

Katlyn M. Turner

Contact Information

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Current Appointments

Massachusetts Institute of Technology, Cambridge, MA USA
Research Scientist, MIT Media Lab
Space Enabled Research Group
MIT School of Architecture and Planning
August 2019-Present

Massachusetts Institute of Technology, Cambridge, MA USA
Research Fellow, Research to Policy Engagement Initiative
MIT Technology and Policy Program
MIT Institute for Data, Systems, and Society
August 2019-Present

Harvard University, Cambridge, MA USA
Research Associate, Belfer Center for Science and International Affairs
Project on Managing the Atom
John F. Kennedy School of Government
July 2019-Present

Education

Stanford University, Palo Alto, CA USA
Ph.D., Geological & Environmental Sciences
September 2014-September 2017

University of Michigan, Ann Arbor, MI USA
M.S., Earth & Environmental Sciences
July 2012-September 2014

University of Notre Dame, Notre Dame, IN USA
B.S., Chemical & Biomolecular Engineering
August 2008-May 2012

Research Experience

Postdoctoral Fellow
Harvard University, John F. Kennedy School of Government
Belfer Center for Science and International Affairs
Managing the Atom Project
International Security Program
September 2017-June 2019

Visiting Postdoctoral Fellow
Harvard University, Department of Earth & Planetary Sciences
June 2018-August 2018
Research Advisor: Rebecca A. Fischer

Graduate Student Research Assistant
Stanford University, Department of Geological Sciences
September 2014-September 2017
Research Advisors: Rodney C. Ewing, Wendy L. Mao

Graduate Student Research Assistant
University of Michigan, Department of Earth & Environmental Sciences
July 2012-September 2014
Research Advisor: Rodney C. Ewing

Undergraduate Research Assistant
University of Notre Dame, Department of Civil & Environmental
Engineering & Earth Sciences
June 2010-July 2012
Research Advisor: Peter C. Burns

Awards & Honors

Research to Policy Engagement Initiative Fellow
Massachusetts Institute of Technology, Technology & Policy Program
August 2019

EFRC Ten at Ten Awards: People Award
Department of Energy, Office of Basic Energy Sciences
August 2019

Graduate Student Voice & Influence Program (gVIP) Fellow
Stanford University, Clayman Institute for Gender Research
July 2016-July 2017

Diversifying Academia, Recruiting Excellence (DARE) Fellow
Stanford University, Office of the Vice Provost for Graduate Education
September 2015-September 2017

Best Research Presentation- Graduate Student Finalist
Department of Energy, Energy Frontier Research Centers (EFRC)
October 2015

Enhancing Diversity in Graduate Education (EDGE) STEM Fellow
Stanford University, Office of the Vice Provost for Graduate Education
September 2014-September 2017

Best Graduate Student Instructor
University of Michigan, Department of Earth & Environmental Sciences
February 2014

Rackham Merit Fellow
University of Michigan, Rackham Graduate School
July 2012-September 2014

Oral Presentations

Engaging Policymakers on Issues in Science and Technology. With Dr. Poushali Maji, Dr. Maimuna Majumder, Nickolas Roth, Dr. Minoo Rathnasabapathy, and Dr. Josephine Wolff. Research to Policy Engagement Initiative, Massachusetts Institute of Technology. February 2020.

Risks of Replicating Earth's Mistakes in Space. Invited lecture. Panelist with Dr. Phil Metzger and Dr. Michael Walthemathe. Space Horizons 2020. Brown University. Providence, Rhode Island, USA. February 2020.

Policy Design and its Influence on the Interface Between Technology and Social Hierarchy. Co-presented with Dr. Poushali Maji. Research to Policy Engagement Initiative, Massachusetts Institute of Technology. December 2019.

Perspectives on a Career in Science and Engineering. Invited lecture. Instituto Superior de Tecnologias de Informação e Comunicação. Luanda, Angola. November 2019.

Technology, Design, and Policy for Equity. Co-presented with Dr. Poushali Maji. Research to Policy Engagement Initiative, Massachusetts Institute of Technology. November 2019.

