

# Milad Abolhasani

ALCOA Professor & University Faculty Scholar

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## Education and Training

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- 10/2014 – 08/2016 **NSERC Postdoctoral Fellow, Chemical Engineering**  
Massachusetts Institute of Technology
- 09/2010 – 08/2014 **Ph.D., Mechanical Engineering**  
University of Toronto
- 09/2008 – 08/2010 **M.A.Sc., Mechanical Engineering**  
University of British Columbia
- 09/2004 – 08/2008 **B.Sc., Mechanical Engineering**  
Sharif University of Technology

## Research Interests

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- Microreaction / Flow Reactor Engineering
- Self-Driving Labs / Autonomous Experimentation
- Flow Chemistry and Microfluidics
- Process Intensification

## Professional Experience

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- 08/2024 – Present **ALCOA Professor, Chemical & Biomolecular Engineering Department, NC State University**
- 10/2024 – Present **Director of Accelerated Technologies, Integrative Sciences Initiative, NC State University**
- 07/2023 – Present **Director of Graduate Program**  
Chemical & Biomolecular Engineering Department, NC State University
- 07/2023 – 08/2024 **ALCOA Scholar, NC State University**
- 08/2021 – 08/2024 **Associate Professor, Chemical & Biomolecular Engineering Department, NC State University**
- 07/2021 – 06/2023 **Director of Graduate Admission and Recruiting**  
Chemical & Biomolecular Engineering Department, NC State University
- 06/2021 – Present **University Faculty Scholar, NC State University**
- 08/2016 – 08/2021 **Assistant Professor, Chemical & Biomolecular Engineering Department, NC State University**
- 10/2014 – 08/2016 **Postdoctoral Fellow, Chemical Engineering Department**  
Novartis-MIT Center for Continuous Manufacturing  
*Advisor: Prof. Klavs F. Jensen*
- 09/2010 – 08/2014 **Graduate Research Assistant**  
Chemistry and Mechanical & Industrial Engineering Departments, University of Toronto  
*Advisors: Prof. Eugenia Kumacheva and Prof. Axel Guenther*
- 09/2008 – 08/2010 **Graduate Research Assistant**  
Mechanical Engineering Department, University of British Columbia

## Awards and Achievements

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- 2024
  - AIChE Catalysis and Reaction Engineering (CRE) Early Career Investigator Award
  - White House Roundtable on Semiconductor Materials Acceleration, Invited Panelist
- 2023
  - Elected to the Board of Directors, Flow Chemistry Society
  - Scialog Fellow, Automated Chemical Laboratories
  - ALCOA Foundation Research Achievement Award
  - Nanoscale Journal Emerging Investigator
  - Invited Panelist, NSF Workshop on AI-Enabled Scientific Revolution
  - ALCOA Scholar
- 2022
  - AIChE NSEF Young Investigator Award
  - Reaction Chemistry & Engineering Outstanding Reviewer
- 2021
  - Dreyfus Foundation Award for Machine Learning in Chemical Sciences & Engineering
  - The John C. Chen Young Professional Leadership Scholarship from AIChE
  - Chancellor's Innovation Fund
  - I&EC Research 2021 Class of Influential Researchers (*American Chemical Society*)
  - Goodnight Early Career Innovator Award
  - University Faculty Scholar
- 2020
  - AIChE 35 under 35
  - Reaction Chemistry & Engineering Outstanding Reviewer
- 2019
  - National Science Foundation (NSF) CAREER Award
  - Journal of Flow Chemistry Emerging Investigator
- 2018
  - Reaction Chemistry & Engineering Emerging Investigator
  - AIChE *Futures* Scholar
  - Selected as the Editor's Choice of the inaugural *Futures issue* of the AIChE Journal
  - American Chemical Society Petroleum Research Fund (ACS PRF), Doctoral New Investigator Award
- 2017
  - Lab on a Chip Emerging Investigator
- 2015
  - Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship
- 2014
  - Canadian Society for Mechanical Engineering (CSME) Best Graduate Student Paper
- 2013
  - CBMS Travel Grant, MicroTAS 2013
  - Bert Wasmund Graduate Fellowship in Sustainable Energy Research, University of Toronto
  - School of Graduate Studies Travel Grant, University of Toronto
- 2012
  - Russell A. Reynolds Graduate Fellowship in Thermodynamics, University of Toronto
  - CMC Microsystems Microfabrication MNT Financial Grant
- 2011
  - CMC Microsystems Best Poster Award, 6<sup>th</sup> Ontario-On-a-Chip, Toronto
- 2010
  - Bert Wasmund Graduate Fellowship in Sustainable Energy Research, University of Toronto

## Selected Funding

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- 2016-2024    Raised **\$17M** external R&D funding from federal funding agencies as well as Global and Fortune 500 Companies.

- **29 Funded Research Projects (Aug 2016 – Present):** Served as a lead PI on **23** and a co-PI on **6** projects
- 5 Selected Funded Projects as the lead PI:
  - **UNC-ROI, 2023-2026:** AMBI: Accelerated Molecular and Biological Innovation Enabled by Integrated Engineering & Sciences
  - **Samsung Electronics, 2020-2025:** Accelerated Synthesis of Inorganic Nanomaterials in Flow
  - **UNC-ROI, 2020-2023:** Nanocrystal Factory: Advanced Manufacturing of Quantum Dot Inks for Next-Generation Solution-Processed Photonic Devices
  - **NSF-CBET #1940959, 2020-2025:** CAREER: Intelligent Synthesis of Colloidal Nanocrystals Enabled by Microreaction Engineering in Flow
  - **Eastman Chemical Company, 2022-2026:** Autonomous Catalysis

## Teaching Experience

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### NC State University

- 2020**      *Microscale Flow Chemistry: From Process Intensification Principles to Continuous Manufacturing* (CHE 596-038)
- 2016-2023**      *Chemical Process Principles* (CHE 205)
- 2018**      *Transport Processes I* (CHE 311)
- 2019**      *Transport Processes II* (CHE 312)

### Massachusetts Institute of Technology

- 2015**      *Kaufman Teaching Certificate Program* (KTCP)

## Supervisory and Mentoring Experience

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(Award)

### Current Group Members

- **Postdocs:** Jeffrey A. Bennett, Richard Canty, Arup Ghorai
- **Graduate Students:** Pragyana Jha (PhD), Junbin Li (PhD), Xinyi Chen (PhD), Hamed Morshedien (PhD), Fernando Delgado Licona (PhD), Jinge Xu (PhD), Sina Sadeghi (PhD), Negin Orouji (PhD), Nikolai Mukhin (PhD), Hicham Moran (PhD), Surya Susarla (MS), Abdulrahman Alsaiani (MS)
- **Undergraduate Students:** Christine Stark, Hannah Dickerson, Koray Latif, Andrew Cahn, Zachary Dubisky

