist Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Lab	<i>Aug 2016 – Nov 2017</i>
Postdoctoral Scholar Joint Center for Artificial Photosynthesis, U C Berkeley, Lawrence Berkeley National Lab <i>Title:</i> Artificial Photosynthesis for CO ₂ Reduction <i>Supervisor:</i> Alexis T. Bell, Adam Z. Weber	<i>Jan 2014 – Aug 2016</i>
Postdoctoral Scholar Joint Center for Artificial Photosynthesis, U C Berkeley, Lawrence Berkeley National Lab <i>Title:</i> Analysis of Solar-Fuel Generators <i>Supervisor:</i> Rachel A. Segalman	<i>March 2013 – Jan 2014</i>
Research Intern , Abbott Labs: Global Pharma R&D <i>Title:</i> Experimental Investigation of Crystal Morphology during Dissolution and Growth <i>Supervisors:</i> Nandkishor Nere, Hsien-Hsin Tung and Shailendra Bordawekar	<i>May 2011 – July 2011</i>
Graduate Research Assistant , Purdue University <i>Title:</i> Towards Control of Crystal Shape and Morphology Distributions in Crystallizers <i>Advisor:</i> Doraiswami Ramkrishna	<i>Jan 2009 – March 2013</i>
Research Assistant , IIT-B <i>Title:</i> Monte Carlo Simulations for Growth of Nanoparticles in Microemulsion <i>Supervisors:</i> Anurag Mehra, Rochish Thaokar and Jayesh Bellare	<i>July 2008 – Nov 2008</i>
Graduate Research Assistant , IIT-B <i>Title:</i> Cryogenic Grinding for Synthesis of Nanoparticles and Extraction of Protein and DNA from Cells <i>Advisors:</i> Jayesh Bellare and Sandip Roy	<i>Jan 2007 – May 2008</i>

Editorial Activities

Editor	Chemical Engineering Research & Design (Elsevier)	2020 – Present
Associate Editor	Energy Lab (Lab Academic Press)	2022 - Present
Editor	Sustainability (MDPI), Section – Sustainable ChemE & Tech.	2020 - Present
Advisory Board	Challenges (MDPI)	2020 - Present

Awards and Honors

1. UIC's Outstanding Global Scholar	<i>Sept 2024</i>
2. UIC CTRI Award	<i>May 2023</i>
3. UIC Proof-of-Concept Phase-II Award	<i>Jan 2023</i>
4. UIC CoE Advising Award	<i>Sept 2022</i>
5. UIC Proof-of-Concept Phase-I Award	<i>Jan 2021</i>
6. UIC CTRI Award	<i>May 2021</i>
7. UIC CoE Research Award	<i>May 2021</i>
8. George Klinzing Best PhD Award, AIChE	<i>Nov. 2015</i>
9. Faculty Lectureship Award, School of Chemical Engineering, Purdue University	<i>March 2014</i>
10. AIChE Process Development Division Student Paper Award	<i>Nov. 2013</i>
11. ACS I&EC Division Graduate Student Award (Invited Talk)	<i>Sept. 2013</i>
12. Outstanding Graduate Student Research Award, College of Engineering, Purdue University	<i>March 2013</i>
13. AIChE Separation Division Graduate Student Research Award	<i>Oct 2012</i>
14. McDonnell Douglas Fellowship	<i>Fall 2012</i>
15. Eastman Travel Grant	<i>Oct 2012</i>
16. Shreve Travel Award	<i>Oct 2011</i>
17. 2 nd Place Presentation Award in Computational Science and Engineering Student Conference, SIAM at Purdue University	<i>April 2013</i>
18. 1 st Place Presentation in 19 th Annual Chemical Engineering Graduate Research Symposium, Purdue University	<i>Aug 2010</i>

Funded Research Projects

Summary of Overall Funding

Type of Funding	Amount to PI's Lab	Total Amount in Participation
Federal	\$1,797,208	\$6,005,595
Non-Federal: Industry	\$1,323,100	\$1,323,100
Non-Federal: OTM-UIC	\$175,000	\$175,000
Overall	\$3,295,308	\$7,503,695

External Funding - Federal

No.	Title	Agency – Award No.	PI	Amount	Duration
1	Computational Platform for Predictive Magneto-hydrodynamic Drug Targeting	NSF CBET-1706921	A. Linninger (PI), M. Singh (Co-I)	\$85,739 (\$342,955)	09/01/2017 – 08/31/2020
2	EFRI DChem: Making Cement Green by Low-Temperature Manufacturing of Calcium Hydroxide from Distributed Waste Sources	NSF EFMA-2132022	B. Wang (PI), M. Singh (Co-PI), R. Annex (Co-PI), W. Nollet (Co-PI), D. Feng (Co-PI)	\$390,000 (\$1,920,892)	09/01/2021 – 08/31/2025
3	Ionic Liquids for Direct Air Capture of CO ₂ using Electric-Field-Mediated Moisture Gradient Process	DOE BES - DE-SC0022321	J. Shah (PI), M. Singh (Co-PI)	\$559,484 (\$1,173,513)	09/01/2021 – 08/31/2024
4	Carbon-negative ready-mix concrete building components through direct air capture	DOE ARPA-E	R. Annex (PI), M. Singh (co-PI), B. Wang (co-PI), A. Memari (co-PI), F.	\$450,000 (\$2,256,250)	09/01/2022 – 08/31/2025

			Rajabipour (co-PI)		
5	Collaborative Research: Scalable Manufacturing of Large-Area Thin Films of Metal-Organic Frameworks for Separations Applications	NSF CMMI AM	M. Singh (PI)	\$311,985	03/13/2024 – 03/12/2027
6	Enabling Sustainable Hydrogen Storage, Transportation, and Refuelling via Electrochemical Ammonia Formation and Decomposition	Scheme for Promotion of Academic and Research Collaboration (SPARC)	V.C. Srivastava (PI) K.K. Pant (co-PI) V. Kumar (co-PI) M.R Singh (co-PI) V. Berry (co-PI)	\$30,000	05/01/2024 – 04/30/2026

External Funding - Industrial

No.	Title	Agency – Award No.	PI	Amount	Duration
5	Development of an Integrated Prototype for Direct Capture of CO ₂ from Flue Gas and its Conversion to Ethylene at Ambient Conditions	Braskem America - 100303	M. Singh (PI)	\$392,565+ \$40,739 = \$433,304	09/14/2020 – 08/31/2023
6	Continuous-Flow Well Mixed, Microfluidic Device for Effective Screening of Active Pharmaceutical Ingredients	Enabling Technology Consortium - 100108	M. Singh (PI)	\$75,000	09/01/2020 – 08/31/2021
7	Validation of Experimental Data from the Research Operations of the BESI Gasification and Energy Recovery System at University Park, IL	Biomass Energy System Inc. - 105333	M. Singh (PI)	\$41,000	10/01/2021 – 08/31/2022
8	Development of a 1 sqft Prototype of Electrochemical Reactor for Synthesis of NH ₃ at Ambient Conditions	Worldwide Liquid Sunshine - 100882	M. Singh (PI)	\$84,850 +\$18,397 + \$5,728 = \$108,975	08/01/2020 – 07/15/2023
9	Electrochemical Gasification of Carbon to Produce H ₂ at > 200 mA/cm ² with < 1 V of Cell Potential	Orochem Technologies -107508	M. Singh (PI)	\$149,532	01/01/2022 – 12/31/2022
10	Fully-Automated High-Throughput Microfluidic Platform for Screening of Crystalline Materials and Lipid Nanoparticles	eN-RAMPS LLC	M. Singh (PI)	\$89,404	07/01/2023 – 06/30/2026
11	Fully integrated electrochemical system to capture CO ₂ from the air and its conversion to value-added chemicals	Saudi Aramco Technologies Co.	M. Singh (PI)	\$305,385.30	09/13/2023 – 09/12/2024
12	Conceptual Design of CO ₂ Capture and Conversion Electrochemical-Based Pilot Plot	Braskem America – CN 00084777	M. Singh (PI)	\$120,500	05/01/2024 – 10/31/2024

Internal Funding - UIC

No.	Title	Agency – Award No.	PI	Amount	Duration
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10	Sensor-Integrated Microfluidic Device for Automated Screening of Active Pharmaceutical Ingredients	CTRI	M. Singh (PI)	\$25,000	05/15/2021 – 11/15/2021
11	Fully Automated Robotic System for Effective Screening of Drug Substance	POC Phase-I	M. Singh (PI)	\$50,000	01/15/2022 – 06/15/2022
12	Prototyping and Commercialization of Fully-Automated, High-Throughput Screening System for Drug Substance	POC Phase-II	M. Singh (PI)	\$75,000	01/10/2023 – 12/31/2023
13	Modular Direct Air Capture Unit for Residential and Commercial Spaces	CTRI	M. Singh (PI)	\$25,000	05/15/2023 – 09/15/2023

Intellectual Properties

1. **Meenesh R. Singh**, and Paria Coliaie, Continuous-Flow, Well Mixed, Microfluidic Crystallization Device for Screening Polymorphs, Morphologies and Crystallization Kinetics at Controlled Supersaturation, PCT/US20/36353, WO/2020/247770, 2020
2. **Meenesh R. Singh**, Aditya Prajapati, and Rohan Sartape, Systems and Process for Carbon Capture and Conversion, PCT/US2021/041677, WO/2022/015882, 2021
3. Nishithan C. Kani, Aditya Prajapati, and **Meenesh R. Singh**, Device and Methods for Production of Ammonia and Nitrates under Ambient Conditions, PCT/US2021/050573, WO/2022/060920, 2021
4. **Meenesh R. Singh**, and Aditya Prajapati, Electrochemical Oxidation of Methane towards Methanol on Mixed Metal Oxides, PCT/US2022/013997, WO/2022/164965, 2022
5. **Meenesh R. Singh**, Aditya Prajapati, and Rohan Sartape, Integrated System(S) and Methods for Continuous Electrochemical Capture and Reduction of CO₂ from Dilute Sources, Provisional Patent Application, UIC 2022-062, 2022
6. **Meenesh R. Singh** and Rajan Bhawnani, Percolation-Assisted Coating of Metal-Organic Frameworks (MOFs) on Porous Substrates, Provisional Patent Application, UIC 2023-026
7. **Meenesh R. Singh**, Nishithan C. Kani, and Ishita Goyal, Metal Nitride Mediated Ammonia Synthesis, Provisional Patent Application, UIC 2023-086
8. **Meenesh R. Singh**, Nishithan C. Kani, and Ishita Goyal, Electrochemical Synthesis of Urea from Nitrate and Carbon Dioxide, Provisional Patent Application, UIC 2023-070

Book Chapters

1. **Meenesh R. Singh**, Sophia Haussener, and Adam Z. Weber, (2018) "Continuum-Scale Modeling of Solar Water-Splitting Devices," In I.D. Sharp, H.A. Atwater, and H.J. Lewerenz (Eds.), *Integrated Solar Fuel Generators* (pp. 487-523), Royal Society of Chemistry
2. Andreas A. Linninger, Kevin Tangen, Ayankola Ayansiji, Daniel Gehrke, Indu Venugopal, Tony Yaksh, Ankit Mehta, and **Meenesh R Singh**, (2024) "CSF Flow Dynamics in Relation to Intrathecal Drug Transport," In: Yaksh, T., Hayek, S. (Eds) *Neuraxial Therapeutics* (pp. 223-253). Springer, Cham. https://doi.org/10.1007/978-3-031-39558-1_9.

Journal Publications

From IIT Bombay

1. **Meenesh R. Singh**, Sandip Roy and Jayesh R. Bellare, "Influence of Cryogenic Grinding on Release of Protein and DNA from *Saccharomyces cerevisiae*," International Journal of Food Engineering, 5 (1), 9, 2009.

