

JONATHAN MELVILLE

U.S. DEPARTMENT OF ENERGY : ADVANCED RESEARCH PROJECTS AGENCY—ENERGY
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SUMMARY

- Science policy fellow with experience with technology development & federal research project management
- Ph.D. in inorganic chemistry, specializing in innovative electrolytic routes for industrial decarbonization
- Extensive and successful volunteer history in student advocacy, leadership, and diversity & inclusion

WORK EXPERIENCE

ARPA-E Fellow, Advanced Research Projects Agency—Energy Washington, DC
Office of the Secretary of Energy, United States Department of Energy **Oct. 2022—present**
→ Developing experimental next-generation technologies for deep decarbonization.

Science, Technology, & Policy Fellow, Solar Energy Technologies Office Washington, DC
Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy **Sep. 2021—Oct. 2022**
→ Worked on concentrating solar power team managing \$239mil of federal awards across 84 projects.
→ Digested RFIs, drafted FOA language, and selected, negotiated, and managed awardee projects.
→ Formulated funding policy on technologies for solar fuels and industrial decarbonization chemistries.

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA
Ph.D. Chemistry **Aug. 2016—May 2021**
Thesis: Towards Sustainable Electrosynthesis of Industrially Valuable Small Molecules

UNIVERSITY OF CALIFORNIA, BERKELEY Berkeley, CA
B.S. Chemistry, magna cum laude **Aug. 2012—May 2016**
Thesis: Synthesis and Characterization of Metal-Organic Frameworks for Gas Storage & Separations

RESEARCH EXPERIENCE

Graduate Researcher, Massachusetts Institute of Technology Cambridge, MA
Adviser: Prof. Yogesh SURENDRANATH **Oct. 2016—Jul. 2021**
→ Optimized and explicated molten phosphate salt electrolysis for decarbonizing phosphorus synthesis.
→ Developed electrosynthetic methods for sustainable production of H₂, NH₃, CO, and CH₃OH.

Undergraduate Researcher, University of California, Berkeley Berkeley, CA
Adviser: Prof. Jeffrey R. LONG **Nov. 2014—Jun. 2016**
→ Synthesized novel photoconductive MOF for chemiresistive detection of gaseous hydrocarbons.

SELECTED ACADEMIC PUBLICATIONS

Melville, J.F.[†]; Licini, A.J.[†]; Surendranath, Y. Efficient Electrosynthesis of White Phosphorus from Molten Condensed Phosphate Salts. *Science*, **under review for invited resubmission**, 10.33774/chemrxiv-2021-zjcs8.

Aubrey, M.L.; Kapelewski, M.T.; Melville, J.F.; Oktawiec, J.; Presti, D.; Gagliardi, L.; Long, J.R. Chemiresistive detection of gaseous hydrocarbons and interrogation of charge transport in Cu[Ni(2,3-pyrazinedithiolate)₂] by gas adsorption. *J. Am. Chem. Soc.*, **2019**, *141*, 5005-5013, 10.1021/jacs.9b00654.

Jackson, M.N.; Kaminsky, C.J.; Oh, S.; Melville, J.F.; Surendranath, Y.. Graphite Conjugation Eliminates Redox Intermediates in Electrocatalysis. *J. Am. Chem. Soc.*, **2019**, *141*, 14160-14167, 10.1021/jacs.9b04981.

SELECTED ACADEMIC PRESENTATIONS

“Solar Fuels: A Roadmap to Making Everything Solar-Powered” *Solar Energy Technologies Office Ideafest*, DOE Office of Energy Efficiency and Renewable Energy, Washington, DC, March 2022 (*virtual*).

“White Phosphorus Electrosynthesis from Molten Phosphates” *Harvard-MIT Seminar in Inorganic Chemistry*, MIT Department of Chemistry, Cambridge, MA, March 2021 (*virtual*).

“Salt Electrolysis for Industrial Decarbonization” *Sustainable Phosphate Processing Symposium*, OCP Group S.A., Cambridge, MA & Ben Guerir, Morocco, June 2020 (*virtual*).

“Short-circuiting the Phosphorus Economy: Electrochemical Reduction of Metaphosphate Salts to Elemental P₄” *Bridging Scales in Electrochemical Materials and Methods Applied to Organic and Inorganic Chemistry, Catalysis, Energy and Biology*, Electrochemistry Gordon Research Conference, Ventura, CA, January 2020.

“Electrochemical Phosphorus Processing” *African Sustainable Development Workshop*, Université Mohammed VI Polytechnique—MIT Research Program, Cambridge, MA, October 2019.

“Electrocatalytic Ammonia Synthesis for Distributed Agriculture” *Annual Research Symposium*, MIT Tata Center, Cambridge, MA, April 2019.

LEADERSHIP, PEDAGOGY, & COMMUNITY ADVOCACY

Graduate Resident Advisor, MIT Division of Student Life **Aug. 2017—June 2021**

- Supported 40 undergraduates in MIT’s East Campus dorm as a mental health paraprofessional.
- Hosted events, counseled individual students, and provided community care through various hall crises.
- Appointed to student advocacy positions on Title IX oversight and mental health reform committees.

Member, Committee for Student Life, MIT Division of Student Life **Aug. 2018—June 2020**

- Advised upon and oversaw implementation of institute-wide student mindfulness initiatives.

Chair, Housing & Community Affairs, MIT Graduate Student Council **Jul. 2018—Jun. 2019**

- Implemented pilot programs to increase student housing stability and reduce dorm vacancy rates.

Teaching Assistant, MIT Department of Chemistry **Aug. 2016—Jun. 2017**

- Led recitation sections for 5.112 (advanced general chemistry) and 5.12 (organic chemistry).

VOLUNTEERISM & EXTRACURRICULAR WORK

Alumni Volunteer, Department of Energy National Science Bowl **Apr. 2010—present**

- Wrote & edited questions for regional & national science competitions for grade 6-12 students.
- Engaged students and parents, providing direct academic mentorship and promoting STEM education.

Web Developer, Freelance **Sep. 2013—present**

Portfolio available at jmelville.science/#web-dev

- Worked with clients to design accessible research websites for recruitment and science communication.
- Syncretized dynamic front-end frameworks to build unique & responsive virtual scientific profiles.

AWARDS & HONORS

STPF Finalist, American Association for the Advancement of Science *Washington, DC* 2022

Diversity, Equity, and Inclusion Fellow, MIT Office of Graduate Education *Cambridge, MA* 2020

J-WAFS Seed Grant Winner, Abdul Latif Jameel Water & Food Systems Lab *Cambridge, MA* 2019

Tata Fellow, MIT Tata Center for Technology and Design *Cambridge, MA* 2018

Senior Undergraduate Research Award, UC Berkeley College of Chemistry *Berkeley, CA* 2016

Dean’s Honor List, UC Berkeley College of Chemistry *Berkeley, CA* 2016

Eagle Scout, San Francisco Bay Area Council *Fremont, CA* 2012