### Alumni

- **Postdocs:** Cheng Zhu (*2018 Postdoc Professional Development Award*), Keshav Raghuvanshi, MarjanAlsadat Kashfipour, Mahdi Ramezani, Malek Y. S. Ibrahim, Robert W. Epps, Muzammil Khan, Tiago Fernandes Lins
- **Graduate Students:** Robert W. Epps (PhD, *2020 MicroTAS Best Presentation Award, 2020 Schoenborn Graduate Research Symposium Best Oral Presentation Award, 2019 GSA Travel Award*), Jeffrey A. Bennett (PhD), Suyong Han (PhD, *2021 ACS I&EC Division Graduate Student Award Symposium*), Kameel Antami (PhD), Zachary S. Campbell (PhD, *2019 Fulbright Scholarship, 2020 Vivian T. Stannett Graduate Award for Outstanding Early Publication*), Amanda A. Volk (PhD), Matthew Parker (MS), Bradley A. Davis (PhD, *2022 Schoenborn Graduate Research Symposium Second Best Oral Presentation Award*), Fazel Batani (PhD, *2021 Schoenborn Graduate Research Symposium 2<sup>nd</sup> Best Poster Presentation Award, 2020 Vivian T. Stannett Graduate Award for Outstanding Early Publication*), Rami Awad (MS)
- **Undergraduate Students:** Michael Bowen (*2019 Astronaut Scholarship, 2019 NCSU Undergraduate Research Symposium Presentation Award*), Steven Crouse, Jacob Lustik (*2019 AIChE Presentation Award*), Corwin Kerr (*2019 Outstanding Capstone Award, 2018 AIChE Presentation Award*), Jacob Faulkner, Sultan Al-Ismaili, Julia Tan (*2018 NAE Grand Challenges Scholarship*), Albaraa Kamal, Kobi Felton (*2018 Marshall Scholarship*), Andrew Kristof (*2018 NSF Graduate Fellowship*), Bryce Gaither, Daniel Devane, Tyler Williams, Rokas Dargis, Ethan Basinger, Owen York
- **Visiting Students:** Vishal Vasudevan, Yiqing Xu, Chen Shi
- **High School Students:** Ethan Ng, Tashroom Ahsan, Sophia Zhu, Lior Politi

## Service and Outreach

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- **NC State University**
  - Director of Graduate Programs (2023-present)
  - Director of Graduate Admissions and Recruiting (2021-2023)
  - Member of the Graduate Program Committee (2021-present)
  - Co-Chair of Faculty Search Committee (2022-2023)
  - Co-Chair of the Annual Schoenborn Graduate Research Symposium (2019-2022)
  - Member of the Integrative Sciences Initiative Faculty Research Advisory Committee (2023-present)
- **External**
- **Committee Member**, National Academies of Sciences, Engineering, and Medicine Chemical Sciences Roundtable (2024-2027)
- **Invited Panelist**, MGI-NSF Workshop on Accelerating Materials Solutions to Meet National and Global Challenges (2024)
- **Workshop Chair**,
  - Future Labs Workshop (Jan 2024)
    - Co-Sponsored by NSF TIP Directorate and Eastman Chemical Company at NC State University
- **Workshop Scientific Organizing Committee Member**,
  - Cloud and Self-Driving Labs Workshop at Carnegie Mellon University (Oct 2023)
- **Symposium Co-Chair**,
  - 2023 Materials Research Society (MRS) Fall Meeting
    - DSO1–Accelerating Materials Research with AI-Assisted Experimentation
- **Session Chair**,
  - The Annual Meetings of the Materials Research Society (MRS)
    - Materials Computing and Data Science (2021)
  - The Annual Meetings of the American Institute of Chemical Engineers (AIChE)
    - Reaction Chemistry and Engineering (2017-present)
    - Microreaction Engineering (2017-present)
- **NSF Panelist**: CBET, CMMI, SBIR, CAREER, SSMC, CCI (2017-present)
- Member of the **RAPID Institute** Road-Mapping Team, (Summer 2017)
- Member of the **RAPID Institute Technical Advisory Board Sub-Committee** (Module Manufacturing), 2018-present
- **External Proposal Reviewer**: NSERC Collaborative Research and Development Grant (Canada, 2017), NSERC CIF (Canada, 2022), NSERC Discovery Grant (Canada, 2022), NSERC Mitacs and Elevate Program (Canada, 2018-2020), French National research Agency (2018), Alberta Innovates (2019), ARO (2020), European Research Council (2020-2022), Dutch Research Council (2021), CASIS (2021), Novo Nordisk Foundation (Denmark, 2023), Singapore National Research Foundation (2022-2024), Simons Foundation (2023)
- **Chair**, External review committee of the Energy Materials and Surface Sciences Unit, OIST (2022)
- **Guest Editor**: Journal of Flow Chemistry (2020), European Journal of Organic Chemistry (2022), Chemistry-Methods (2022), MRS Bulletin (2022)
- **Reviewer for**: *Nature*, *Nature Materials*, *Nature Chemistry*, *Nature Synthesis*, *Nature Communications*, *Nature Chemical Engineering*, *Science*, *Science Advances*, *Science Robotics*, *Advanced Materials*, *Advanced Energy Materials*, *Advanced Functional Materials*, *Advanced Materials Technologies*, *Advanced Science*, *Small*, *Matter*, *Trends in Chemistry*, *Angewandte Chemie International Edition*, *Chemical Reviews*, *ACS Catalysis*, *ACS Nano*, *ACS Sustainable Chemistry & Engineering*, *Analytical Chemistry*, *Langmuir*, *Organic Process Research & Development*, *Industrial & Engineering Chemistry Research*, *Chemical Science*, *Green Chemistry*, *Lab on a Chip*, *Nanoscale*, *Reaction Chemistry & Engineering*, *Chemical Engineering Journal*, *Chemical Engineering Science*, *Nano Research*, and 25 other Journals.
- **Senior Member** of American Institute of Chemical Engineers (**AIChE**), American Chemical Society (**ACS**), Materials Research Society (**MRS**), American Society for Engineering Education (**ASEE**)

## Patents and Patent Applications

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- 2022**
11. **M. Abolhasani**, R. W. Epps, T. Kim, H. Yang, S A. Jun "Apparatus and Method for Accelerated Multi-Stage Synthesis of Quantum Dots", US Patent App. 17853857, North Carolina State University and Samsung Electronics.
  10. N. M. West, M. E. Janka, A. J. M. Miller, E. J. Alexanian, **M. Abolhasani**, A. M. Veatch, J. A. Bennett, M. Y. S. Ibrahim, and D. Cunningham "Catalytic Carboxycarbonylation of Alkenes to Form Anhydrides", US Prov. Patent App. 63355407, North Carolina State University and UNC Chapel Hill.
  9. M. Y. S. Ibrahim and **M. Abolhasani**, "Low Temperature Hydrogen Production and Storage in Liquid Carrier", US Prov. Patent App. 63323214, North Carolina State University.
  8. **M. Abolhasani**, K. C. Felton, R. W. Epps, "Devices and Methods of Use Thereof", US Patent No. US 11,499,948 B2, North Carolina State University.
- 2021**
7. M. Y. S. Ibrahim and **M. Abolhasani**, "Intensified Hydroaminomethylation in Flow", US Prov. Patent App. 63256132, North Carolina State University.
  6. M. Y. S. Ibrahim and **M. Abolhasani**, "On-Demand Tuning of Aldehyde Branching with a Cyclic Fluorophosphite Ligand", US Prov. Patent App. 63219213, North Carolina State University.
  5. **M. Abolhasani** and M. Ramezani, "Modular Flow Reactors for Accelerated Synthesis of Indium Phosphide Quantum Dots", US Patent App. 17932447, North Carolina State University.
  4. **M. Abolhasani**, K. Raghuvanshi, C. Zhu, M. Ramezani, S. Menegatti, and E. E. Santiso, "Aldehyde Generation via Alkene Hydroformylation", US Patent App. PCT/US2021/023224, North Carolina State University.
- 2020**
3. T. Theis, **M. Abolhasani**, P. TomHon, S. Lehmkuhl, and S. Han, "Parahydrogen Hyperpolarization Membrane Reactor", US Prov. Patent App. 63006129, North Carolina State University.
  2. **M. Abolhasani** and R. W. Epps, "Reduced Pathlength Flowcell for Inline Sample Characterization in Modular Fluoropolymer Tubing Microfluidics", US Patent App. PCT/US2020/057045, North Carolina State University.
- 2019**
1. **M. Abolhasani**, C. W. Coley, and K. F. Jensen, "Multi-Phase Oscillatory Flow Reactor", US Patent No. US10252239B2, Massachusetts Institute of Technology.