From Purdue University

2. Jayanta Chakraborty, **Meenesh R. Singh**, Doraiswami Ramkrishna, Christian Borchert and Kai Sundmacher, "Modeling of Crystal Morphology Distributions. Towards Crystals with Preferred Asymmetry," Chemical Engineering Science (Pharmaceutical Engineering Science- A Key for Tomorrow's Drugs), 65 (21), 5676-5686, 2010.
3. **Meenesh R. Singh**, Jayanta Chakraborty, Nandkishor Nere, Hsien-Hsin Tung, Shailendra Bordawekar and Doraiswami Ramkrishna, "Image-Analysis-Based Method for Measurement of 3D Crystal Morphology and Polymorph Identification using Confocal Microscopy," Crystal Growth & Design, 12 (7), 3735-3748, 2012.
4. **Meenesh R. Singh**, Parul Verma, Hsien-Hsin Tung, Shailendra Bordawekar and Doraiswami Ramkrishna, "Screening Crystal Morphologies from Crystal Structure," Crystal Growth & Design, 13 (4), 1390-1396, 2013.
5. **Meenesh R. Singh** and Doraiswami Ramkrishna, "A Comprehensive Approach to Predicting Crystal Morphology Distributions with Population Balances," Crystal Growth & Design, 13 (4), 1397 – 1411, 2013.
6. **Meenesh R. Singh** and Doraiswami Ramkrishna, "Dispersions in Crystal Nucleation and Growth Rates: Implications of Fluctuation in Supersaturation," Chemical Engineering Science, 107 (7), 102-113, 2014.
7. Doraiswami Ramkrishna and **Meenesh R. Singh**, "Population Balance Modeling. Current Status and Future Prospects," Annual Review of Chemical and Biomolecular Engineering, 5 (1), 123-146, 2014. (**Invited Review**)
8. **Meenesh R. Singh**, Nandkishor Nere, Hsien-Hsin Tung, Samrat Mukherjee, Shailendra Bordawekar, and Doraiswami Ramkrishna, "Measurement of Polar Plots of Crystal Dissolution Rates using Hot-Stage Microscopy. Some Further Insights into Dissolution Morphologies," Crystal Growth & Design, 14 (11), 5647 – 5661, 2014.

From JCAP and LBNL

9. **Meenesh R. Singh**, John C. Stevens, and Adam Z. Weber, "Design of Membrane-Encapsulated Wireless Photoelectrochemical Cells for Hydrogen Production", Journal of The Electrochemical Society, 161 (8), E3283-E3296, 2014.
10. Jian Jin, Karl Walczak, **Meenesh R. Singh**, Chris Karp, Nathan S. Lewis, and Chengxiang Xiang, "Experimental and Modeling/Simulation Evaluation of the Efficiency and Operational Performance of an Integrated, Membrane-Free, neutral pH Solar-Driven Water-Splitting System," Energy & Environmental Science, 7 (10), 3371-3380, 2014.
11. Christopher M. Evans, **Meenesh R. Singh**, Nathaniel A. Lynd, and Rachel A. Segalman, "Improving the Gas Barrier Properties of Nafion via Thermal Annealing: Evidence for Diffusion through Hydrophilic Channels and Matrix," Macromolecules, 48 (10), 3303-3309, 2015.
12. **Meenesh R. Singh**, Ezra L. Clark, and Alexis T. Bell, "Effects of Electrolyte, Catalyst, and Membrane Composition and Operating Conditions on the Performance of Solar-Driven Electrochemical Reduction of Carbon Dioxide," Physical Chemistry Chemical Physics, 17, 18924-18936, 2015 (**Cover Page**)
13. **Meenesh R. Singh**, Kimberly Papadantonakis, Chengxiang Xiang, and Nathan S. Lewis, "An Electrochemical Engineering Assessment of the Operational Conditions and Constraints for Solar-Driven Water-Splitting Systems at Near-Neutral pH," Energy & Environmental Science, 8, 2760-2767, 2015
14. Ezra L. Clark, **Meenesh R. Singh**, Youngkook Kwon, and Alexis T. Bell, "Differential Electrochemical Mass Spectrometer Cell Design for Online Quantification of the Products Produced during Electrochemical Reduction of CO₂," Analytical Chemistry, 87 (15), 8013-8020, 2015
15. **Meenesh R. Singh**, Ezra L. Clark, and Alexis T. Bell, "Thermodynamic and Achievable Efficiencies for Solar-Driven Electrochemical Reduction of Carbon Dioxide to Transportation Fuels," Proceedings of the National Academy of Sciences, 112 (45), E6111-E6118, 2015. (**News Coverage- IEEE Spectrum, and Green Car Congress**)
16. **Meenesh R. Singh**, and Alexis T. Bell, "Design of an Artificial Photosynthetic System for Production of Alcohols in High Concentration from CO₂," Energy & Environmental Science, 9, 193-199, 2016. (**New Coverage – Chemistry World**)
17. Harri Ali-Loytty, Mary W. Louie, **Meenesh R. Singh**, Lin Li, Hernan G. Sanchez Casalongue, Hirohito Ogasawara, Ethan J. Crumlin, Zhi Liu, Alexis T. Bell, Anders Nilsson, and Daniel Friebe, "Ambient-Pressure XPS Study of a Ni-Fe Electrocatalyst for the Oxygen Evolution Reaction," The Journal of Physical Chemistry C, 120 (4), 2247-2253, 2016

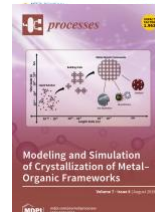
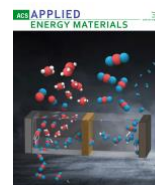
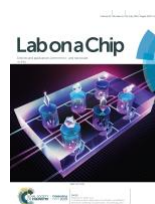
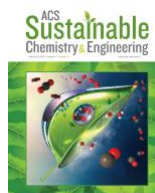
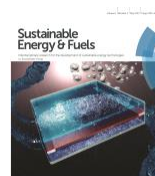


18. Chengxiang Xiang, Adam Z. Weber, Shane Ardo, Alan D. Berger, YiKai Chen, Robert Coridan, Katherine T. Fountaine, Sophia Haussener, Shu Hu, Rui Liu, Nathan S. Lewis, Miguel A. Modestino, Matthew M. Shaner, **Meenesh R. Singh**, John C. Stevens, Ke Sun, Karl Walczak, "Modeling, Simulation and Implementation of Solar-Driven Water-Splitting Devices," *Angewandte Chemie International Edition*, 55, 2-17, 2016 (**Invited Review**)
19. Peter Lobaccaro, **Meenesh R. Singh**, Ezra L. Clark, Youngkook Kwon, Alexis T. Bell, and Joel W. Ager III, "Effects of Temperature and Gas-Liquid Mass Transfer on the Operation of Small Electrochemical Cells for the Quantitative Evaluation of CO₂ Reduction Electrocatalysts," *Physical Chemistry Chemical Physics*, 18 (38), 26777 - 26785, 2016



From UIC

20. **Meenesh R. Singh**, Youngkook Kwon, Yanwei Lum, Joel W. Ager III, and Alexis T. Bell, "Hydrolysis of Electrolyte Cations Enhances the Electrochemical Reduction of CO₂ over Ag and Cu," *Journal of The American Chemical Society*, 138 (39), 13006 – 13012, 2016
21. **Meenesh R. Singh**, Chengxiang Xiang, and Nathan S. Lewis, "Evaluation of Flow Schemes for Near-Neutral Electrolytes in Solar-Fuels Generators," *Sustainable Energy & Fuels*, 1 (3), 458 - 466. (**Cover Page, 2017 Sustainable Fuels & Energy HOT Articles**)
22. **Meenesh R. Singh**, Jason D. Goodpaster, Adam Z. Weber, Martin Head-Gordon, and Alexis T. Bell, "Mechanistic Insights into Electrochemical Reduction of CO₂ over Ag using DFT and Transport Models," *Proceedings of the National Academy of Sciences*, 114 (42), E8812-E8821, 2017. (**News Coverage – R&D Mag, UIC Today, Science Daily, NewsWise, Phys.Org, and EurekaAlert!**)
23. Abhay Sane, Kevin Tangen, David Frim, **Meenesh R. Singh**, and Andreas A. Linninger, "Cellular Obstruction Clearance in Proximal Ventricular Catheters using Low-Voltage Joule Heating," *IEEE Transactions on Biomedical Engineering*, 65 (11), 2503 – 2511, 2018.
24. Aditya Prajapati, and **Meenesh R. Singh**, "Assessment of Artificial Photosynthetic Systems for Integrated Carbon Capture and Conversion," *ACS Sustainable Chemistry & Engineering*, 7 (6), 5993 – 6003, 2019. (**Cover Page, News Coverage – CNN, UPI News, Digital Trends, Futurism, Science Daily, Phys.Org, Anthropocene, New Atlas, Money Inc., Times of India**)
25. Paria Coliaie, Manish S. Kelkar, Nandkishor K. Nere, and **Meenesh R. Singh**, "Continuous-Flow, Well-Mixed, Microfluidic Crystallization Device for Screening of Polymorphs, Morphologies, and Crystallization Kinetics at Controlled Supersaturation" *Lab on a Chip*, 19, 2373 – 2382, 2019. (**Cover Page, News Coverage – EurekaAlert!, Phys.Org, ScienceDaily**)
26. Meng Lin, Lihao Han, **Meenesh R. Singh**, Chengxiang Xiang, "An Experimental- and Simulation-Based Evaluation of CO₂ Utilization Efficiency in Aqueous-Based Electrochemical CO₂ Reduction Reactors with Ion-Selective Membranes," *ACS Applied Energy Materials*, 2 (8), 5843-5850, 2019. (**Cover Page, News Coverage – EurekaAlert!, TechExplore, Science Daily, Solar Daily, Newswise, Science Blog**)
27. Anish V. Dighe, Roshan Y. Nemade, and **Meenesh R. Singh**, "Modeling and Simulation of Crystallization of Metal-Organic Frameworks," *Processes*, 7(8), 527, 2019. (**Cover Page, Invited Article in Special Issue – Modeling and Control of Crystallization**)
28. Anish V. Dighe, and **Meenesh R. Singh**, "Solvent Fluctuations in the Solvation-Shell Determines the Activation Barrier for Crystal Growth Rates," *Proceedings of the National Academy of Sciences*, 116 (48),



23954 – 23959, 2019 ([News Coverage – EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Cosmos Magazine](#), [Quanta Magazine](#), [Scitech Daily](#), [AzoNano](#), [Nanowerk](#))

29. Emani, Pavan S., Hisham Maddah, Arjun Rangoonwala, Songwei Che, Aditya Prajapati, **Meenesh R. Singh**, Dieter M. Gruen, Vikas Berry, and Sanjay K. Behura. "Organophilicity of Graphene Oxide for Enhanced Wettability of ZnO Nanorods," *ACS Applied Materials & Interfaces* , 12 (35), 39772 – 39780, 2020.
30. Nishithan C. Kani, Aditya Prajapati, Brianna A. Collins, Jason D. Goodpaster, and **Meenesh R. Singh**, "Competing Effects of pH, Cation-Identity, H₂O Saturation, and N₂ Concentration on the Activity and Selectivity of Electrochemical Reduction of N₂ to NH₃ on Electrodeposited Cu at Ambient Conditions," *ACS Catalysis*, 10 (24), 14592 – 14603, 2020. ([News Coverage – Chemical Engineer](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Bioengineer.org](#), [newswise](#), [sciencenewsnet.in](#))
31. Ayankola O. Ayansiji, Anish V. Dighe, Andreas A. Linninger, and **Meenesh R. Singh**, "Constitutive Relationship and Governing Physical Properties for Magnetophoresis," *Proceedings of the National Academy of Sciences*, 117 (48), 30208-30214, 2020. ([News Coverage – Scienmag](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Bioengineer.org](#), [newswise](#), [sciencenewsnet.in](#))
32. Aditya Prajapati, Brianna A. Collins, Jason D. Goodpaster, and **Meenesh R. Singh**, "Fundamental Insights into Electrochemical Activation of Methane towards Methanol over Transition Metal Oxides," *Proceedings of the National Academy of Sciences*, 118 (8), e2023233118, 2021. ([News Coverage – STLE Tech Beat](#), [Lab Manager](#), [Lab Roots](#), [AZO Materials](#), [CN Beta](#), [New Atlas](#), [ENN](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Bioengineer.org](#), [newswise](#), [sciencenewsnet.in](#))

