

JONATHAN MELVILLE

SCIENCE, TECHNOLOGY, & POLICY FELLOW, UNITED STATES DEPARTMENT OF ENERGY
950 L'Enfant Plaza SW | jonathan.melville@ee.doe.gov | 510.371.3050 | stuff.mit.edu/~melville

SUMMARY

- Science policy fellow with technical expertise and familiarity with U.S. federal scientific funding policy
- Inorganic electrochemist by training, specializing in electrochemical routes for industrial decarbonization
- Compelling scientific communicator with publications in high-impact peer-reviewed scientific journals and presentations at prestigious international conferences
- Extensive and successful volunteer history in student advocacy, leadership, and diversity & inclusion

WORK EXPERIENCE

Science Technology Policy Fellow, Oak Ridge Institute for Science and Education *Washington, DC*
Supervisor: Dr. Abraham SHULTZ, Solar Energy Technologies Office **Sept. 2021—present**

- Worked with concentrating-solar power team managing over \$30,000,000/yr of government contracts.
- Drafted funding opportunities, selected applications, and conducted quarterly awardee reviews.
- Developed U.S. federal funding policy on emerging solar technologies for industrial decarbonization.

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, High Honors **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—present**

- Optimized and explicated high-temperature electroreduction of metaphosphates to white phosphorus.
- Discovered high-efficiency copper nitride catalyst activity for electroreduction of nitrogen to ammonia.
- Innovated industrial product separations scheme for electrochemical methane gas-to-liquid reactors.

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.
- Applied rational design principles to augment MOF CH₄ storage capacity by alkyl functionalization.
- Enhanced MOF synthetic yield, framework porosity, and crystal structure using air-free techniques.

SELECTED ACADEMIC PUBLICATIONS

Melville, J.F.[†]; Licini, A.J.[†]; Surendranath, Y. Efficient Electrosynthesis of White Phosphorus from Molten Condensed Phosphate Salts. *Under review.*

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.

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

SELECTED ACADEMIC PRESENTATIONS

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

“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**

- Oversaw supercommittee of grad student dorm governments and mediated with MIT administration.
- 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 questions and administered 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**

- 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.

Portfolio:

Schreier Group	UW Madison	engineered-interfaces.org
Pai Lab	UMass Medical School	pai-lab.org
Surendranath Group	MIT	interphases.org
Center for Gas Separations	Department of Energy	cchem.berkeley.edu/co2efrc/
Long Group	UC Berkeley	alchemy.cchem.berkeley.edu

AWARDS & HONORS

2020	Diversity, Equity, and Inclusion Fellow , MIT Office of Graduate Education	<i>Cambridge, MA</i>
2019	J-WAFS Seed Grant Winner , Abdul Latif Jameel Water and Food Systems Lab	<i>Cambridge, MA</i>
2018	Tata Fellow , MIT Tata Center for Technology and Design	<i>Cambridge, MA</i>
2016	Honorable Mention , National Science Foundation Graduate Research Fellowship	<i>Berkeley, CA</i>
2016	Senior Undergraduate Research Award , UC Berkeley College of Chemistry	<i>Berkeley, CA</i>
2016	Dean’s Honor List , UC Berkeley College of Chemistry	<i>Berkeley, CA</i>
2013	Dean’s Honor List , UC Berkeley College of Chemistry	<i>Berkeley, CA</i>
2012	Eagle Scout , San Francisco Bay Area Council	<i>Fremont, CA</i>