## Invited Talks

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- 2024**
82. "Human-AI-Machine Collaboration to Accelerate Materials Research with Autonomous Labs", **2024 MRS Fall Meeting**, Dec 2024, Boston, MA.
  81. "Accelerated Materials Discovery, Optimization, and Manufacturing with Autonomous Robotic Experimentation in Flow", **2024 MRS Fall Meeting**, Dec 2024, Boston, MA.
  80. "Research Acceleration in Nanoscience with Autonomous Experimentation", **ENGE 2024**, Nov 2024, Jeju, Korea.
  79. "Accelerated Materials and Molecular Discovery with Autonomous Flow Reactors", **The International Conferences on Microreaction Technology (IMRET 17)**, Oct 2024, Graz, Austria.
  78. "Autonomous Labs: Human-AI-Robot Collaboration to Accelerate Chemical & Materials Sciences", **AI for Multidisciplinary Exploration and Discovery (AIMED) Workshop**, Oct 2024, Chicago, IL.
  77. "The Future Labs: Harnessing The Power of AI and Robotics in Chemistry with Self-Driving Labs", **UCLA**, Sep 2024, California, CA.
  76. "Research Acceleration in Nanoscience with Autonomous Experimentation", **2024 ACS Fall Meeting**, Aug 2024, Denver, CO.

75. "Data-Rich Autonomous Fluidic Labs for Accelerated Materials Discovery", **2024 Accelerate Conference**, Aug 2024, Vancouver, Canada.
74. "Self-Driving Catalysis Lab: Research Acceleration in Homogeneous Catalysis with Autonomous Flow Reactors", **45<sup>th</sup> International Conference on Coordination Chemistry**, July 2024, Fort Collins, CO.
73. "Accelerated Materials Discovery with Self-Driving Fluidic Labs", **MARSS 2024**, July 2024, Delft, Netherlands.
72. "Autonomous Labs: Human-AI-Robot Collaboration to Accelerate Chemical & Materials Sciences", **ARPA-E Accelerating Catalyst Development Workshop**, June 2024, Washington DC.
71. "Research Acceleration in Materials Science with Self-Driving Labs", **CIMTEC 2024**, June 2024, Montecatini Terme, Italy.
70. "Accelerated Materials and Molecular Discovery with Self-Driving Fluidic Labs", **PASC24**, June 2024, Zurich, Switzerland.
69. "The Rise of Self-Driving Labs in Chemical and Materials Sciences", **ETH Zurich**, June 2024, Zurich, Switzerland.
68. "Accelerated Materials and Molecular Discovery with Self-Driving Labs", **Materials Square**, May 2024, virtual event.
67. "Research Acceleration in Materials Science with Self-Driving Labs", **Nature Communications and MRS Communications Workshop on Artificial Intelligence and Materials Science**, May 2024, virtual event.
66. "Accelerated Discovery and On-Demand Nanomanufacturing of Colloidal Quantum Dots", **2024 MRS Spring Meeting**, April 2024, Seattle, WA.
65. "Accelerated Materials Discovery with an End-to-End Self-Driving Fluidic Lab", **MMLI Symposium**, March 2024, Chicago, IL.
64. "Self-Driving Catalysis Lab: Research Acceleration in Homogeneous Catalysis with Autonomous Flow Reactors", **2024 ACS Spring Meeting**, March 2024, New Orleans, LA.
63. "Research Acceleration in Materials Science with Self-Driving Labs", **The Materials for Sustainable Development Conference (MATSUS24)**, March 2024, Barcelona, Spain.
62. "Accelerated Nanomaterials Discovery with an Autonomous Fluidic Lab", **Pittcon 2024**, Feb 2024, San Diego, CA.
61. "Accelerated Materials Discovery Enabled by an End-to-End Autonomous Fluidic Lab", **Electronic Materials and Applications (EMA 2024)**, Feb 2024, Denver, CO.
60. "Self-Driving Labs: Accelerated Materials and Molecular Discovery with Autonomous Experimentation in Flow", **Pfizer**, Feb 2024, virtual visit.
59. "Accelerated Materials Discovery with an Autonomous Fluidic Lab", **Argonne National Laboratory**, Jan 2024, Chicago, IL.
- 2023 58. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", **Oakridge National Lab**, Nov 2023, virtual talk.
57. "Self-Driving Fluidic Labs: Autonomous Experimentation in Flow to Accelerate Materials and Molecular Discovery", **2023 AIChE Fall Meeting**, Nov 2023, Orlando, FL.
56. "Self-Driving Catalysis Lab: Research Acceleration in Homogeneous Catalysis enabled by Autonomous Flow Reactors", **2023 AIChE Fall Meeting**, Nov 2023, Orlando, FL.
55. "Accelerated Materials Discovery Enabled by an End-to-End Autonomous Fluidic Lab", **2023 AIChE Fall Meeting**, Nov 2023, Orlando, FL.
54. "Accelerated Materials Discovery and Optimization Enabled by an Autonomous Fluidic Lab", **2023 ACS Fall Meeting**, Aug 2023, San Francisco, CA.
53. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", **FORNT Center in Green Chemistry and Catalysis**, April 2023, Montreal, Canada.
52. "Self-Driving Catalysis Lab: Research Acceleration in Homogeneous Catalysis", **2023 ACS Spring Meeting**, March 2023, Indianapolis, IN.