33. Paria Coliaie, Manish S. Kelkar, Marianne Langston, Chengxiang Liu, Neda Nazemifard, Daniel Patience, Dimitri Skliar, Nandkishor K. Nere, and **Meenesh R. Singh**, "Advanced Continuous-Flow Microfluidic Device for Parallel Screening of Crystal Polymorphs, Morphology and Kinetics at Controlled Supersaturation," *Lab on a Chip* , 21 (12), 2333-2342, 2021 ([Cover Page](#), [News Coverage – Technology Networks](#), [Mirage News](#), [Scienmag](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Bioengineer.org](#), [newswise](#), [sciencenewsnet.in](#))



34. John Cavin, Alireza Ahmadi-paridari, Leily Majidi, Arashdeep Singh Thind, Saurabh N. Misal, Aditya Prajapati, Zahra Hemmat, Sina Rastegar, Andrew Beukelman, **Meenesh R. Singh**, Kinga A. Unocic, Amin Salehi-Khojin, Rohan Mishra, "Two-Dimensional High-Entropy Transition Metal Dichalcogenides for Carbon Dioxide Electrocatalysis," *Advanced Materials*, 33, 2100347, 2021 ([News Coverage – Materials Today](#), [Mirage News](#), [Scienmag](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [Bioengineer.org](#), [newswise](#), [sciencenewsnet.in](#))
35. Achyut Pakhare, Channamallikarjun Mathpati, Jyeshtharaj B. Joshi, **Meenesh R. Singh**, Doraiswami Ramkrishna, Raosaheb Patil, Ekambara Kalekudithi, Anish Dighe, "Polymorphic and morphological study of Potassium Acid Phthalate Crystals," *Chemical Engineering Research & Design*, 174, 463-470, 2021.
36. Nishithan C. Kani, Joseph Gauthier, Aditya Prajapati, Isha Bordawekar, Windom Shields, Mitchell Shields, Aayush R. Singh, **Meenesh R. Singh**, "Solar-Driven Electrochemical Synthesis of Ammonia with >10% Solar-to-Fuel Efficiency at Ambient Conditions," *Energy & Environmental Science*, 14, 6349-6359, 2021 ([Cover Page](#), [News Coverage – Chemical Engineering Progress](#), [Scienmag](#), [EurekAlert!](#), [Phys.Org](#), [ScienceDaily](#), [True Viral News](#), [AZO materials](#), [newswise](#), [SciTechDaily](#))



37. Anish V. Dighe, Luke Huelsenbeck, Rajan R. Bhawnani, Prince Verma, Kevin H. Stone, **Meenesh R. Singh**, and Gaurav Giri, "Autocatalysis and Oriented Attachment Direct the Synthesis of Metal-Organic Framework," *JACS Au*, 2 (2), 453-462, 2022 ([Cover Page](#))



38. Paria Coliaie, Rajan R. Bhawnani, Aditya Prajapati, Rabia Ali, Prince Verma, Gaurav Giri, Manish S. Kelkar, Akshay Korde, Marianne Langston, Chengxiang Liu, Neda Nazemifard, Daniel Patience, Tamar Rosenbaum, Dimitri Skliar, Nandkishor K. Nere, and **Meenesh R.**



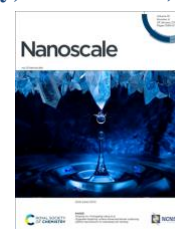
Singh, "Patterned Microfluidic Devices for Rapid Screening of Metal-Organic Frameworks Yields Insights Into Polymorphism and Non-Monotonic Growth," *Lab on a Chip*, 22, 211-224, 2022 ([Cover Page](#))

39. Paria Coliaie, Aditya Prajapati, Rabia Ali, Akshay Korde, Manish S. Kelkar, Nandkishor K. Nere, and **Meenesh R. Singh**, "Machine-Learning-Driven, Sensor-Integrated Microfluidic Device for Monitoring and Control of Supersaturation for Automated Screening of Crystalline Materials," *ACS Sensors*, 7 (3), 797-805, 2022 ([Cover Page](#))



40. Aditya Prajapati, Rohan Sartape, Tomas Rojas, Naveen K. Dandu, Pratik Dhakal, Amey S. Thorat, Jiahan Xie, Ivan Bessa, Miguel T. Galante, Marcio H. S. Andrade, Robert T. Somich, Marcio V. Rebouças, Gus T. Hutras, Nathalia Diniz, Anh T. Ngo, Jindal Shah and **Meenesh R. Singh**, "Migration-assisted, moisture gradient process for ultrafast, continuous CO₂ capture from dilute sources at ambient conditions," *Energy & Environmental Science*, 15, 680-692, 2022 ([News Coverage –EE Times, C&EN, Interesting Engineering, MSN, ChemEurope, TechXplore, Phys.org, Science Daily, EurekAlert!](#))

41. Anish V. Dighe, Paria Coliaie, Prem K. R. Podupu, and **Meenesh R. Singh**, "Selective Desolvation in Two-Step Nucleation Mechanism Steers Crystal Structure Formation," *Nanoscale*, 14, 1723-1732, 2022 ([Cover Page](#))



42. Paria Coliaie, Manish S. Kelkar, Akshay Korde, Marianne Langston, Chengxiang Liu, Neda Nazemifard, Daniel Patience, Dimitri Skliar, Nandkishor K. Nere, and **Meenesh R. Singh**, "On-the-Spot Quenching for Effective Implementation of Cooling Crystallization in Continuous-Flow Microfluidic Device," *Reaction Chemistry & Engineering*, 7, 1179-1190, 2022

43. Paria Coliaie, Aditya Prajapati, Rabia Ali, Moussa Boukerche, Akshay Korde, Manish S. Kelkar, Nandkishor K. Nere, and **Meenesh R. Singh**, "In-Line Measurement of Liquid-Liquid Phase Separation Boundaries using a Turbidity-Sensor-Integrated Continuous-Flow Microfluidic Device," *Lab on a Chip* (themed collection: Miniaturised Sensors and Diagnostics), 22, 2299-2306, 2022 ([Cover Page](#))



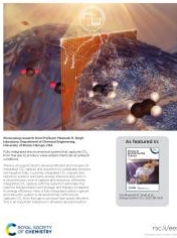
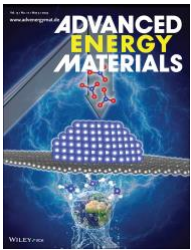

44. Anish V. Dighe, Prem K. R. Podupu, Paria Coliaie, and **Meenesh R. Singh**, "Three-Step Mechanism of Antisolvent Crystallization," *Crystal Growth & Design* ([special issue](#): Emerging Investigators 2022), 22 (5), 3119-3127, 2022

45. Nishithan C. Kani, Aditya Prajapati, and **Meenesh R. Singh**, "Sustainable Routes for Photo-Electrochemical Synthesis of Ammonia using Various Nitrogen Precursors," *ACS ES&T Engineering* ([special issue](#): Photo-Energy Utilization for a Sustainable Environment: Photo(Electro)Catalysis), 2 (6), 1080-1087, 2022

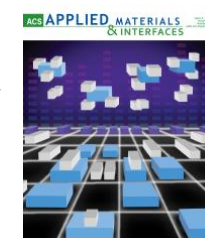
46. Rohan Sartape, Aditya Prajapati, Tomas Rojas, Naveen K. Dandu, Pratik Dhakal, Amey S. Thorat, Jiahan Xie, Ivan Bessa, Miguel T. Galante, Marcio H. S. Andrade, Robert T. Somich, Marcio V. Rebouças, Gus T. Hutras, Nathalia Diniz, Anh T. Ngo, Jindal Shah and **Meenesh R. Singh**, "Reply to the 'Comment on "Migration-assisted, moisture gradient process for ultrafast, continuous CO₂ capture from dilute sources at ambient conditions"' by J. Casado," *Energy Environ. Sci.*, 2022, DOI: 10.1039/D2EE00555G," *Energy & Environmental Science*, 15, 3994-3996, 2022

47. Aditya Prajapati, Nishithan C. Kani, Joseph Gauthier, Rohan Sartape, Jiahan Xie, Ivan Bessa, Miguel T. Galante, Samuel Leung, Marcio H. S. Andrade, Robert T. Somich, Marcio V. Rebouças, Gus T. Hutras, Nathalia Diniz, and **Meenesh R. Singh**, "CO₂-Free High-Purity Ethylene from Electroreduction of CO₂ with 4% Solar-to-Ethylene and 10% Solar-to-Carbon Efficiencies," *Cell Reports Physical Science*, 3(9), 101053, 2022 ([News Coverage –AzoCleantech, New Atlas, True Viral News, Mirage News, Phys.org, Science Daily, EurekAlert!](#))

48. Aditya Prajapati, and **Meenesh R. Singh**, "Preventing Over-Electrodialysis for Efficient Capture of CO₂ from Seawater," *ACS Sustainable Chemistry & Engineering* ([special issue](#): Emerging Investigators 2022), 10 (37), 12466 – 12474, 2022

49. **Meenesh R. Singh** and Diana Azevedo, “Special Issue on Women in Chemical Engineering,” Chemical Engineering Research & Design, 187, 62 - 68, 2022
 50. Aditya Prajapati, Rohan Sartape, Nishithan Kani, Joseph A. Gauthier, and **Meenesh R. Singh**, “Chloride-Promoted, High-Rate Ambient Electrooxidation of Methane to Methanol on a Patterned Cu-Ti Bimetallic Oxides,” ACS Catalysis, 12 (22), 14321- 14329, 2022.
 51. Aditya Prajapati, Rohan Sartape, Miguel T. Galante, Jiahua Xie, Samuel Leung, Ivan Bessa, Marcio H. S. Andrade, Robert T. Somich, Marcio V. Rebouças, Gus T. Hutras, Nathalia Diniz, and **Meenesh R. Singh**, “Fully-Integrated Electrochemical System that Captures CO₂ from Flue Gas to Produce Value-Added Chemicals at Ambient Conditions,” Energy & Environmental Science, 15, 5105 - 5117, 2022 ([Back Cover Page](#), [News Coverage – Wikipedia](#), [UIC Today](#))
- 
52. Xiaoxuan Yang, Shreya Mukherjee, Thomas O'Carroll, Yang Hou, **Meenesh R. Singh**, Joseph A. Gauthier, and Gang Wu, “Achievements, Challenges, and Perspectives on Nitrogen Electrochemistry for Carbon-Neutral Energy Technologies,” Angewandte Chemie International Edition, 2022 ([Invited Review](#))
 53. Rajan R. Bhawnani, Rohan Sartape, Aditya Prajapati, Prem Podupu, Paria Coliaie, and **Meenesh R. Singh**, “Percolation-Assisted Coating of Metal-Organic Frameworks on Porous Substrates,” Journal of Membrane Science, 668, 121202, 2023
 54. Nishithan C. Kani, Ngoc Hoang Lan Nguyen, Kyle Markel, Benjamin Shindel, Kartikey Sharma, Vinayak P. Dravid, Vikas Berry, Joseph A. Gauthier, and **Meenesh R. Singh**, “Electrochemical Reduction of Nitrates on CoO Nanoclusters-Functionalized Graphene with Highest Mass Activity and nearly 100% Selectivity to Ammonia,” Advanced Energy Materials, 13 (17), 2204236, 2023. ([Back Cover Page](#))
- 
55. Anish V. Dighe, Rajan Bhawnani, Prem K. R. Podupu, Naveen Dandu, Anh Ngo, Santanu Chaudhuri, and **Meenesh R. Singh**, “Microkinetic Insights into the role of Catalyst and Water Activity on the Nucleation, Growth, and Dissolution during COF-5 Synthesis,” Nanoscale, 15, 9329-9338, 2023 ([Back Cover Page](#))
- 
56. Rohit Chauhan, Rohan Sartape, Nitin Minocha, Ishita Goyal, and **Meenesh R. Singh**, “Advancements in Environmentally Sustainable Technologies for Ethylene Production,” Energy & Fuels ([special issue: Rising Stars 2023](#)), 37 (17), 12589-12622, 2023
 57. Anish V. Dighe, Prem K. R. Podupu, and **Meenesh R. Singh**, “Emulsification of Supersaturated Solutions Amplifies Induction Time Variation in Crystallization,” Crystal Growth & Design, 23 (9), 6290 – 6297, 2023
 58. Rohit Chauhan, Nitin Minocha, Paria Coliaie, Priyanka G. Singh, Akshay Korde, Manish S. Kelkar, Marianne Langston, Chengxiang Liu, Neda Nazemifard, Daniel Patience, Dimitri Skliar, Nandkishor K. Nere, and **Meenesh R. Singh**, “Emerging Microfluidic Platforms for Crystallization Process Development,” Chemical Engineering Research & Design, ([special issue: Enabling Technologies for Biopharmaceutical Process Development and Manufacturing](#)), 197, 908 – 930, 2023
 59. Andreas A. Linninger, Ayankola O. Ayansiji, Daniel S. Gehrke, Bastien Baralle, Ariel Nozain, and **Meenesh R. Singh**, “Determination of Spinal Tracer Dispersion after Intrathecal Injection in a Deformable CNS Model,” Frontiers in Physiology – Computational Physiology and Medicine, 14, 1244016, 2023
 60. Rohit Chauhan, Rohan Sartape, Amey Thorat, Jindal K. Shah, and **Meenesh R. Singh**, “Theory-Enabled High-Throughput Screening of Ion Dissociation Explains Conductivity Enhancements in Diluted Ionic Liquid Mixtures,” ACS Sustainable Chemistry & Engineering ([special issue: Emerging Investigators 2023](#)), 11 (41), 14932 – 14936, 2023.