Nuclear Waste Management in the Near-Long Term. Project on Managing the Atom Seminar. Belfer Center for Science and International Affairs, Harvard University. February 2019.

Nuclear Waste Management in the Near-Long Term. Invited lecture. DARE@10 Homecoming Celebration + Research Conference. Stanford University. Stanford, California, USA. November 2018.

The High Pressure Response of Uranyl Nano-cages. Invited lecture. Consortium for Materials Property Research in Earth Sciences Annual Meeting. Tamaya, New Mexico, USA. August 2018.

Emerging Nuclear Fuel Cycle Technologies and their Proliferation Risks. 30th International Summer Symposium on Science & World Affairs. University of British Columbia. Vancouver, BC, Canada. July 2018.

Nuclear Waste Management in the United States and its Effect on the Fuel Cycle, Security, and Non-Proliferation Endeavors. International Security Program Seminar. Belfer Center for Science and International Affairs, Harvard University. May 2018.

Emerging Nuclear Fuel Cycle Technologies and their Proliferation Risks. Project on Managing the Atom Seminar. Belfer Center for Science and International Affairs, Harvard University. May 2018.

What Every Reporter Should Know About Covering Nuclear Issues.

Invited lecture. Co-presented with Dr. Matthew Bunn, Dr. Alex Wellerstein, & David Sanger. Covering Nuclear Issues: A Workshop for Journalists. Nieman Foundation, Harvard University. March 2018.

<https://vimeo.com/259782584>; <https://vimeo.com/259873096>

The Nuclear Fuel Cycle: Everything Technical You'd Ever Want to Know or Were Afraid to Ask. Project on Managing the Atom Seminar. Belfer Center for Science and International Affairs, Harvard University. February 2018.

Breakthrough or Obstruction? The Potential Promise & Plight of Emerging Technologies in the Nuclear Fuel Cycle. **Invited lecture.**

Union of Concerned Scientists Security and Arms Control Webinars. November 2017. https://www.youtube.com/watch?v=4TN2X1_a6_E.

The High-Pressure Structural Response of Lanthanide Hafnate ($Ln_2Hf_2O_7$; $Ln=Sm, Eu, Gd, Dy, Y, Yb$) and Stannate ($Ln_2Sn_2O_7$; $Ln=Nd, Gd, Er$) Pyrochlore. Goldschmidt 2017 Fall Meeting. August 2017. Paris, France.

Exploring the Structural Behavior of Uranyl Nano-cages at High Pressure. Energy Frontier Research Center, Materials Science of Actinides All Hands Meeting. November 2016. Notre Dame, IN, USA.

Waste Streams and Environmental Impacts of Nuclear Energy. **Invited lecture.** Santa Clara University. April 2016. Santa Clara, CA, USA.

The High Pressure Structural Evolution of a Uranyl Peroxide Nano-cage Fullerene: U60. **Invited lecture.** Energy Frontier Research Centers Mid Review. January 2016. Gaithersburg, MD, USA.

The High Pressure Structural Evolution of a Uranyl Peroxide Nano-cage Fullerene: U60. Materials Research Society, Fall 2015 Meeting. December 2015. Boston, MA, USA.

The High Pressure Structural Evolution of a Uranyl Peroxide Nano-cage Fullerene: U60. Energy Frontier Research Center, Materials Science of Actinides All Hands Meeting. November 2015. Notre Dame, IN, USA.

The High Pressure Structural Evolution of a Uranyl Peroxide Nano-cage Fullerene: U60. Department of Energy, Energy Frontier Research Center Symposium. October 2015. Washington, DC, USA.

The High Pressure Structural Evolution of a Uranyl Peroxide Nano-cage Fullerene: U60. Geological Society of America. Fall Meeting. Baltimore, MD, USA.