51. "Role of AI in Experimental Physical Sciences", **National Science Foundation**, March 2023, Alexandria, VA.
50. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", **Virginia Commonwealth University**, Feb 2023, Richmond, VA.
49. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", **Lawrence Berkley National Lab, Molecular Foundry Seminar Series**, Feb 2022, Virtual Visit.
48. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", Department of Chemical Engineering and Applied Chemistry, **University of Toronto**, Jan 2023, Toronto, Canada.
47. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", Department of Chemical and Materials Engineering, **New Jersey Institute of Technology**, Jan 2023, Newark, NJ.
- 2022 46. "Research Acceleration in Nanoscience by Self-Driving Fluidic Labs", NSEF Young Investigator Award Plenary, **2022 AIChE Fall Meeting**, Nov 2022, Phoenix, AZ.
45. "Self-Driving Fluidic Micro-Processors for Accelerated Discovery and Manufacturing of Energy Materials", Next-Gen Manufacturing Topical Conference, **2022 AIChE Fall Meeting**, Nov 2022, Phoenix, AZ.
44. "Self-Driving Fluidic Labs: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", Department of Chemical and Biomolecular Engineering, **Rice University**, Sep 2022, Houston, Tx.
43. "Rise of Self-Driving Fluidic Labs", **Acceleration Conference**, Aug 2022, Toronto, Canada.
42. "Self-Driving Fluidic Micro-Processors", **Samsung Forum**, July 2022, Virtual Visit.
41. "Artificial Chemist: Accelerated Discovery of Inorganic Materials", **Samsung Advanced Institute of Technology**, June 2022, Virtual Visit.
40. "Machine Learning-Guided Materials Discovery Enabled by Robo-Fluidic Microprocessors", **Machine Learning in Material Development: Innovations, Start-Ups, Applications**, June 2022, Virtual Event.
39. "Autonomous Flow Chemistry", **Advanced Manufacturing & Processing Conference**, June 2022, Bethesda, MD.
38. "Self-Driving Fluidic Micro-Processors", **LG Display America**, March 2022, Virtual Visit.
37. "AI-Guided Microreaction Engineering in Flow", **Flow Chemistry Summit 2022**, March 2022, Boston, MA.
36. "Autonomous Flow Chemistry", **Enabling Technologies for Organic Chemistry Symposium**, Feb 2022, Digital Event.
35. "Flow Chemistry: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", Department of Chemical and Biomolecular Engineering, **University of Houston**, Feb 2022, Houston, Tx.
- 2021 34. "Flow Chemistry: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing", School of Chemical and Biomolecular Engineering, **Georgia Institute of Technology**, Dec 2021, Atlanta, GA.
33. "Role of Flow Chemistry in Sustainable Manufacturing of Specialty Chemicals", **Innovative Flow Chemistry Summit**, Dec 2021, Munich, Germany.
32. "Machine Learning-Guided Materials Discovery Enabled by Robo-Fluidic Microprocessors", **2021 MRS Fall Meeting**, Dec 2021, Boston, MA.
31. "Accelerated Development of Quantum Dots by Autonomous Robotic Experimentation in Flow", **Flow Chemistry Summit 2021**, Sep 2021, Boston, MA.
30. "Modern Colloidal Nanoscience: Convergence of AI, Robotics, and Colloidal Synthesis", **MLMR2021 Workshop on Advanced Machine Learning Techniques for Materials Discovery**, July 2021, Digital Event.
29. "Flow Chemistry Meets Machine Learning: Autonomous Flow Reactors for Accelerated Development of Specialty Chemicals", **2<sup>nd</sup> Commercializing Flow Chemistry Summit**, Aug 2021, Digital Event.
28. "Accelerated Development of Energy-Relevant Nanomaterials in Flow: Convergence of Microfluidics, Colloidal Synthesis, and Machine Learning", **TCI Webinar Series**, May 2021 (virtual talk).

27. "Accelerated Development of Energy-Relevant Nanomaterials in Flow: Convergence of Microfluidics, Colloidal Synthesis, and Machine Learning", *Microfluidics & Energy Symposium*, April 2021 (virtual talk).
26. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, AI, and Chemical Synthesis", *French Chemical Society Section in Paris*, March 2021 (virtual visit).
- 2020 25. "Artificial Chemist: Autonomous Quantum Dot Synthesis Bot", *Nanosys*, Dec 2020 (virtual visit).
24. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, AI, and Chemical Synthesis", *BASF*, Dec 2020 (virtual visit).
23. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, AI, and Chemical Synthesis", Department of Chemistry, *Fordham University*, Nov 2020 (virtual visit).
22. "Artificial Chemist: Accelerated Materials Development in Flow", *Merck (Medicinal Chemistry)*, Aug 2020 (virtual visit).
21. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, Colloidal Nanoscience, and Machine Learning", *2020 MRS Fall Meeting*, Nov 2020 (virtual talk).
20. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, Colloidal Nanoscience, and Machine Learning", *EMD Serono*, June 2020 (virtual visit).
19. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, Colloidal Nanoscience, and Machine Learning", Department of Chemical Engineering, *Eindhoven University of Technology*, April 2020 (virtual visit).
18. "Accelerated Materials Development in Flow: Convergence of Flow Chemistry, Colloidal Nanoscience, and Machine Learning", School of Chemical and Biomolecular Engineering, *Georgia Institute of Technology*, April 2020 (virtual visit).
- 2019 17. "Autonomous (Nano)Material Synthesis: Convergence of Flow Chemistry, Machine Learning, and Colloidal Synthesis", *Annual Samsung Tech Fair*, Nov 2019, Seoul, Korea.
16. "Intensified Flow Chemistry Strategies for Accelerated Materials Synthesis, Screening, and Optimization", *Manufacturing of Materials in Flow*, Sep 2019, University of Cambridge, UK.
15. "Intelligent Quantum Dot Manufacturing", Samsung Future Tech Forum, *Samsung Advanced Institute of Technology*, Aug 2019, Seoul, Korea.
14. "Microscale Flow Chemistry: A Discovery, Screening, and Optimization Toolbox for Colloidal Nanomaterials, Pharmaceuticals, and Green Chemistry", Supercritical Fluids Group, *Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB)*, July 2019, Bordeaux, France.
- 2018 13. "Microfluidic Synthesis of Elastomeric Microparticles: A Case Study in Catalysis of Palladium-Mediated Cross-Coupling", *AIChE Journal Futures: New Directions in Chemical Engineering Research*, *2018 AIChE Fall Meeting*, Oct 2018, Pittsburgh, PA.
12. "Microscale Flow Chemistry: A Discovery, Screening, and Optimization Toolbox for Pharmaceuticals, Green Chemistry, and Colloidal Nanomaterials", Department of Chemical & Life Science Engineering, *NC A&T State University*, Feb 2018, Greensboro, NC.
- 2017 11. "Microscale Flow Chemistry: A Discovery, Screening, and Optimization Toolbox for Pharmaceuticals, Green Chemistry, and Colloidal Nanomaterials", Department of Chemical & Life Science Engineering, *Virginia Commonwealth University*, Nov 2017, Richmond, VA.
- 2016 10. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Mechanical Engineering, *University of Alberta*, March 2016, Edmonton, Canada.
9. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Mechanical and Aerospace Engineering, *The State University of New York at Buffalo*, Feb 2016, Buffalo, NY.
8. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Chemical and Biological Engineering, *The State University of New York at Buffalo*, Feb 2016, Buffalo, NY.

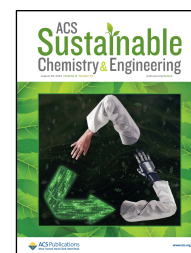


7. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Chemical and Biomolecular Engineering, **University of Maryland**, Feb 2016, College Park, MD.
6. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Chemical and Biomolecular Engineering, **North Carolina State University**, Feb 2016, Raleigh, NC.
5. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Mechanical Engineering, **York University**, Feb 2016, Toronto, Canada.
4. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", Department of Chemical Engineering, **University of Waterloo**, Jan 2016, Waterloo, Canada.
- 2015 3. "Microscale Multi-Phase Flow Technologies for Sustainability, Pharmaceutical Chemistry, and Nanomaterial Synthesis", School of Engineering, **The University of British Columbia**, Oct 2015, Kelowna, British Columbia, Canada.
- 2013 2. "Cruise Control of Microscale Bubble and Droplet Flows Provides Predictive Control over Mass Transfer Behavior and Chemical Reactions", Dynamics of Complex Fluids Seminar Series, **Max Planck Institute**, Oct 2013, Gottingen, Germany.
1. "Cruise Control of Microscale Bubble and Droplet Flows", Thermo-Fluids & Interfaces Seminar Series, **Technical University of Darmstadt**, Oct 2013, Darmstadt, Germany.