61. Paria Coliaie, Rajan R. Bhawnani, Rabia Ali, Manish S. Kelkar, Akshay Korde, Marianne Langston, Chengxiang Liu, Neda Nazemifard, Daniel Patience, Tamar Rosenbaum, Dimitri Skliar, Nandkishor K. Nere, and **Meenesh R. Singh**, “Snap-on Adaptor to Transform Microtiter Plate into Continuous-Flow Microfluidic Device for Screening of Crystalline Materials under Flow-Controlled Conditions,” *ACS Omega*, 8 (44), 41502 – 41511, 2023.
62. Nishithan C. Kani, Samuel Olusegun, Rohit Chauhan, Joseph A. Gauthier, and **Meenesh R. Singh**, “High-Pressure Electrochemistry: A New Frontier in Decarbonization,” *EES Catalysis* (**Back Cover Page**), 2, 507-521, 2024.
63. Vamsi V. Gande, Prem K.R. Podupu, Bianca Berry, Nandkishor K. Nere, S. Pushpavanam, **Meenesh R. Singh**, “Engineering Advancements in Microfluidic Systems for Enhanced Mixing at Low Reynolds Numbers,” *Biomicrofluidics* (**Invited article**), 18 (1), 011502, 2024
64. Anish V. Dighe, Prem K. R. Podupu, Vamsi V. Gande, Urmila Diwekar, and **Meenesh R. Singh**, “Group Contribution Method for Rapid Estimation of Crystal Growth Rates,” *Chemical Engineering Research & Design*, 203, 140-148, 2024.
65. Rajan R. Bhawnani, Naveen Dandu, Prem K.R. Podupu, Anh Ngo, and **Meenesh R. Singh**, “Sequential Hydrolysis of Metal Oxo Clusters Drives Polymorphism in Electrodeposited Zirconium Metal-Organic Frameworks,” *Chemistry of Materials* (**Cover Page**), 36 (5), 2402-2411, 2024.
66. Nishithan C. Kani, Ishita Goyal, Joseph A. Gauthier, Windom Shields, Mitchell Shields, and **Meenesh R. Singh**, “Pathway towards Scalable Energy-Efficient Lithium Mediated Ammonia Synthesis,” *ACS Applied Materials & Interfaces* (**Cover Page, News Coverage – Hydrogen Insight, Scitech Daily, AZO Cleantech, Phys.Org, EurekAlert!**), 16 (13), 16203 - 16212, 2024.
67. Amey Thorat, Rohan Sartape, Rohit Chauhan, **Meenesh R. Singh**, and Jindal K. Shah, “Effect of K⁺ Force Field on Ionic Conductivity and Charge Dynamics of KOH in Ethylene Glycol,” *The Journal of Physical Chemistry B*, 128 (15), 3707-3719, 2024.
68. **Meenesh R. Singh**, Priyanka G. Singh, Vamsi V. Gande, and Rohit Chauhan, “Simplified Universal Equation for Ionic Conductivity of Concentrated Multicomponent Mixtures,” *Journal of Electrochemical Society*, DOI 10.1149/1945-7111/ad586c, 2024.
69. Nishithan C. Kani, Rohit Chauhan, Samuel A. Olusegun, Ishwar Sharan, Anag Katiyar, David W. House, Sang-Won Lee, Alena Jairamsingh, Rajan R. Bhawnani, Dongjin Choi, Adam C. Nielander, Thomas F. Jaramillo, Hae-Seok Lee, Anil Oroskar, Vimal C. Srivastava, Shishir Sinha, Joseph A. Gauthier, and **Meenesh R. Singh**, “Sub-Volt Conversion of Activated Biochar and Water for H₂ Production Near Equilibrium via Biochar-Assisted Water Electrolysis,” *Cell Reports Physical Sciences*, DOI: 10.1016/j.xcrp.2024.102013, 2024 (**News Coverage – Hydrogen Fuel News, Interesting Engineering, PV Magazine, Popular Science, MSN, Science Daily, TodayHeadline, Nanowerk**)
70. Nimish Pankhedkar, Rohan Sartape, **Meenesh R. Singh**, Ravindra Gudi, and Pratim Biswas, “System-level feasibility analysis of a novel chemical looping combustion integrated with electrochemical CO₂ reduction,” 10.1039/D4SE00770K, 2024.



Manuscripts Under Review/Revision

71. Arisha Sharma, Prakash Biswas, and **Meenesh R. Singh**, “Metal-Organic Framework-Templated Synthesis of Nickel-Alumina Nanocatalysts Improves Catalyst Support Interaction for Higher Activity and Stability of Biogas Reforming under Controlled Oxidizing Conditions,” ACS Applied Materials & Interfaces, 2024 (Under review)
72. Rohit Chauhan, Rohan Sartape, Rashmi Mishra, Jindal K. Shah, and **Meenesh R. Singh**, High-throughput Measurements of CO₂ Permeance and Solubility in Ionic Liquid Reveal a Synergistic Role of Ionic Interactions and Void Fractions, Chemical Engineering Journal, 2024 (under review)
73. Ragavendra Hari, Vamsi V. Gande, **Meenesh R. Singh**, “A Graph-Theoretic Solution to the Population Balance Equation for Pure Breakage,” 2024 (under review)
74. Nishithan C. Kani, Ishita Goyal, Samuel Olusegun, Sreenivasulu Chinnabattigalla, Rajan R. Bhawnani, Ksenija D. Glusac, Joseph A. Gauthier, and **Meenesh R. Singh**, “Screening Transition Metal Electrodes for Achieving near 100% Selectivity to Urea via Electroreduction of NO₃⁻ and CO₂ at 100 mA/cm² Current Density,” EES Catalysis, 2024 (under review)
75. Ishita Goyal, Nishithan C. Kani, Samuel A. Olusegun, Sreenivasulu Chinnabattigalla, Rajan R. Bhawnani, Ksenija Glusac, Aayush R. Singh, Joseph A. Gauthier, and **Meenesh R. Singh**, “Metal Nitride as a Mediator for the Electrochemical Synthesis of NH₃,” 2024 (under review)
76. Rashmi Mishra, Rajan Bhawnani, Rohan Sartape, Rohit Chauhan, **Meenesh R. Singh**, Jindal K. Shah, “Role of intermolecular interactions in Deep Eutectic solvents for CO₂ capture: Vibrational spectroscopic and quantum chemical studies,” 2024 (under review)
77. Rajan R Bhawnani, Prem K. R. Podupu, Yamil Colón, Gaurav Giri, and **Meenesh R. Singh**, “Next-Generation Computational and Experimental Tools for Mechanistic Studies of Nucleation and Growth of Metal-Organic Frameworks,” 2024 (under review)
78. Prem K.R. Podupu, Prince Verma, Rajan R. Bhawnani, Anish V. Dighe, Gaurav Giri, and **Meenesh R. Singh**, “Mechanism of Evaporation-Driven Growth of Metal-Organic Framework Thin Films,” 2024 (under review)
79. Samuel A. Olusegun, Yancun Qi, Nishithan C. Kani, **Meenesh R. Singh**, and Joseph A. Gauthier, “Understanding trends in electrochemical dinitrogen oxidation,” 2024 (under review)

Invited Talks

1. **Meenesh R. Singh** and Doraiswami Ramkrishna*, “Towards Control of Crystallization Processes,” Global Pharmaceutical R&D, Abbott Laboratories, North Chicago, Illinois, August 7th, 2012
2. **Meenesh R. Singh***, “Crystal Morphologies: Targeting, Screening, Control and Measurement,” Department of Chemical and Biomolecular Engineering, University of California Berkeley, Berkeley, California, October 25th, 2012
3. **Meenesh R. Singh***, “Screening Crystal Morphologies from Crystal Structure,” ACS I&EC Graduate Award Symposia, 2013 (Declined)
4. **Meenesh R. Singh***, “A Journey through Crystal Forests,” Faculty Lectureship Award, Purdue University, 2014
5. **Meenesh R. Singh***, “Materials and System Engineering for Energy and Healthcare Applications – From Discovery to Design,” Department of Chemical Engineering, University of Illinois at Chicago, 2016
6. **Meenesh R. Singh***, “Continuous-flow Microfluidic Crystallizer and Multiscale Simulation Framework for Screening of Crystalline Materials,” AI Process Development, Dow AgroSciences/Corteva, March 29th, 2018
7. **Meenesh R. Singh***, “Solar-driven Electrochemical Conversion of CO₂ and Water to Hydrocarbons,” Department of Chemical and Biological Engineering, IIT Chicago, April 18th, 2018