Teaching Experience

Instructor, *Human's Dependence on Earth's Mineral Resources Interdisciplinary Teaching About Earth for a Sustainable Future (InTeGrate) Program*
Evergreen Valley College, Winter 2017
Program Mentor: Jagruti Vedamati

Teaching Assistant, *Isotope Geochemistry*
Stanford University, Fall 2016
Course Instructor: Kate Maher

Teaching Assistant, *The Legacy of Fukushima Daiichi.*
Stanford University, Spring 2016
Course Instructor: Rodney C. Ewing

Teaching Assistant, *The Environmental Impacts of Energy Producing Systems: What are the Risks?*
Stanford University, Winter 2016
Course Instructor: Rodney C. Ewing

Graduate Student Instructor, *Environmental Geology*
University of Michigan, Winter/Spring 2014
Course Instructor: Rose M. Cory

Graduate Student Instructor, *Mineralogy and Optical Mineralogy*
University of Michigan, Fall 2013
Course Instructor: Jackie Li

Teaching Assistant: *The Environmental Impacts of Energy Producing Systems: What are the Risks?*
University of Michigan, Fall 2012
Course Instructor: Rodney C. Ewing

Teaching Assistant: *Introduction to Engineering Systems*
University of Notre Dame, Fall 2009, Spring 2010, Fall 2010
Course Instructors: Kerry L. Meyers, Leo McWilliams

Mentoring & Service

Undergraduate Research Mentor, Space Enabled Research Group
Massachusetts Institute of Technology, Media Arts and Sciences
January 2020-Present

Mentor, Ernest Houston Johnson Scholars (EHJS) Program
Stanford University, Student Affairs, Black Community Services Center
December 2015-April 2017

Mentor, Mao Laboratory
Stanford University, Department of Geological Sciences
January 2016-July 2016

Graduate Student Representative, Mantle Processes Search Committee
Stanford University, Department of Geological Sciences
January 2016-June 2016

Mentor, Enhancing Diversity in Graduate Education (EDGE) STEM
Fellowship
Stanford University, Office of the Vice Provost for Graduate Education
September 2015-September 2017

Geological Sciences Representative, Graduate Student Advisory
Committee
Stanford University, School of Earth, Energy & Environmental Sciences
June 2015-June 2016

Op-Eds & Editorials

Sahar Nowrouzzadeh & Katlyn Turner. “How to ensure Iran never resumes reprocessing.” *Bulletin of the Atomic Scientists*. December 13, 2017. <https://thebulletin.org/how-ensure-iran-never-resumes-reprocessing11349?platform=hootsuite>.

Publications

Katlyn Turner. “New ways to detect nuclear misbehavior.” *Bulletin of the Atomic Scientists*. (2018) **74**, 1, 2-6.

Katlyn Turner, Cameron Tracy, Wendy Mao, & Rodney Ewing. “Lanthanide stannate pyrochlores ($\text{Ln}_2\text{Sn}_2\text{O}_7$; Ln = Nd, Gd, Er) at high pressure.” *Journal of Physics, Condensed Matter*. (2017) **29**, 50, 504005.

Katlyn Turner, Jennifer Szymanowski, Fuxiang Zhang, Yu Lin, Brendan McGrail, Wendy Mao, Peter Burns, & Rodney Ewing. “Uranium fullerenes at extreme pressures.” *Journal of Materials Research*. (2017) 1-10.

Katlyn Turner, Dylan Rittman, Rachel Heymach, Madison Turner, Cameron Tracy, Wendy Mao, & Rodney Ewing. “Pressure-induced structural modifications of rare-earth hafnate pyrochlore” *Journal of Physics, Condensed Matter*. (2017) **29**, 25, 255401.

Dylan Rittman, Katlyn Turner, Antonio Fuentes, Changyong Park, Wendy Mao, & Rodney Ewing. “Strain engineered pyrochlore at high pressure.” *Scientific Reports*. (2017) **7**, 1, 2236.

Dylan Rittman, Katlyn Turner, Sulgiye Park, Antonio Fuentes, Jinyuan Yan, Rodney Ewing, & Wendy Mao. “High-pressure behavior of $A_2B_2O_7$ pyrochlore (A=Eu, Dy; B=Ti, Zr).” *Journal of Applied Physics*. (2017) **121**, 4, 045902.

Katlyn Turner, Sarah Hickam, Jennifer Szymanowski, Kristi Pellegrini, Wendy L. Mao, Peter C. Burns, & Rodney C. Ewing. “The high pressure structural response of uranyl peroxide nanocage $U_{24}Py_{12}$.” **IN PREP.**