## Publications

*Graduate Student Authors*; *Undergraduate Student Authors*

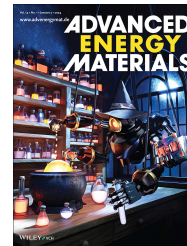
- 2024 94. R. B. Canty and **M. Abolhasani**, "Reproducibility in Automated Chemistry Laboratories using Computer Science Abstractions", **Nature Synthesis**, 2024, DOI: 10.1038/s44160-024-00649-8.
93. J. A. Bennett, N. Orouji, M. Khan, S. Sadeghi, J. A. Rodgers, and **M. Abolhasani**, "Autonomous Reaction Pareto-Front Mapping with a Self-driving Catalysis Laboratory", **Nature Chemical Engineering**, 2024, 1, 240-250.
92. J. A. Bennett and **M. Abolhasani**, "Machine-Learning Optimization of 3D-Printed Flow-Reactor Geometry", **Nature Chemical Engineering**, 2024, 1, 501-503.
91. A. A. Volk and **M. Abolhasani**, "Performance Metrics to Unleash the Power of Self-Driving Labs in Chemistry and Materials Science", **Nature Communications**, 2024, 15, 1378.
90. J. A. Bennett and **M. Abolhasani**, "Robotic Synthesis Decoded Through Phase Diagram Mastery", **Nature Synthesis**, 2024, 3, 565-567.
89. S. Sadeghi, R. B. Canty, N. Mukhin, J. Xu, F. Delgado-Licona, and **M. Abolhasani**, "Engineering a Sustainable Future: Harnessing Automation, Robotics, and AI with Self-Driving Labs", **ACS Sustainable Chemistry & Engineering**, 2024, 12(4), 12695-12707.
88. K. Darabi, M. Chauhan, B. Guo, J. Wang, D. Seyitliyev, F. Bateni, T. Wang, M. Ghasemi, L. Taussig, N. Woodward, **M. Abolhasani**, K. Gundogdu, and A. Amassian, "Cationic Ligation Guides Quantum Well Formation in Layered Hybrid Perovskites", **Matter**, 2024, DOI: 10.1016/j.matt.2024.09.010.
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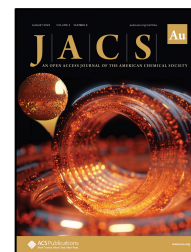
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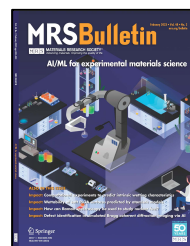


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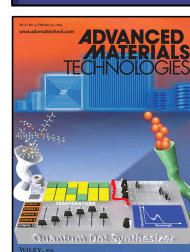
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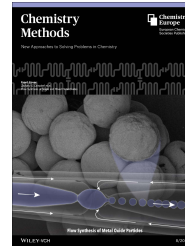
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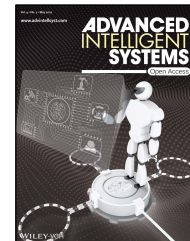


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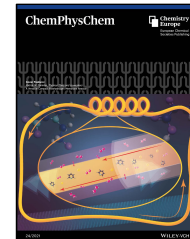
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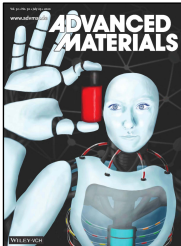
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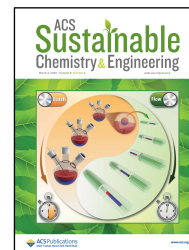


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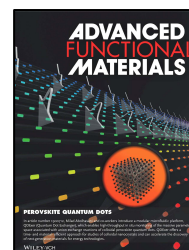
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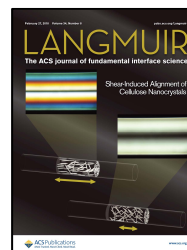
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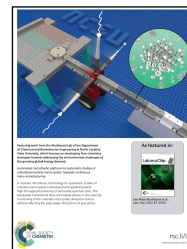
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15. L. Yang, Y. Shi, **M. Abolhasani** and K. F. Jensen "Characterization and Modeling of Multiphase Flow in Structured Microreactors: A Post Microreactor Case Study", *Lab on a Chip*, 2015, 15 (15), 3232–3241.
14. **M. Abolhasani**, E. Kumacheva, and A. Guenther, "Peclet Number Dependence of Mass Transfer in Microscale Segmented Gas-Liquid Flow", *Industrial & Engineering Chemistry Research*, 2015, 54 (36), 9046–9051.
13. V. Rajendra, H. Therien-Aubin, **M. Abolhasani**, M. Villalobos, and E. Kumacheva, "An Exploratory Microfluidic Approach to Photopolymerized Polymer-Inorganic Nanocomposite Films", *Macromolecular Materials and Engineering*, 2015, 300 (11), 1071–1078.
- 2014** 12. **M. Abolhasani**, A. Guenther, and E. Kumacheva, "Microfluidic Studies of Carbon Dioxide", *Angewandte Chemie International Edition*, 2014, 53(31), 7992–8002.
11. **M. Abolhasani\***, G. Lestari\*, D. Bennett, P. Chase, A. Guenther, and E. Kumacheva, "Switchable Water (SW): Microfluidic Investigation of CO<sub>2</sub>-Mediated Liquid-Liquid Phase Separation", *Journal of the American Chemical Society*, 2014, 136 (34), 11972–11979. \* Authors contributed equally; Featured in *Phys.org* and *WaterOnline*.
10. M. Chau, **M. Abolhasani**, H. Thérien-Aubin, Y. Li, Y. Wang, D. Velasco, E. Tumarkin, A. Ramachandran, and E. Kumacheva, "Microfluidic Generation of Composite Biopolymer Microgels with Tunable Compositions and Mechanical Properties", *BioMacromolecules*, 2014, 15 (7), 2419–2425.
9. **M. Abolhasani**, A. Oskooei, A. Klinkova, E. Kumacheva, and A. Guenther, "Shaken and Stirred: Oscillatory Segmented Flow for Controlled Size-Evolution of Colloidal Nanomaterials", *Lab on a Chip*, 2014, 14 (13), 2309–2318.
8. **M. Abolhasani\***, D. Voicu\*, R. Choueiri, G. Lestari, C. Seiler, G. Menard, J. Greener, A. Guenther, D. W. Stephan, and E. Kumacheva, "Microfluidic Studies of CO<sub>2</sub> Sequestration by Frustrated Lewis Pairs", *Journal of the American Chemical Society*, 2014, 136 (10), 3875–3880. \* Authors contributed equally
7. J. Cheng, **M. Abolhasani**, L. Beltran, Y. M. Buys, and G. E. Trope, "Evaluation of Priming the Ahmed Glaucoma Valve: Pressure Required and Effect of Over-Priming", *Journal of Glaucoma*, 2014, 24 (4), e34–e35.
- 2013** 6. Y. Wang, E. Tumarkin, D. Velasco, **M. Abolhasani**, W. Lau, and E. Kumacheva, "Exploring a Direct Injection Method for Microfluidic Generation of Polymer Microgels", *Lab on a Chip*, 2013, 13 (13), 2547–2553.

5. A. Oskooei, **M. Abolhasani**, and A. Guenther, "Bubble Gate for in-Plane Flow Control" *Lab on a Chip*, 2013, 13 (13), 2519-2527.

**Highlight:** Selected for the back cover of the issue.



- 2012 4. **M. Abolhasani**, M. Singh, E. Kumacheva, and A. Guenther, "Cruise Control for Segmented Flow", *Lab on a Chip*, 2012, 12 (22), 4787-4795.
3. **M. Abolhasani**, M. Singh, E. Kumacheva, and A. Guenther, "Automated Microfluidic Platform for Studies of Carbon Dioxide Dissolution and Solubility in Physical Solvents", *Lab on a Chip*, 2012, 12 (9), 1611-1618.
2. J. Greener, E. Tumarkin, M. Debono, C. Kwan, **M. Abolhasani**, A. Guenther, and E. Kumacheva, "Development and Applications of a Microfluidic Reactor with Multiple Reconfigurable Probes", *Analyst*, 2012, 137 (2), 444-450.
- 2011 1. E. Tumarkin, Z. Nie, J.I. Park, **M. Abolhasani**, J. Greener, B. Sherwood-Lollar, A. Guenther, and E. Kumacheva, "Temperature-Controlled Breathing of Carbon Dioxide Bubbles", *Lab on a Chip*, 2011, 11 (20), 3545-3550.