8. **Meenesh R. Singh***, “Transport of Paramagnetic Nanoparticles in Magnetic Field for Drug Deliver,” in “In Honor of Professor D. Ramkrishna’s Contributions to Biopharmaceutical Industry,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
9. Nishithan Balaji, Aditya Prajapati, and **Meenesh R. Singh***, “A Systematic Study of Ammonia Synthesis by Electrochemical Reduction of N₂ over Cu,” 235th ECS Meeting, Dallas, Texas, May 26th – May 30th, 2019
10. Nishithan C Kani, and **Meenesh R. Singh***, “Optimal Morphology of Cu-Based Catalyst for Efficient Electrochemical Synthesis of NH₃ By Direct Reduction of N₂ and H₂O at Ambient Conditions,” 237th ECS Meeting, Montreal, Canada, May 10th – May 14th, 2020
11. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemical, Biomolecular, and Corrosion Engineering, University of Akron, Spring 2021
12. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Center for Catalysis and Surface Science, Northwestern University, Spring 2021
13. **Meenesh R. Singh***, “Integrating Continuous-flow Microfluidic Crystallizer with Multiscale Simulation to Obtain Fundamental Insights into Nucleation and Growth of Crystalline Materials,” Department of Chemical Engineering, Oklahoma State University, Spring 2021
14. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemistry, University of Minnesota, Summer 2021
15. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemistry, Michigan State University, Summer 2021
16. **Meenesh R. Singh***, “Fundamental Insights into Electrocatalytic Reactions from Multiscale Multiphysics Simulations,” in CATL-Multiscale Modeling in Heterogeneous Catalysis, 262nd ACS National Meeting, Atlanta, August 22-26th, 2021
17. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemical Engineering, IIT Roorkee, Fall 2021
18. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemical Engineering, IIT Gandhinagar, Fall 2021
19. **Meenesh R. Singh***, “Integrating Continuous-flow Microfluidic Crystallizer with Multiscale Simulation to Obtain Fundamental Insights into Nucleation and Growth of Crystalline Materials,” Department of Chemical Engineering, IIT Guwahati and IChE, Fall 2021
20. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Keynote Talk, CHEM-CONFLUX²², Motilal Nehru National Institute of Technology, India, Fall 2021
21. **Meenesh R. Singh***, “Nitrogen Electrochemistry for Grid Resilience and Decarbonization,” Keynote Talk, International Conference on Chemical Engineering: Enabling Transition towards Sustainable Future (CHEMTSF), Indian Institute of Technology Roorkee, Fall 2022
22. **Meenesh R. Singh***, “Emerging Microfluidic Platforms and Computational Methods for Crystallization Process Design: From Academic Research to Commercialization,” 24th ACT Larson Workshop, Fall 2022
23. **Meenesh R. Singh***, “Nitrogen Electrochemistry for Grid Resilience and Decarbonization,” Department of Chemical and Biochemical Engineering, University of Iowa, Fall 2022
24. **Meenesh R. Singh***, “Nitrogen Electrochemistry for Grid Resilience and Decarbonization,” Department of Chemical and Biochemical Engineering, LEAF Seminar, Lawrence Livermore National Lab, Fall 2022
25. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemical Engineering, Michigan Tech, Spring 2023
26. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Department of Chemical Engineering, City College of New York, Spring 2023
27. **Meenesh R. Singh***, “Prospects of Electrocatalysis for Sustainable Manufacturing, Greenhouse Gas Mitigation, and Energy Storage,” Climate Chapter, 3M Tech Forum, Spring 2023
28. **Meenesh R. Singh***, “Energy Earthshot Lecture Series,” Department of Chemical Engineering, IIT Roorkee, Summer 2023
29. **Meenesh R. Singh***, “Nitrogen Electrochemistry to Support DOE’s Energy Earthshots,” Department of Chemical and Biomolecular Engineering, University of Notre Dame, Fall 2023
30. **Meenesh R. Singh***, “Nitrogen Electrochemistry to Support DOE’s Energy Earthshots,” AIChE MRC 2024, Keynote Talk, Illinois Institute of Technology, Spring 2024

31. **Meenesh R. Singh***, “Electrochemical N² Activation: Advancing Sustainable Agriculture, Hydrogen Logistics, and Energy Storage,” Department of Chemical Engineering, Indian Institute of Technology Madras, Summer 2024
32. **Meenesh R. Singh***, “Emerging Microfluidic Platforms and Computational Methods for Crystallization Process Design: From Academic Research to Commercialization,” Department of Chemical Engineering, Indian Institute of Technology Hyderabad, Summer 2024

* Indicates oral presenter

Conference Proceedings

1. Jayanta Chakraborty*, **Meenesh Singh** and Doraiswami Ramkrishna, “Population Balance Modeling of Faceted Asymmetric Crystals”, International Symposium on Chemical Reaction Engineering (ISCRE 2010), Pennsylvania, June 13-16, 2010.
2. Jayanta Chakraborty, **Meenesh R. Singh*** and Doraiswami Ramkrishna, “Morphological population balance modeling of faceted crystals with large number of faces: the division of internal coordinate space into dynamic and invariant coordinates”, 4th International Conference on Population Balance Modeling, Berlin, Germany, September 15-17, 2010.
3. **Meenesh R. Singh***, Jayanta Chakraborty and Doraiswami Ramkrishna, “Population Balance Modeling of Morphology Distributions of Asymmetric Crystals,” Paper # 141g, AIChE Annual Meeting, Salt Lake City, Utah, November 7-12, 2010.
4. **Meenesh R. Singh***, Jayanta Chakraborty, Doraiswami Ramkrishna, Stephan X. M. Boerichter, Christian Borchert and Kai Sundmacher, “Morphological Measurements of Faceted Crystals Using Image Analysis,” Paper #668c, AIChE Annual Meeting, Salt Lake City, Utah, November 7-12, 2010.
5. **Meenesh R. Singh** and Doraiswami Ramkrishna*, “Towards Control of Crystal Shape. Crystallization and Dissolution”, Keynote Lecture, 18th International Symposium on Industrial Crystallization (ISIC 18), ETH Zurich, Switzerland, September 13-16, 2011.
6. **Meenesh R. Singh***, Christian Borchert, Kai Sundmacher and Doraiswami Ramkrishna, “Modeling of Morphology Transformations in Crystalline Materials: A Generalized Framework”, Paper #20c, AIChE Annual Meeting, Minneapolis, Minnesota, October 16-21, 2011.
7. **Meenesh R. Singh***, Stephan X. M. Boerrigter, Christian Borchert, Kai Sundmacher and Doraiswami Ramkrishna, “Experimental Investigation of Crystal Shape Evolution During Growth and Dissolution”, Paper #548d, AIChE Annual Meeting, Minneapolis, Minnesota, October 16-21, 2011.
8. **Meenesh R. Singh*** and Doraiswami Ramkrishna, “On Predicting Nuclei Shape Distribution,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd 2012
9. **Meenesh R. Singh*** and Doraiswami Ramkrishna, “The Morphological-Population Balance Model (M-PBM) Generator. Application to Additives Controlled Crystallization of KAP,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd 2012
10. **Meenesh R. Singh**, “Computational Screening of Crystal Morphologies from Crystal Structure,” Computational Science and Engineering Student Conference, SIAM, Purdue University, April 5th, 2013
11. **Meenesh R. Singh**, Conor D. Parks* and Doraiswami Ramkrishna, “A Kinetic Approach towards Polymorph Prediction. Identifying Nucleation Kernels Specific to a Polymorph,” 5th International Conference on Population Balance Modelling, Bangalore, India, September 11 – 13, 2013
12. **Meenesh R. Singh**, Conor Parks*, Hsien-Hsin Tung, Shailendra Bordawekar and Doraiswami Ramkrishna, “Polymorph Prediction: A Kinetic Approach,” AIChE Annual Meeting, San Francisco, California, November 3rd – November 8th 2013
13. **Meenesh R. Singh***, Hsien-Hsin Tung, Shailendra Bordawekar and Doraiswami Ramkrishna, “Morphology Control through Cycles of Particle Breakage, Dissolution and Growth,” AIChE Annual Meeting, San Francisco, California, November 3rd – November 8th 2013
14. **Meenesh R. Singh** and Doraiswami Ramkrishna, “Predicting dispersions in Crystallization Process,” AIChE Annual Meeting, San Francisco, California, November 3rd – November 8th 2013

15. **Meenesh R. Singh***, John C. Stevens, and Adam Z. Weber, "Membrane-Encapsulated Solar Fuel Generators," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
16. **Meenesh R. Singh***, and Doraiswami Ramkrishna, "Identification of Polar Plots of Crystal Dissolution Rates using Hot-Stage Microscopy," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
17. **Meenesh R. Singh***, Christopher M. Evans, Chengxiang Xiang, Rachel A. Segalman, and Nathan S. Lewis, "Solar Fuel Generation at Near-Neutral pH Conditions: Operational Advantages and Disadvantages," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
18. Daniel J. Miller*, **Meenesh R. Singh**, Siwei Liang, Rachel A. Segalman, and Nathaniel A. Lynd, "Polymeric Moisture Swing Membranes for Carbon Dioxide Capture from Gas Mixtures," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
19. Siwei Liang*, **Meenesh R. Singh**, Daniel J. Miller, and Nathaniel A. Lynd, "Synthesis of Anion-Exchange Membranes for Applications in Artificial Photosynthesis and CO₂ Capture," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
20. Christopher M. Evans*, **Meenesh R. Singh**, Gabriel Sanoja, Miguel A. Modestino, Yanika Schneider, Nathaniel A. Lynd, and Rachel A. Segalman, "Ionic Conductivity and Gas Permeability of Polymerized Ionic Liquid Block Copolymer Membranes for Energy Applications," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
21. Ezra L. Clark*, **Meenesh R. Singh**, Youngkook Kwon, and Alexis T. Bell, "Design of an Electrochemical Cell for Investigating the CO₂ Reduction Reaction via Differential Electrochemical Mass Spectrometry," AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
22. **Meenesh R. Singh***, "Materials and Systems Design for Healthcare and Energy Applications," , AIChE Annual Meeting, Atlanta, Georgia, November 16th – November 21st 2014
23. Doraiswami Ramkrishna*, **Meenesh R. Singh**, "Population Balances: Applications Ever on the Increase," 64th Canadian Chemical Engineering Conference, Niagara Falls, New York, October 19th – October 22nd 2014
24. Chengxiang Xiang*, Yikai Chen, Karl Walczak, **Meenesh R. Singh**, Adam Z. Weber, Jian Jin, and Nathan S. Lewis, "Modeling/Simulation and Prototyping Development of Solar-Hydrogen Generators," 227th ECS Meeting, Chicago, Illinois, May 24th – May 28th 2015
25. John Stevens, Chengxiang Xiang, **Meenesh R. Singh**, Yikai Chen, and Adam Z. Weber*, "Mathematical Modeling of Solar-Fuel Generators," 228th ECS Meeting, Phoenix, Arizona, October 11th – 16th 2015
26. **Meenesh R. Singh***, Ezra L. Clark, and Alexis T. Bell, "Solar-driven Electrochemical Reduction of Carbon Dioxide: Materials Selection, Operating Conditions, and Cell Design," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
27. **Meenesh R. Singh***, and Alexis T. Bell, "Thermodynamic and Practical Efficiencies of Solar-driven Electrochemical Conversion of Water and Carbon Dioxide to Transportation Fuels," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
28. Ezra L. Clark*, **Meenesh R. Singh**, Youngkook Kwon, and Alexis T. Bell, "Online Quantification of the Electrochemical CO₂ Reduction Reaction via a Novel Differential Electrochemical Mass Spectrometer Cell Design," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
29. Ezra L. Clark*, Youngkook Kwon, Mu-Jeng Cheng, Peter Lobaccaro, Yanwei Lum, **Meenesh R. Singh**, and Alexis T. Bell, Rational Design of a Metallic Electrocatalyst for the Selective Reduction of CO₂ to C₂+ Oxygenates," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
30. Katie Chen, **Meenesh R. Singh**, Ke Sun, Shu Hu, Adam Weber, Nathan S. Lewis, and Chengxiang Xiang*, "Modeling and Simulation of Solar-Fuel Generators," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
31. **Meenesh R. Singh***, Chengxiang Xiang, Kimberly Papadantonakis, and Nathan Lewis, "Solar-driven Electrochemical Water-Splitting at Near Neutral pH Conditions – Operating Strategies and their Limitations," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
32. **Meenesh R. Singh***, "Materials and Systems Engineering for Healthcare and Energy Applications – From Discovery to Design," AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
33. **Meenesh R. Singh***, Youngkook Kwon, Yanwei Lum, Joel W. Ager III, and Alexis T. Bell "How do Electrolyte Cations Affect Activity and Selectivity of the Electrochemical Reduction of CO₂ over Ag and Cu?," AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016