## Selected Conference Presentations

### Oral Presentations

- 2023 79. J. A. Bennett and **M. Abolhasani**, "Autonomous Homogeneous Catalysis Enabled by a Self-Driving Flow Reactor", *Proceedings of the AIChE National Meeting (Fall 2023)*, Orlando, USA, Nov. 5-10.
78. S. Sadeghi, F. Bateni, and **M. Abolhasani**, "Autonomous Synthesis of Eco-Friendly Metal Halide Perovskite Nanocrystals", *Proceedings of the AIChE National Meeting (Fall 2023)*, Orlando, USA, Nov. 5-10.
77. H. Morshedian and **M. Abolhasani**, "Microfluidic Photodegradation Studies of Quantum Dots", *Proceedings of the AIChE National Meeting (Fall 2023)*, Orlando, USA, Nov. 5-10.
- 2022 76. A. A. Volk, R. W. Epps, K. G. Reyes, and **M. Abolhasani**, "Autonomous Colloidal Atomic Layer Deposition", *Proceedings of the 2022 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov 27-Dec 2.
75. F. Bateni, K. G. Reyes, and **M. Abolhasani**, "Self-Driving Fluidic Laboratory for Autonomous Development of Metal Halide Perovskite Nanocrystals", *Proceedings of the 2022 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov 27-Dec 2.
74. F. D. Licon, R. W. Epps, and **M. Abolhasani**, "Accelerated Synthesis of Colloidal Quantum Dots in Multi-Stage Microfluidic Reactors", *Proceedings of the 2022 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov 27-Dec 2.
73. F. Bateni, R. W. Epps, K. Abdel-Latif, R. Dargis, J. A. Bennett, K. G. Reyes, and **M. Abolhasani**, "Autonomous Synthesis of Metal Halide Perovskite Nanocrystals", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.
72. B. A. Davis, J. A. Bennett, J. Genzer, K. Efimenko, and **M. Abolhasani**, "Cyclodextrin Network-Supported Catalysis in Flow", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.
71. J. A. Bennett, M. Y. S. Ibrahim, and **M. Abolhasani**, "Flexible Homogeneous Hydroformylation: On-Demand Tuning of Aldehyde Branching with a Cyclic Fluorophosphite Ligand", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.
70. A. A. Volk, R. W. Epps, D. Yonemoto, B. Masters, F. N. Castellano, and **M. Abolhasani**, "Microfluidic Studies of Colloidal Atomic Layer Deposition", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.
69. K. Antami, F. Bateni, M. Ramezani, and **M. Abolhasani**, "High-Temperature Flow Synthesis of Lead Halide Perovskite Nanocrystals", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.

68. A. A. Volk, R. W. Epps, D. Yonemoto, F. N. Castellano, and **M. Abolhasani**, "Quaternary Phase Segmented Flow Format for Biphasic Reactions", *Proceedings of the AIChE National Meeting (Fall 2022)*, Phoenix, USA, Nov. 13-18.
- 2021 67. F. Bateni and **M. Abolhasani**, "Autonomous Microfluidic Synthesis of Metal Cation-Doped Perovskite Quantum Dots", *Proceedings of the 2021 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov 29-Dec 2.
66. B. A. Davis, J. A. Bennett, and **M. Abolhasani**, "Continuous Ligand-Free Suzuki-Miyaura Cross-Coupling Reactions in a Packed Bed Flow Reactor Using an Easily Synthesized Siloxane Network-Supported Palladium Catalyst", *Proceedings of the AIChE National Meeting (Fall 2021)*, Boston, USA, Nov. 7-11.
65. N. Sitapure, R. W. Epps, **M. Abolhasani**, and K. Kwon, "Controlling the Effect of Slug-to-Slug Variation on the Crystal Size Distribution of Perovskite QDs: A CFD-Based Approach", *Proceedings of the AIChE National Meeting (Fall 2021)*, Boston, USA, Nov. 7-11.
64. R. W. Epps and **M. Abolhasani**, "Machine Learning-Guided Quantum Dot Synthesis in Flow", *Proceedings of the ACS National Meeting (Fall 2021)*, Virtual ACS 2021.
63. S. Han and **M. Abolhasani**, "CO<sub>2</sub>-Triggered Switchable Hydrophilicity Solvents: From Accelerated Screening to Intensified Continuous Extraction", *Proceedings of the ACS National Meeting (Fall 2021)*, Virtual ACS 2021.
62. N. Sitapure, R. W. Epps, **M. Abolhasani**, and K. Kwon, "Multiscale CFD modeling and optimal control of a continuous slug flow crystallizer for quantum dot production", *Proceedings of the IEEE Control Systems Society Conference (Spring 2021)*, Virtual ACC 2021, USA, May 15-17.
61. R. W. Epps and **M. Abolhasani**, "Data-Driven Quantum Dot Synthesis Development in Flow", *Proceedings of the 2021 Materials Research Society (MRS) Annual Meeting*, USA, April 18-23, Virtual Presentation.
- 2020 60. S. Han, K. Raghuvanshi, and **M. Abolhasani**, "Flow Chemistry-Enabled Investigations of Switchable Hydrophilicity Solvents", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
59. R. W. Epps, A. A. Volk, K. Abdel-Latif, K. G. Reyes, and **M. Abolhasani**, "Machine Learning-Guided Flow Synthesis of Inorganic Metal Halide Perovskite Quantum Dots", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
58. R. W. Epps, N. Sitapure, A. A. Volk, J. S. Kwon, and **M. Abolhasani**, "Modular Fluidic Microreactor for Fully Decoupled Precursor Mixing and Reaction Times in Mechanistic Studies of Metal Halide Perovskite Quantum Dot Synthesis", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
57. N. Sitapure, R. W. Epps, **M. Abolhasani**, and J. S. Kwon, "Multiscale Modelling and Model Predictive Control of CsPbBr<sub>3</sub> Quantum Dots Production: A Step Towards on-Demand Smart-Nanomanufacturing", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
56. Z. S. Campbell, D. Jackson, J. Lustik, A. K. Al-Rashdi, J. A. Bennett, F. Li, and **M. Abolhasani**, "Microfluidic Synthesis of Titania Microparticles with Tunable Morphologies", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
55. **M. Abolhasani**, "Machine Learning-Enhanced Flow Synthesis of Quantum Dots", *Proceedings of the ACS National Meeting (Spring 2020)*, ACS 2020, Virtual Meeting.
54. **M. Abolhasani**, "Mixing-Controlled Synthesis of Metal Halide Perovskite Nanocrystals", *Proceedings of the ACS National Meeting (Spring 2020)*, ACS 2020, Virtual Meeting.
53. S. Han and **M. Abolhasani**, "Accelerated Material- and Energy-Efficient Studies of Switchable Hydrophilicity Solvents", *Proceedings of the ACS National Meeting (Spring 2020)*, ACS 2020, Virtual Meeting.
- 2019 52. R. W. Epps, M. Bowen, K. Abdel-Latif, and **M. Abolhasani**, "Convergence of Microfluidics, Colloidal Synthesis, and Machine Learning: Real-Time Optimization of Halide Exchange Reactions of Colloidal Inorganic Perovskites Quantum Dots", *Proceedings of the 2019 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Dec. 1-6.
51. **M. Abolhasani**, "Continuous Synthesis of Organic/Inorganic Microparticles Using a Low-Cost Flow-Focusing Microreactor", *Proceedings of the 2019 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Orlando, USA, Nov. 10-15.

50. **M. Abolhasani**, "Continuous on-Demand Synthesis of Perovskite Quantum Dots", *Proceedings of the 2019 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Orlando, USA, Nov. 10-15.
49. **M. Abolhasani**, "Microfluidic Studies of Colloidal Perovskite Quantum Dots", *Proceedings of the 2019 American Chemical Society (ACS) Annual Spring Meeting*, Orlando, USA, March 31-April 4.
48. **M. Abolhasani**, "Continuous Flow Synthesis and Anion Exchange of Colloidal Perovskite Quantum Dots", *Proceedings of the 2019 Materials Research Society (MRS) Annual Spring Meeting*, Phoenix, USA, April 22-26.
47. **M. Abolhasani**, "Microfluidic Synthesis of Elastomeric Microparticles: A Case Study in Catalysis of Palladium-Mediated Cross-Coupling", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
- 2018 46. C. Zhu, K. Raghuvanshi, C. W. Coley, and **M. Abolhasani**, "Single-Droplet Flow Chemistry Platform for High-Throughput Studies of Rhodium-Catalyzed Hydroformylation Reactions", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
45. Z. Campbell, M. Parker, J. Lustik, D. Jackson, S. Yusuf, F. Li, and **M. Abolhasani**, "Energy Efficient Methane Reforming Enabled by Continuous Manufacturing of Porous Titania Microparticles", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
44. J. Bennett, J. Genzer, and **M. Abolhasani**, "Monodisperse Elastomeric Microparticle Scaffolds for Heterogeneous Palladium-Mediated Catalysis", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
43. C. Zhu, K. Raghuvanshi, C. W. Coley, and **M. Abolhasani**, "Single-Droplet Flow Chemistry Platform for High-Throughput Studies of Rhodium-Catalyzed Hydroformylation Reactions", *Proceedings of the 2018 American Chemical Society (ACS) Annual Meeting*, Boston, USA, Aug. 19-22.
42. **M. Abolhasani**, "Microfluidic Studies of Room Temperature Synthesized Perovskite Nanocrystals", *Proceedings of the 2017 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Minneapolis, USA, Oct. 29- Nov. 3.
- 2017 41. **M. Abolhasani**, Y. Shen, C. W. Coley, and K. F. Jensen, "Microfluidic Studies of Bi-Phasic Ligand Exchange of Semiconductor Nanocrystals", *Proceedings of the 21st International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Savannah, USA, Oct. 22-26.  
**Highlight:** Selected as one of the 99 oral presentations out of 1061 submissions (9% Acceptance rate).
40. **M. Abolhasani**, C. W. Coley, H. Lin, and K. F. Jensen, "Automated Oscillatory Photochemical Reactor for High Throughput Studies of Visible-Light Photoredox Catalysis", *Proceedings of the 2016 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 13-18.
- 2016 39. **M. Abolhasani**, N. C. Bruno, and K. F. Jensen, "Oscillatory Flow Reactor for Studies of Bi-Phasic C-C and C-N Cross-Coupling Reactions", *Proceedings of the 2015 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Salt Lake City, USA, Nov. 8-15.
- 2015 38. **M. Abolhasani**, C. Coley, L. Xie, O. Chen, and K. F. Jensen, "Oscillatory Microprocessor for High-Throughput In-Situ Characterization of Semiconductor Nanocrystals", *Proceedings of the 2015 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Salt Lake City, USA, Nov. 8-15.
37. **M. Abolhasani**, and K. F. Jensen, "Oscillatory Motion of a Bi-Phasic Slug in a Teflon Reactor", *Bulletin of the American Physical Society: 68<sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics*, Boston, USA, Nov. 22-24.
36. L. Yang, Y. Shi, **M. Abolhasani**, and K. F. Jensen, "Modelling the Hydrodynamics and Transport in Multiphase Microreactors", *Bulletin of the American Physical Society: 68<sup>th</sup> Annual Meeting of the APS*, Boston, USA, Nov. 22-24.
35. **M. Abolhasani**, Y. Hassan, E. Kumacheva, G. D. Scholes, and A. Guenther, "Multi-Stage Microfluidic Strategy for High Temperature Nanocrystal Synthesis", *Proceedings of the Canadian Society for Mechanical Engineering (CSME) International Congress*, Toronto, Canada, June 1-4. **Highlight:** Selected as one of the top 10 papers.

- 2014 34. **M. Abolhasani**, Y. Hassan, E. Kumacheva, G. D. Scholes, and A. Guenther, "Multi-Stage Microfluidic Growth and Shelling of Quantum Dots", *Proceedings of the 2013 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 3-8.
- 2013 33. **M. Abolhasani**, E. Kumacheva, and A. Guenther, "Gas Dissolution in Microscale Segmented Gas-Liquid Flow", *Proceedings of the 2013 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 3-8.
32. **M. Abolhasani**, A. Oskooei, E. Kumacheva, and A. Guenther, "Shaken, and Stirred!", *Proceedings of the 17<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Freiburg, Germany, Oct. 27-31.
31. **M. Abolhasani**, E. Kumacheva and A. Guenther, "Dynamics of Carbon Dioxide Bubble Shrinkage in Microchannel Flow Determines Mass Transfer in Physical Solvents", *Proceedings of the 23<sup>rd</sup> International Congress of Theoretical and Applied Mechanics (ICTAM)*, Beijing, China, Aug. 19-24.
- 2012 30. J. Greener, R. Choueiri, E. Tumarkin, **M. Abolhasani**, A. Guenther, and E. Kumacheva, "Spectroscopic Studies of Gas-Liquid Reactions Using Microfluidics for the Study of CO<sub>2</sub> Conversion to High-Value Products", *Proceedings of the 12<sup>th</sup> Topical Conference on Gas Utilization; AIChE 2012 Winter Meeting*, Houston, USA, April 1-5.
29. **M. Abolhasani**, E. Kumacheva, and A. Guenther, "Model-Predictive Strategy for Exploration of Carbon Dioxide Dissolution and Mass Transfer", *Proceedings of the 15<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Seattle, USA, Oct. 2-6.  
**Highlight:** Selected as one of the 92 oral presentations out of 1352 submissions (7% Acceptance rate).
- 2011 28. **M. Abolhasani**, E. Kumacheva, and A. Guenther, "Bubble Shrinkage and Growth: An Investigation of Carbon Dioxide Dissolution and Solubility", *Bulletin of the American Physical Society: 64<sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics*, Baltimore, USA, Nov. 20-22.
27. **M. Abolhasani**, K. D. Devlin, H. Najjaran, M. Hoorfar, and J. F. Holzman, "Nonlinear Localization for Electrowetting-Based Digital Microfluidic Actuation", *Proceedings of the 8<sup>th</sup> International Conference on Nanochannels, Microchannels and Minichannels*, Canada, Aug. 1-5.
- 2010 26. **M. Abolhasani**, K. D. Devlin, H. Najjaran, M. Hoorfar, and J. F. Holzman, "Multiplexed Localization in Bi-Layer Digital Microfluidic Systems", *Proceedings of Tech Connect World Conference & Expo.*, Anaheim, USA, June 21-24.
25. **M. Abolhasani**, K. D. Devlin, H. Najjaran, M. Hoorfar, and J. F. Holzman, "Enhanced Addressability in Digital Microfluidic Multiplexer Systems by Threshold-Based Voltage Actuation and Bi-Polar Voltage Activation," *Proceedings of the Canadian Society for Mechanical Engineering (CSME) International Congress*, Victoria, Canada, June 7-9.