34. **Meenesh R. Singh***, Jason D. Goodpaster, Adam Z. Weber, Martin Head-Gordon and Alexis T. Bell “Mechanistic Insights into the Electrochemical Reduction of CO₂ over Ag using an Integrated Transport-DFT-Microkinetic Model,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
35. **Meenesh R. Singh***, and Alexis T. Bell “Achievable Alcohol Concentrations and Membrane Requirements for Artificial Photosynthetic System,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
36. Peter Lobaccaro*, **Meenesh R. Singh**, Ezra L. Clark, Youngkook Kwon, Alexis T. Bell, and Joel W. Ager III, “Effects of Temperature and Gas-Liquid Mass Transfer on the Operation of Small Electrochemical Cells for the Quantitative Evaluation of CO₂ Reduction Electrocatalysts,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
37. **Meenesh R. Singh***, Yanwei Lum, Ezra L. Clark, Joel W. Ager III, and Alexis T. Bell, “Optimal Pattern of Bimetallic Electrocatalysts for Efficient Conversion of Water and Carbon Dioxide to Hydrocarbons and Oxygenates,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
38. Anish Dighe*, and **Meenesh R. Singh**, “Mathematical Modeling and Simulation of Nucleation and Growth of Crystalline Polymorphs,” AIChE Midwest Regional Conference, Chicago, Illinois, February 28th – March 1st, 2017
39. Aditya Prajapati*, and **Meenesh R. Singh**, “Efficiency of Artificial Photosynthetic Devices for Integrated Carbon Capture and Reduction,” AIChE Midwest Regional Conference, Chicago, Illinois, February 28th – March 1st, 2017
40. Paria Coliaie*, and **Meenesh R. Singh**, “Designing a Microfluidic Platform for High-Throughput Screening of Pharmaceutical Polymorphs,” AIChE Midwest Regional Conference, Chicago, Illinois, February 28th – March 1st, 2017
41. James Fell*, Anish V. Dighe, and **Meenesh R. Singh**, “Multiscale, Multiphysics, Mechanistic Model for Computation of Face-Specific Growth Rates,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
42. Emily C. Yolo*, Aditya Prajapati, and **Meenesh R. Singh**, “Solar-Driven Electrochemical Desalination of Seawater,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
43. Anish V. Dighe*, and **Meenesh R. Singh**, “A Multiscale Computational Method for Prediction of Polymorphs,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
44. Grzegorz Kokoszka*, Aditya Prajapati, and **Meenesh R. Singh**, “Transport Analysis of an Integrated Artificial Photosynthetic System for Direct Capture and Reduction of CO₂ from Air,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
45. Aditya Prajapati*, and **Meenesh R. Singh**, “Measurement of Intrinsic Activity of Electrocatalytic Reduction of CO₂ over Cu,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
46. Anish V. Dighe*, and **Meenesh R. Singh**, “Calculation of Free Energy Barriers for Attachment of Molecules during Crystal Growth and Nucleation,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
47. Aditya Prajapati*, and **Meenesh R. Singh**, “Efficiency Limits of an Integrated Solar-Driven CO₂ Capture and Reduction Systems,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
48. Paria Coliaie*, and **Meenesh R. Singh**, “Multiphysics Modeling and Simulation of Microfluidic Platforms for Screening of Pharmaceutical Polymorphs,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
49. Paria Coliaie*, and **Meenesh R. Singh**, “A Novel Microfluidic Platform for Screening of Pharmaceutical Polymorphs under Hydrodynamically-Controlled Crystallization Conditions,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
50. Rosanna Granata*, Aditya Prajapati, and **Meenesh R. Singh**, “Design of a 400 MW Carbon-Neutral, Coal-Fired Power Plant with Integration of Waste Heat and Solar Energy,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
51. **Meenesh R. Singh*** and Andreas Linninger, “Mathematical Modeling and Simulation of Magnetophoresis. Application to Drug Delivery Using Magnetic-Field,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
52. Adam Z. Weber, Andrew R. Crothers, **Meenesh R. Singh**, Clayton J. Radke, and Alexis T. Bell, “Multiscale Modeling of Transport Phenomena in Ion-Conducting Membranes and Aqueous CO₂ Reduction Cells,” 233rd ECS Meeting, Seattle, Washington, May 13th – 17th, 2018

53. Aditya Prajapati*, Songwei Che, Vikas Berry, and **Meenesh R. Singh**, “Single-Atom Catalysts for Electrochemical Reduction of CO₂,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
54. Paria Coliaie*, and **Meenesh R. Singh**, “Antisolvent and Cooling Crystallization of Pharmaceuticals Using a Continuous-Flow Microfluidic Platform,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
55. Anish Dighe*, James Fell, and **Meenesh R. Singh**, “Identifying Nucleation and Growth Kernels of Crystallization,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
56. Anish Dighe*, and **Meenesh R. Singh**, “Mechanistic Insights into the Process of Crystallization using Kinetic, Multiscale Model,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
57. Victoria Smith, Aditya Prajapati*, and **Meenesh R. Singh**, “Electrochemical Reduction of Nitrogen to Ammonia over Transition Metals,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
58. Aditya Prajapati*, and **Meenesh R. Singh**, “A Systematic Experimental Study on Electrochemical Oxidation of Methane over Transition Metals,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
59. Aditya Prajapati*, Emily C. Yolo, and **Meenesh R. Singh**, “Design of an Electrochemical Cell for Desalination of Seawater,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
60. James Fell, Anish Dighe*, and **Meenesh R. Singh**, “Integrated Kinetic Monte-Carlo Method to Find Face Specific Growth Rates,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
61. Meng Lin, Lihao Han, **Meenesh R. Singh**, Chengxiang Xiang, “An Experimental- and Simulation-Based Evaluation of CO₂ Utilization Efficiency of Solar-Driven CO₂ Reduction Reactors with Ion-Selective Membranes in Aqueous Electrolytes,” ASME 2019 ES, 13th International Conference on Energy Sustainability, Bellevue, WA, July 15th – July 18th, 2019
62. Anish Dighe*, **Meenesh R. Singh**, “Rapid Screening of Solvents for Crystallization Using Group Contribution Method” AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
63. Anish Dighe*, **Meenesh R. Singh**, “Identification of Polymorph Specific Molecular Interactions during the Process of Crystallization” AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
64. Ayankola Ayansiji*, Anish Dighe, **Meenesh R. Singh**, “Modeling and Simulation of Magnetophoresis of Nanoparticles – Physical Insights into Magnetic Targeting Applications” AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
65. Paria Coliaie*, **Meenesh R. Singh**, “Screening of Polymorphs and Measurement of Growth Rates of L-Histidine at Controlled Supersaturation Using Continuous-Flow, Microfluidic Device” AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
66. Paria Coliaie*, **Meenesh R. Singh**, “Comparative Screening of Polymorphs of o-Aminobenzoic Acid Using Microtiter Plates and Novel Continuous-Flow, Microfluidic Devices” AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
67. Nishithan C. Kani*, Aditya Prajapati, and **Meenesh R. Singh**, “Modeling the transport of Nitrogen in Gas Diffusion Electrode (GDE) for the Electrochemical Ammonia Synthesis at ambient conditions”, AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
68. Aditya Prajapati* and **Meenesh R. Singh**, “Designing and Electrochemical System for Simultaneous Extraction of CO₂ and Rejection of Salts from Seawater”, AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
69. Aditya Prajapati*, Brianna Collins, Jason Goodpaster, and **Meenesh R. Singh**, “Fundamental Insights into Electrochemical Oxidation of Methane over Transition Metals”, AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
70. Brianna Collins, Aditya Prajapati, **Meenesh R. Singh**, and Jason D. Goodpaster, “Computational and experimental study of electrochemical methane oxidation over transition metals,” Pacificchem 2020, Honolulu, Hawaii, December 10 – 15th, 2020
71. Ayansiji Ayankola*, Daniel Gehrke, Andreas Linninger, **Meenesh R. Singh**, “Rational Design and Mathematical Modeling of Intrathecal Therapeutics: Biodispersion and Pharmacokinetics” Virtual AIChE Annual Meeting, November 16th-20th, 2020

72. Ayansiji Ayankola*, Anish Dighe, Andreas Linninger, **Meenesh R. Singh**, “Modeling and Simulation of Magnetophoresis of Nanoparticles for Magnetic Targeting Applications” Virtual AIChE Annual Meeting, November 16th-20th, 2020
73. Paria Coliaie*, Manish Kelkar, Nandkishor Nere, **Meenesh R. Singh**, “Sensor Integrated Continuous Microfluidic Mixer for Protein Screening at Constant Supersaturation” Virtual AIChE Annual Meeting, November 16th-20th, 2020
74. Paria Coliaie*, Manish Kelkar, Nandkishor Nere, **Meenesh R. Singh**, “Temperature Control Approaches for Cooling Crystallization Using a Continuous Microfluidic Mixer” Virtual AIChE Annual Meeting, November 16th-20th, 2020
75. Paria Coliaie*, Manish Kelkar, Nandkishor Nere, **Meenesh R. Singh**, “Dual Chamber and Membrane Embedded Continuous Microfluidic Device for MOFs Screening” Virtual AIChE Annual Meeting, November 16th-20th, 2020
76. Anish Dighe*, **Meenesh R. Singh**, “Stochastic Simulations of Motion of Solute Molecules during the Process of Crystallization Yields the Rate Constants for the Processes of Crystallization” Virtual AIChE Annual Meeting, November 16th-20th, 2020
77. Anish Dighe*, **Meenesh R. Singh**, “Selective Desolvation of Functional Groups Determines the Crystal Structure during the Process of Crystallization” Virtual AIChE Annual Meeting, November 16th-20th, 2020
78. Nishithan Kani*, **Meenesh R. Singh**, “Modeling the Reactions and Transport in Gas Diffusion Electrode (GDE) for the Electrochemical Reduction of Nitrogen to Ammonia” Virtual AIChE Annual Meeting, November 16th-20th, 2020
79. Nishithan Kani*, **Meenesh R. Singh**, “Experimental and Theoretical Screening of Transition Metal Catalysts for Electrochemical Reduction of Nitrates to Ammonia” Virtual AIChE Annual Meeting, November 16th-20th, 2020
80. Nishithan Kani*, **Meenesh R. Singh**, “Electrochemical Synthesis of Urea By Co-Reduction of Nitrates and CO₂ on Cu, Zn and Ti Gas Diffusion Electrodes (GDE)” Virtual AIChE Annual Meeting, November 16th-20th, 2020
81. Aditya Prajapati*, N.H.L. Nguyen, Vikas Berry, **Meenesh R. Singh**, “Mechanistic Insight into CO₂ Electroreduction over Single-Atom Catalyst Platform Via Operando Infrared Spectroscopy” Virtual AIChE Annual Meeting, November 16th-20th, 2020
82. Aditya Prajapati*, **Meenesh R. Singh**, “Influencing the Migration of Ions for Simultaneous Extraction of CO₂ and Desalination of Seawater” Virtual AIChE Annual Meeting, November 16th-20th, 2020
83. Aditya Prajapati*, **Meenesh R. Singh**, “Design of a Fully Integrated Artificial Photosynthetic System for a Moisture-Gradient CO₂ Capture and Reduction” Virtual AIChE Annual Meeting, November 16th-20th, 2020
84. Rajan Bhawnani*, Santanu Chaudhary, **Meenesh R. Singh**, “Identifying Crystal Morphologies to Optimize Growth Kinetics of Covalent Organic Frameworks – an Example of Cof-5” Virtual AIChE Annual Meeting, November 16th-20th, 2020
85. Rajan Bhawnani*, Santanu Chaudhary, **Meenesh R. Singh**, “Process Optimization for Controlling the Morphology of Cof-5 Crystals” Virtual AIChE Annual Meeting, November 16th-20th, 2020
86. Anish V. Dighe*, Prem K.R. Podupu, Paria Coliaie, **Meenesh R. Singh**, “Brownian Dynamics Simulations Predict the Nucleation Probability of Polymorphs During the Process of Crystallization”, AIChE Annual Meeting, November 7th-11th, 2021
87. Anish V. Dighe*, Prem K.R. Podupu, Paria Coliaie, **Meenesh R. Singh**, “Molecular Simulations Reveal Underlying Mechanism of Cooling and Antisolvent Crystallization to Predict the Polymorphism and Growth of Organic Crystals”, AIChE Annual Meeting, November 7th-11th, 2021
88. Anish V. Dighe*, Luke Huelsenbeck, Prince Verma, Kevin Stone, Gaurav Giri, **Meenesh R. Singh**, “Autocatalytic Initiation Followed by Oriented Attachment Governs the Nucleation and Crystal Growth of MOF Crystals”, AIChE Annual Meeting, November 7th-11th, 2021
89. Prem K.R. Podupu*, Anish V. Dighe, Paria Coliaie, **Meenesh R. Singh**, “Molecular Simulations Unravel the Dynamics of Oiling Out of β -Alanine”, AIChE Annual Meeting, November 7th-11th, 2021
90. Paria Coliaie, Aditya Prajapati, Rabia Ali, Rajan R.Bhawnani*, Manish Kelkar, Nandkishor Nere, **Meenesh R. Singh**, “Integration of an Electrochemical Sensor with a Continuous-Flow, Microfluidic device to monitor and predict supersaturation using machine learning algorithms” AIChE Annual Meeting, November 7th-11th, 2021