### Poster Presentations

- 2021 24. F. Bateni and **M. Abolhasani**, "Accelerated Microfluidic Studies of Cation-Doped Lead Halide Perovskite Quantum Dots", *Proceedings of the 25<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences, (MicroTAS)*, USA, Virtual Meeting, Oct.10-14.
23. F. Bateni and **M. Abolhasani**, "On-Demand Continuous Manufacturing of Metal Cation-Doped Perovskite Nanocrystals", *1<sup>st</sup> Microfluidics and Energy Symposium*, April 29 (virtual presentation).
22. R. W. Epps and **M. Abolhasani**, "Self-Driven Quantum Dot Synthesis Enabled by Autonomous Robotic Experimentation in Flow", *1<sup>st</sup> Microfluidics and Energy Symposium*, April 29 (virtual presentation).
- 2020 21. S. Han, M. Ramezani, and **M. Abolhasani**, "Accelerated Microfluidic Studies of Switchable Hydrophilicity Solvents", *Proceedings of the 24<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences, (MicroTAS)*, USA, Virtual Meeting, Oct.4-9.
20. R. W. Epps, A. A. Volk, K. Abdel-Latif, K. G. Reyes, and **M. Abolhasani**, "AI-Guided Microfluidic Synthesis of Colloidal Lead Halide Perovskite Quantum Dots", *Proceedings of the 24<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences, (MicroTAS)*, USA, Virtual Meeting, Oct.4-9.  
**Highlight:** Selected for the CHEMINAS - Young Researcher Poster Award.

19. S. Han, K. Raghuvanshi, and **M. Abolhasani**, "An Oscillatory Flow Reactor for High-Throughput Studies of CO<sub>2</sub>-Mediated Switchable Hydrophilicity Solvents", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
18. Z. S. Campbell, D. Jackson, J. Lustik, A. K. Al-Rashdi, J. A. Bennett, F. Li, and **M. Abolhasani**, "Intensified Flow Reactor for Continuous Synthesis of High Surface Area Titania Microparticles", *Proceedings of the 2020 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 10-15.
17. S. Han and **M. Abolhasani**, "Switchable Hydrophilicity Solvents: Single-Droplet Studies of CO<sub>2</sub>-mediated Solvent Extraction in an Intensified Flow Reactor", *Proceedings of the ACS National Meeting (Spring 2020)*, ACS 2020, Virtual Meeting.
- 2019 16. K. Abdel-Latif, R. W. Epps, and **M. Abolhasani**, "Microfluidic Studies of Anion Exchange Reactions of Inorganic Perovskite Quantum Dots", *Proceedings of the 2019 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Dec. 1-6.
- 2018 15. K. Abdel-Latif, R. W. Epps, and **M. Abolhasani**, "On-Demand Band-Gap Tuning of Colloidal Perovskite Nanocrystals Enabled by Fast Anion-Exchange Reactions", *Proceedings of the 2018 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov. 25-30.
14. R. W. Epps and **M. Abolhasani**, "Mass Transfer-Tuned Growth Pathways of Colloidal Perovskite Quantum Dots Revealed by a High-Throughput Microfluidic Strategy", *Proceedings of the 2018 Materials Research Society (MRS) Annual Meeting*, Boston, USA, Nov. 25-30.
13. K. Raghuvanshi, C. Zhu, and **M. Abolhasani**, "Rapid Studies of Rhodium-Catalyzed Hydroformylation Reactions Enabled by an Automated Single-Droplet Flow Reactor", *Proceedings of the 2018 Flow Chemistry Congress*, Miami, USA, Nov. 12-13.
12. C. Zhu, K. Raghuvanshi, C. W. Coley, and **M. Abolhasani**, "Automated Microfluidic Platform for High-Throughput Screening of Rhodium-Catalyzed Hydroformylation", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
11. M. Parker, Z. Campbell, J. Lustik, D. Jackson, S. Yusuf, F. Li, and **M. Abolhasani**, "Porous Titania Microspheres: Highly-Efficient Catalyst Scaffold for Green Syngas Production", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
10. J. Bennett, J. Genzer, and **M. Abolhasani**, "Continuous Ligand-Free Palladium-Mediated Carbon-Carbon Cross-Coupling", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2.
9. C. Kerr, R.W. Epps, and **M. Abolhasani**, "Low-Cost Optical Velocity Meter for Multi-Phase Lab-on-a-Tube Devices", *Proceedings of the 2018 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, USA, Oct. 27- Nov. 2. **Highlight:** 1<sup>st</sup> place in the poster competition.
8. C. Zhu, K. Raghuvanshi, C. W. Coley, and **M. Abolhasani**, "Flow chemistry platform for high-throughput screening of rhodium-catalyzed hydroformylation of 1-octene", *Proceedings of the 2018 American Chemical Society (ACS) Annual Meeting*, Boston, USA, Aug. 19-22.
- 2017 7. K. C. Felton, R. W. Epps. C. W. Coley, and **M. Abolhasani**, "High-Throughput Screening Platform for Cesium-Lead Perovskite Nanocrystal Synthesis", *Proceedings of the 2017 American Institute of Chemical Engineers (AIChE) Annual Meeting*, Minneapolis, USA, Oct. 29- Nov. 3. **Highlight:** 2<sup>nd</sup> place in the poster competition.
6. J. Bennett. A. Kristof, J. Genzer, J. Srogl, and **M. Abolhasani**, "Microfluidic Synthesis of Silicone Elastomer Microgels Using On-Chip Chemical Cross-Linking", *Proceedings of the 21<sup>st</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Savannah, USA, Oct. 22-26.
5. R. W. Epps. K. C. Felton, C. W. Coley, and **M. Abolhasani**, "Automated Microfluidic Platform for High-Throughput Screening of Colloidal Perovskite Nanocrystals", *Proceedings of the 21<sup>st</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Savannah, USA, Oct. 22-26.
- 2014 4. G. Lestari, **M. Abolhasani**, D. Bennett, P. Chase, A. Guenther, and E. Kumacheva, "Switchable Water (SW): Microfluidic Investigation of CO<sub>2</sub>-Mediated Liquid-Liquid Phase Separation", *Proceedings of the 18<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, San Antonio, USA, Oct. 26-30.

- 2013**
- 3.** **M. Abolhasani**, Y. Hassan, E. Kumacheva, G. D. Scholes, and A. Guenther, "Multi-Pass Nanocrystal Processor", *Proceedings of the 17<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Freiburg, Germany, Oct. 27-31.
  - 2.** **M. Abolhasani**, and A. Guenther, "Automated, Flowable Formats for Carbon Dioxide Sequestration and Tailored Manufacturing of Colloidal Nanomaterials", *Proceedings of the 2013 American Institute of Chemical Engineers (AIChE) Annual Meeting*, San Francisco, USA, Nov. 3-8.
- 2012**
- 1.** **M. Abolhasani**, E. Kumacheva and A. Guenther, "Ready Steady (Bubble) Flow! Predictive Control of Mixing, Mass Transfer and Residence Times in Segmented Flow", *Proceedings of the 16<sup>th</sup> International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Okinawa, Japan, Oct. 28 - Nov.1.