91. Paria Coliaie, Aditya Prajapati, Rabia Ali, Rajan R.Bhawnani*, Manish Kelkar, Nandkishor Nere, **Meenesh R. Singh**, "In-line detection of oiling LLPS boundaries using a photosensitive turbidity sensor integrated into a Continuous-Flow Microfluidic device" AIChE Annual Meeting, November 7th-11th, 2021
92. Anish V. Dighe, Rajan Bhawnani*, Prem Podupu, Santanu Chaudhuri, **Meenesh R. Singh**, "Acid-catalyzed esterification governs the chain elongation and oriented attachment of COF-5 synthesis" AIChE Annual Meeting, November 7th-11th, 2021
93. Rohan Sartape*, Aditya Prajapati and **Meenesh R. Singh**, "Migration-Assisted Water Gradient Process for a Continuous CO₂ Capture", AIChE Annual Meeting, Boston, Massachusetts, November 7th-19th, 2021.
94. Rohan Sartape*, Aditya Prajapati and **Meenesh R. Singh**, "Design of an Electric Field-Assisted Water-Gradient System for CO₂ Capture", Virtual AIChE MRC Meeting, March 1st-2nd, 2022.
95. Nishithan C. Kani*, **Meenesh R. Singh**, Joseph A. Gauthier, Ayush R. Singh, "Electrochemical Reduction of Nitrates to Ammonia on Oxide Derived Cobalt," 2021 AIChE Annual Meeting, Boston, Massachusetts, November 7 -11, 2021.
96. Nishithan C. Kani*, **Meenesh R. Singh**, "Sustainable Synthesis of Ammonia," 2021 AIChE Annual Meeting, Boston, Massachusetts, November 7 -11, 2021.
97. Nishithan C. Kani*, **Meenesh R. Singh**, "Electrochemical Synthesis of Urea by the Co-Reduction of Nitrates and CO₂ on Co-Cu Bimetallic Gas Diffusion Electrodes (GDE)", 2022 AIChE Annual Meeting, Phoenix, Arizona, November 13-18, 2022.
98. Nishithan C. Kani*, **Meenesh R. Singh**, "Is Electrification of the Manufacturing of Commodity Chemicals to Decarbonize Manufacturing Economically Feasible?", 2022 AIChE Annual Meeting, Phoenix, Arizona, November 13-18, 2022.
99. Rohan Sartape*, Aditya Prajapati and **Meenesh R. Singh**, "Patterned Cu-Ti Bimetallic Oxides for Electrooxidation of Methane to Methanol at Ambient Conditions", AIChE Annual Meeting, Phoenix, Arizona, November 13th-18th, 2022.
100. Rohan Sartape*, Aditya Prajapati and **Meenesh R. Singh**, "A Continuous, Integrated Electrochemical System for CO₂ Capture and Valorization", AIChE Annual Meeting, Phoenix, Arizona, November 13th-18th, 2022.
101. Anish Dighe, Prem K.R. Podupu*, Paria Coliaie, **Meenesh R. Singh**, "Two-Step Nucleation Mechanism Drives Crystal Structure Formation By Selective Desolvation", 2022 AIChE Annual Meeting, Phoenix, Arizona, November 13th-18th, 2022.
102. Prem K.R. Podupu*, Prince Verma, Anish Dighe, Rajan Bhawnani, Gaurav Giri, **Meenesh R. Singh**, "A Microkinetic Model for Understanding the Synthesis of Thin Film Metal Organic Framework Using Solution Shearing Based Evaporative Crystallization", 2022 AIChE Annual Meeting, Phoenix, Arizona, November 13th-18th, 2022.
103. Rajan Bhawnani*, Rohan Sartape, Aditya Prajapati, Prem Reddy, Paria Coliaie and **Meenesh R. Singh**, "Percolation-Assisted Coating on Metal-Organic Frameworks (MOFs) on porous substrates using continuous microfluidic reactor", AIChE Annual Meeting, Phoenix, Arizona, November 13-18, 2022.
104. Ishita Goyal*, Nishithan Balaji Chidambara Kani, and **Meenesh R Singh**, "Selective Electrochemical Reduction of NO₃⁻ and CO₂ to Urea on Silver Gas Diffusion Electrode", AIChE 2023 Annual Meeting Orlando, Florida, November 6, 2023.
105. Ishita Goyal* and **Meenesh R Singh**, "Electrochemical Synthesis of Aniline Using Ammonia and Benzene", AIChE 2023 Annual Meeting Orlando, Florida, November 7, 2023.
106. Ishita Goyal*, Nishithan Balaji Chidambara Kani and **Meenesh R Singh**, "Lithium Mediated Electrochemical Synthesis of Ammonia at High Pressures", AIChE 2023 Annual Meeting Orlando, Florida, November 7, 2023.
107. Rohit Chauhan*, Nishithan C. Kani, **Meenesh R. Singh**, "Green H₂ Production through Biochar Advanced Water Electrolysis," 2023 AIChE Annual Meeting, Orlando, Florida, November 5-10, 2023.
108. Rohit Chauhan*, Rohan Sartape, **Meenesh R. Singh**, "High Throughput Screening of Ionic Liquids for Enhanced Conductivity," 2023 AIChE Annual Meeting, Orlando, Florida, November 5-10, 2023.
109. Rohit Chauhan*, Rohan Sartape, **Meenesh R. Singh**, "Screening of Ionic Liquids for CO₂ Capture at Ambient Conditions" 2023 AIChE Annual Meeting, Orlando, Florida, November 5-10, 2023.
110. Rohan Sartape, Rohit Chauhan*, **Meenesh R. Singh**, "Electrochemical Screening of Ionic Liquids for Direct Air Capture" 2023 AIChE Annual Meeting, Orlando, Florida, November 5-10, 2023.

111. Amey Thorat*, Rohan Sartape, Rohit Chauhan, **Meenesh R. Singh**, Jindal Shah, “Leveraging Non-ideal Behavior in Binary Ionic-liquid Mixtures to Design Efficient Electrolytes” 2023 AIChE Annual Meeting, Orlando, Florida, November 5-10, 2023.
112. Nitin Minocha*, Paria Coliaie, **Meenesh R Singh**, “Development of fully automated microfluidic device for high throughput screening of crystallization process,” 2023 AIChE Annual Meeting, Orlando, Florida, November 5 -10, 2023.
113. Nitin Minocha*, Rohan Sartape, **Meenesh R Singh**, “Selective Electroreduction of CO₂ to Ethylene Under Controlled Catalyst Regeneration,” 2023 AIChE Annual Meeting, Orlando, Florida, November 5 -10, 2023.
114. Nitin Minocha*, Rohan Sartape, **Meenesh R Singh**, “Breaking Frontiers in Selective Electroreduction of CO₂ to Ethylene Under Controlled Catalyst Regeneration,” 2024 AIChE Midwest Regional Conference (MRC 16), Chicago, Illinois, March 5-6, 2024.

* Indicates oral presenter of the paper

Software Developed

1. *CrystalShape*: A software to visualize 3D shape of crystals.
<https://engineering.purdue.edu/~drops/software/CrystalShape.zip>
 2. *CrystalTomogram*: A software to construct crystal morphology from tomographic images,
<https://engineering.purdue.edu/~drops/software/CrystalTomogram.zip>
 3. *MorphologyDomain*: A software to visualize accessible crystal morphologies under given operating conditions.
<https://engineering.purdue.edu/~drops/software/MorphologyDomain.zip>
 4. *CrystalPolar*: A software to obtain growth/dissolution rates of all crystal faces from the dynamic images of crystals. <https://engineering.purdue.edu/~drops/software/CrystalPolar.zip>
 5. *ECO2R Simulator*: Web-based software to simulate electrochemical cell for CO₂ reduction. jcap-n-simulator-1.lbl.gov:2036
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Conference Session Organizer

1. Co-Chair, “Modeling and Control of Crystallization,” AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
2. Co-Chair, “Fundamentals of Hydrogen Production,” AIChE Annual Meeting, Salt Lake City, Utah, November 8th – 13th, 2015
3. Chair, “Solid Form Selection: Cocrystals, Salts, Solvates, Polymorphs, and Beyond,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
4. Co-Chair, “Electrocatalysis and Photoelectrocatalysis,” AIChE Annual Meeting, San Francisco, California, November 13th – 18th, 2016
5. Chair, “Electrocatalysis and Photoelectrocatalysis,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
6. Co-Chair, “Rational Design of Catalysts,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
7. Chair, “Modeling and Control of Crystallization,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
8. Co-Chair, “Solid Form Selection: Cocrystals, Salts, Solvates, Polymorphs, and Beyond,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
9. Co-Chair, “Amorphous and Crystalline Particle Engineering in Pharmaceuticals and Other Novel Materials,” AIChE Annual Meeting, Minneapolis, Minnesota, October 29th – November 3rd, 2017
10. Chair, “Poster Session,” AIChE Midwest Regional Conference, Chicago, Illinois, February 28th – March 1st, 2017
11. Chair, “Amorphous and Crystalline Particle Engineering,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
12. Chair, “Modeling and Control of Crystallization,” AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018

13. Chair, "In Honor of Doraiswami Ramkrishna's 80th Birthday," AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
14. Co-Chair, "Area 2B Plenary: In Honor of Doraiswami Ramkrishna's 80th Birthday," AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
15. Co-Chair, "Electrocatalysis and Photoelectrocatalysis II: Reactors and Processes for CO₂ Reduction," AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
16. Co-Chair, "Nucleation and Growth- I & II," AIChE Annual Meeting, Pittsburgh, Pennsylvania, October 28th – November 2nd, 2018
17. Chair, "Bio-Medical & Material Engineering," AIChE Midwest Regional Conference, Chicago, Illinois, March 18th – 19th, 2019
18. Chair, "High Temperature Electrocatalysis," North American Catalysis Society Meeting, Chicago, Illinois, June 23rd – 28th, 2019
19. Chair, "Nucleation and Growth I & II," AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
20. Co-Chair, "Thermochemical CO₂ Reduction I – C1 products," AIChE Annual Meeting, Orlando, Florida, November 10th-15th, 2019
21. Chair, "Industrial Crystallization I & II," AIChE Midwest Regional Conference, Chicago, Illinois, March 11th – 12th, 2020
22. Chair, "Continuous Crystallization Processes," AIChE Annual Meeting, San Francisco, California, November 15th – 20th, 2020
23. Chair, "Nitrogen Chemistry II- Nitrate and Nitrite Reduction," AIChE Annual Meeting, San Francisco, California, November 15th – 20th, 2020
24. Bin Lead and Chair, "Nitrogen Chemistry II- Nitrate and Nitrite Reduction," AIChE Annual Meeting, Boston, Massachusetts, November 7-19th, 2021
25. Chair, "Continuous Crystallization Processes," AIChE Annual Meeting, Boston, Massachusetts, November 7-19th, 2021
26. Chair, "Nucleation and Growth," AIChE Annual Meeting, Phoenix, Arizona, November 13-18th, 2022
27. Chair, "Nitrogen Chemistry: Thermal/Photo/Plasma N₂ Reduction," AIChE Annual Meeting, Phoenix, Arizona, November 13-18th, 2022
28. Co-Chair, "Synthesis and Application of Inorganic Materials II: Applications," AIChE Annual Meeting, Phoenix, Arizona, November 13-18th, 2022
29. Co-Chair, "Advancements in Drug Product Engineering and Material Science," AIChE Annual Meeting, Orlando, November 5-10th, 2023
30. Co-Chair, "Advancements in Drug Substance Processing and Material Science," AIChE Annual Meeting, Orlando, November 5-10th, 2023
31. Co-Chair, "Synthesis and Application of Inorganic Materials," AIChE Annual Meeting, Orlando, November 5-10th, 2023
32. Chair, "Invited Talks: In Honor of Prof. Robert Prud'homme," AIChE Annual Meeting, San Diego, October 27 – 31st, 2024
33. Chair, "Synthesis and Application of Inorganic Materials," AIChE Annual Meeting, San Diego, October 27 – 31st, 2024
34. Co-Chair, "In Honor of Alex Bell's Retirement (Invited Talks)," AIChE Annual Meeting, San Diego, October 27 – 31st, 2024

Teaching Activities

Instructor , CHE 321 Chemical Reaction Engineering UIC	<i>Aug 2024 – Dec 2024</i>
Instructor , CHE 150 Climate Engineering for Global Warming UIC	<i>Jan 2024 – May 2024</i>
Instructor , CHE 150 Climate Engineering for Global Warming UIC	<i>Aug 2023 – Dec 2023</i>
Instructor , CHE 321 Chemical Reaction Engineering UIC	<i>Aug 2022 – Dec 2022</i>
Instructor , CHE 494 Biopharma Process Dev. and R&D UIC	<i>Jan 2022 – May 2022</i>
Instructor , CHE 527 Advanced Chemical Reaction Engineering UIC	<i>Jan 2022 – May 2022</i>
Instructor , CHE 321 Chemical Reaction Engineering UIC	<i>Aug 2021 – Dec 2021</i>
Instructor , CHE 494 Biopharma Process Dev. and R&D UIC	<i>Jan 2021 – May 2021</i>

Instructor , CHE 527 Advanced Chemical Reaction Engineering UIC	<i>Jan 2021 – May 2021</i>
Instructor , CHE 321 Chemical Reaction Engineering UIC	<i>Aug 2020 – Dec 2020</i>
Instructor , CHE 527 Advanced Chemical Reaction Engineering UIC	<i>Jan 2020 – May 2020</i>
Instructor , CHE 321 Chemical Reaction Engineering UIC	<i>Jan 2019 – Dec 2019</i>
Instructor , CHE 445 Mathematical Methods in Chemical Engineering UIC	<i>Aug 2018 – Dec 2018</i>
Instructor , CHE 494 Solar-Fuels Engineering, UIC	<i>Jan 2017 – May 2017</i>
Instructor , CHE 445 Mathematical Methods in Chemical Engineering, UIC	<i>Aug 2017 – Dec 2017</i>
Instructor , CHE 445 Mathematical Methods in Chemical Engineering, UIC	<i>Aug 2016 – Dec 2016</i>
Teaching Assistant , Applied Mathematics in Chemical Engineering, Purdue University	<i>Aug 2011 – Dec 2011</i>
Teaching Assistant , Transport Phenomena, Purdue University	<i>Aug 2009 – Dec 2009</i>
Teaching Assistant , Data Analysis and Interpretation, IIT-B	<i>Jan 2008 – May 2008</i>
Teaching Assistant , Computational Methods in Chemical Engineering, IIT-B	<i>Aug 2007 – Dec 2007</i>
Teaching Assistant , Chemical Engineering Thermodynamics-I, IIT-B	<i>Jan 2007 – May 2007</i>

Mentoring Activities

Ph. D. Students

Past

1. **Aditya Prajapati**, “Electrochemical Routes for Upgrading Carbon-based Greenhouse Gases,” Fall 2016 – Fall 2021.
Current Position: Postdoctoral Researcher, Lawrence Livermore National Lab
UIC Awards:
 - i. 2018 TA of the year award from the Department of Chemistry
 - ii. 2019 Provost’s Graduate Research Award
 - iii. 2019 Award for Graduate Research.
 - iv. 2021 CoE Graduate Student Award
 External Awards:
 - v. 2019 AIChE CRE Travel Award
 - vi. 2020 AIChE Environmental Division Best Student Paper Award
 - vii. 2022 Sustainable Chemistry’s Best PhD Thesis Award
2. **Paria Coliaie**, “Continuous-flow, well-mixed, microfluidic devices for screening of crystalline materials,” Fall 2016 – Fall 2021.
Current Position: Senior Scientist-I, AbbVie Inc.
UIC Awards:
 - i. 2018 Chancellor’s Student Service Award
 - ii. 2020 Provost’s Graduate Research Award
 - iii. 2020 Provost’s Graduate Internship Award
 External Awards:
 - iv. 2020 AIChE Women in Chemical Engineering (WIC) Travel Award.
3. **Anish Dighe**, “Multiscale Computational Model for Polymorphism and Growth of Crystals in Solution Crystallization,” Fall 2016 – Fall 2021
Current Position: Postdoctoral Researcher, Massachusetts Institute of Technology
UIC Awards:
 - i. 2019 Provost’s Graduate Research Award
 - ii. 2021 Award for Graduate Research
 External Awards:
 - iii. 2021 AIChE Separation Division Graduate Student Research Award.
4. **Nishithan Balaji**, “Sustainable Synthesis of Nitrogenated Compounds,” Fall 2018 – Summer 2023
Current Position: Postdoctoral Researcher, Technical University of Denmark
UIC Awards:

- i. 2019 Best TA Award from Department of Chemical Engineering
- ii. 2020 Award for Graduate Research
- iv. 2021 3-Minute Thesis Competition (Honorable Mention)
- v. 2021 Provost's Graduate Internship Award

External Awards:

- iii. 2021 AIChE Sustainable Engineering Forum Student Paper Award.
- iv. 2022 AIChE CRE Travel Award

5. **Ayankola Ayansiji** (co-advised with Prof. Andreas Linninger), "Drug Delivery to the Central Nervous System," Fall 2018 – Summer 2023

Current Position: Postdoctoral Researcher, University of Illinois Chicago

UIC Awards:

- i. 2022 High-Impact Publication Award from Department of Chemical Engineering

Current

6. **Rajan Bhawnani**, "Understanding and Control of Synthesis of Organic Frameworks," Fall 2019 – Fall 2024
7. **Rohan Sartape**, "Integrated CO₂ Capture and Conversion," Fall 2020 – present
8. **Prem Podupu**, "Computational Modeling of Synthesis of Covalent Frameworks," Fall 2020- present
9. **Ishita Goyal**, "Metal Nitride Mediated Electrochemical Synthesis of Ammonia," Fall 2022 – present
10. **Yancun Qi**, "Electrochemical Synthesis of High-Value Chemicals," Fall 2023 – present
11. **Iman Najafipour**, "Electrochemical Reduction of CO₂," Fall 2023 – present

M. S. Students

1. Victoria Smith, "Electrochemical Reduction of N₂ to NH₃ over Cu," Fall 2017 – Spring 2018
2. Ragavendra Hari, "Analysis of Breakage Problem," Fall 2017 – Spring 2018
3. Michael Zepeda, "Phase-field simulation of Li-dendrite growth," Spring 2020 – Spring 2021
4. Sihang Chen, "Discrete element modeling of dendrite growth in solid-state electrolytes," Spring 2020 – Spring 2021
5. Rabia Ali, "Continuous-flow microfluidic device for screening of crystalline materials," Spring 2021 – Spring 2022
6. Ayush Karwa, "Design of CO₂ Electrolyzers," Fall 2023 – Fall 2024

B. S. Students

1. James Fell, "Modeling of Crystal Growth Rates," Fall 2016 – Spring 2018
2. Emily Yolo, "Design of Solar-Driven Electrochemical Desalinators," Fall 2016 – Spring 2017
3. Grzegorz Kokoszka, "MEA for Carbon Capture and Reduction," Fall 2016 – Spring 2017
4. Rosanna Granata, "Design of 500 MW Carbon-Neutral Power Plant," Spring 2016 – Fall 2016
5. Karthi Thiagarajan, "Benchmarking of Robotic Hand," Summer 2022
6. Vir Trivedi, "Benchmarking of Robotic Hand," Summer 2022
7. Aruba Kwan, "CO₂ capture using electrodialysis unit," Summer 2023

Postdoctoral Researchers

Past

1. Dr. Vamsi V. Gande, Spring 2023 – Fall 2024.

Current Position: Assistant Professor of Chemical Engineering, Indian Institute of Technology Hyderabad.

Current

2. Dr. Rohit Chauhan, Fall 2022 - present
3. Dr. Nitin Minocha, Spring 2023 - present

UIC AIChE Chem-E-Car

1. 2017 AIChE North Central Meeting – UIC's E-Wagon ranked at 7th place. Team: Demetrios Galanos (Captain), Christian Kozlowski, Dayan Reyes, Trisha Erasga, and Timothy Oswald.

2. 2018 AIChE North Central Meeting – UIC’s Hot Rod ranked at 5th place. Team: Eddie Salgado (Captain), James Fell (Vice Captain), William Rawson, Fatima Saeed, Amanda Ly.
3. 2019 AIChE Annual Student Conference – UIC’s Hot Rod ranked at 7th place. Team: James Fell (Captain), William Rawson, Alejandro Gutierrez, and Nadia Nikolova.
4. 2020 AIChE North Central Meeting – UIC’s Hot Rod v2 ranked at 7th place. Team: Alejandro Gutierrez (Captain), Ramiro Roman, Dhurvin Kapadia, Duc Huy Ngyuen, Mustafa Soniwala, and Japheth Bandi.
5. 2020 AIChE North Central Meeting – UIC’s Lightning McLaren ranked at 1st place. Team: Ramiro Roman (Captain), Vihar Trada, Ayush Patel, Mario Ocampo, and Angela Sianturi.
6. 2023 AIChE North Central Meeting – UIC’s CSTR ranked at 7th place. Team: Ramiro Maldonado (Captain), Karim Al Zahabi, Varun Maheshwari, Emily Seriruk, Ogechikanma Ihenacho, Vihar Trada, Andrew Russ, Jocelyn Ortega, Mario Ocampo, Ramiro Roman.
7. 2024 AIChE Annual Student Conference – UIC’s CSTR. Team: Varun Maheshwari (Captain), Karim Al Zahabi, Ogechikanma Ihenacho, Natalie Salas, Gary Ko and Ben Dobbins
8. 2024 AIChE North Central Meeting – UIC’s CSTR. Team: Varun Maheshwari (Captain), Ogechikanma Ihenacho, Natalie Salas, Ria Patel, Huyen Nguyen, Gary Ko, Anthony Ortiz, Miriam Fahmi Nimer Jabr, and Shraddha Zina.

UIC AIChE ChemE Cube

1. 2023 AIChE Annual Student Conference – UIC’s DAC Cube received “Outside-the-Cube” award for most innovative and original cube design. Team: Ramiro Maldonado (Captain), Shaheer Sohail, Varun Maheshwari, Shraddha Zina.

Members of College Committees

Member	Department Graduate Admission Committee	2016 – 2022
Member	Chancellor’s Committee on Sustainability and Energy – Energy and Utilities Subcommittee	2019 - Present
Fellow	UIC Honors College	2020 – Present
Advisor	Nanotechnology Core Facility	2021 - Present

Members of Societies

Member	American Institute of Chemical Engineers	2009 – Present
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Ad hoc Reviewer

Chemical Engineering Science, Crystal Growth & Design, Acta Crystallographica, Nature Catalysis, Computers and Chemical Engineering, Journal of Physical Chemistry Letters, Nature Comm., PNAS, EES, CES, AIChE, JCIS, I&EC, CGD, IOP, CHERD, JAS, PPSC and CET