

CAMERON LEE TRACY

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POSITIONS

University of California, Berkeley , Goldman School of Public Policy Senior Research Scholar	2025 - current
Stanford University , Center for International Security and Cooperation (CISAC) Research Scholar	2021 - 2025
Union of Concerned Scientists , Global Security Program Global Security Fellow	2019 - 2021
Harvard University , Belfer Center for Science and International Affairs Nuclear Security Postdoctoral Fellow	2018 - 2019
Stanford University , Department of Geological Sciences Postdoctoral Research Fellow	2015 - 2018
Stanford University , Center for International Security and Cooperation (CISAC) Nuclear Security Postdoctoral Fellow	2015 - 2017
Los Alamos National Laboratory , Materials Science and Technology Division Research Assistant	2009 - 2010

EDUCATION

University of Michigan , Ann Arbor, Michigan PhD, Materials Science and Engineering	2015
University of Michigan , Ann Arbor, Michigan MS, Materials Science and Engineering	2013
University of California, Davis , California BS, Materials Science and Engineering	2011

SCHOLARLY PUBLICATIONS (SECURITY, TECHNOLOGY, & POLICY)

- C.L. Tracy**, “Technological surprise and normalization through use: The tactical and discursive effects of new precision strike weapons in the Russo-Ukrainian War,” *Texas National Security Review* 9, 2 (2026)
- C.L. Tracy**, “Sociotechnical risks posed by the geologic disposal of weapons plutonium,” *Bulletin of the Atomic Scientists* 81, 1 (2025)
- C.L. Tracy**, “Weapons design, engineering ethics, and the duty to inform: A case study on US hypersonic missile development,” *IEEE Technology & Society* 43, 4 (2024)
- D. Wright, **C.L. Tracy**, “Hypersonic cruise missiles,” *Science & Global Security* 32, 1-3 (2024)
- D. Wright, **C.L. Tracy**, “Hypersonic weapons: Vulnerability to missile defenses and comparison to MaRVs,” *Science & Global Security* 31, 3 (2023)
- S. Park, **C.L. Tracy**, R.C. Ewing, “Reimagining US rare earth production: Domestic failures and the decline of US rare earth production dominance — lessons learned and recommendations,” *Resources Policy* 85, A (2023)
- C.L. Tracy**, D. Wright, “‘Computational fluid dynamics analysis of the infrared emission from a generic hypersonic glide vehicle’—A response,” *Science & Global Security* 31, 1-2 (2023)

- C.L. Tracy**, R.C. Ewing, “Mining for the bomb: The vulnerability of buried plutonium to clandestine recovery,” *Science & Global Security* 30, 3 (2022)
- C.L. Tracy**, “Disposal, destruction, and disarmament: Comparative analysis of US chemical weapon and weapons plutonium stockpile reductions,” *Central European Journal of International and Security Studies* 17, 1 (2022)
- C.L. Tracy**, S. Park, M. Plevaka, E. Bogdanova, D. Popovich, “Opportunities for US-Russian collaboration on the safe disposal of nuclear waste,” *Bulletin of the Atomic Scientists* 77, 3 (2021)
- C.L. Tracy**, D. Wright, “Modeling the performance of hypersonic boost-glide missiles,” *Science & Global Security* 28, 3 (2020)
- S. Park, A. Puccioni, **C.L. Tracy**, E. Serbin, R.C. Ewing, “Geologic analysis of the Democratic People’s Republic of Korea’s uranium resources and mines,” *Science & Global Security* 28, 2 (2020)
- N. Ulibarri, **C.L. Tracy**, R.J. McCarty, “Cleanup and complexity: Nuclear and industrial contamination at the Santa Susana Field Laboratory, California,” *Environmental Management* 65, 2 (2020)
- C.L. Tracy**, M.K. Dustin, R.C. Ewing, “Reassess New Mexico’s nuclear-waste repository,” *Nature* 529, 7585 (2016)

SCHOLARLY PUBLICATIONS (PHYSICS, CHEMISTRY, & ENGINEERING)

- S. Zhao, H. Xiao, Y. Li, Z. Zhang, Y. Wang, Q. Huang, L. Cao, F. Gao, **C.L. Tracy**, R.C. Ewing, C. Wang, “Multi-stage phase transformation pathways in MAX phases,” *Nature Communications* 16, 1554 (2025)
- E.C. O’Quinn, A.P. Solomon, C. Corbridge, C. Overstreet, **C.L. Tracy**, A.F. Fuentes, D.J. Sprouster, M.K. Lang, “Response of lanthanide sesquioxides to high-energy ball milling,” *Advanced Engineering Materials* 27, 6 (2024)
- E.C. O’Quinn, **C.L. Tracy**, W.F. Cureton, R. Sachan, J.C. Neuefeind, C. Trautmann, M.K. Lang, “Multi-scale investigation of heterogeneous swift heavy ion tracks in stannate pyrochlore,” *Journal of Materials Chemistry A* 9, 31 (2021)
- A.P. Solomon, **C.L. Tracy**, E.C. O’Quinn, D. Severin, M.K. Lang, “Transformations to amorphous and X-type phases in swift heavy ion-irradiated Ln_2O_3 and Mn_2O_3 ,” *Journal of Applied Physics* 129, 22 (2021)
- W.F. Cureton, **C.L. Tracy**, M. Lang, “Review of swift heavy ion irradiation effects in CeO_2 ,” *Quantum Beam Science* 5, 2 (2021)
- C. Wang, **C.L. Tracy**, R.C. Ewing, “Radiation effects in $\text{M}_{n+1}\text{AX}_n$ phases,” *Applied Physics Reviews* 7, 4 (2020)
- C. Wang, T. Yang, **C.L. Tracy**, C. Lu, H. Zhang, Y.J. Hu, L. Wang, L. Qi, L. Gu, Q. Huang, J. Zhang, J. Wang, J. Xue, R.C. Ewing, Y. Wang, “Disorder in $\text{M}_{n+1}\text{AX}_n$ phases at the atomic scale,” *Nature Communications* 10, 622 (2019)
- C. Wang, **C.L. Tracy**, S. Park, J. Liu, F. Ke, F. Zhang, T. Yang, S. Xia, C. Li, Y. Wang, Y. Zhang, W.L. Mao, R.C. Ewing, “Phase transformations of Al-bearing high-entropy alloys $\text{Al}_x\text{CoCrFeNi}$ ($x = 0, 0.1, 0.3, 0.75, 1.5$) at high pressure,” *Applied Physics Letters* 114, 9 (2019)
- W.F. Cureton, R.I. Palomares, **C.L. Tracy**, E.C. O’Quinn, J. Walters, M. Zdorovets, R.C. Ewing, M. Toulemonde, M. Lang, “Effects of irradiation temperature on the response of CeO_2 , ThO_2 , and UO_2 to highly ionizing radiation,” *Journal of Nuclear Materials* 525 (2019)
- C.L. Tracy**, C. Chen, S. Park, M.L. Davisson, R.C. Ewing, “Measurement of UO_2 surface oxidation using grazing-incidence x-ray diffraction: Implications for nuclear forensics,” *Journal of Nuclear Materials* 502 (2018)

- C. Chen, **C.L. Tracy**, C. Wang, M. Lang, R.C. Ewing, "Initial stages of ion beam-induced phase transformations in Gd_2O_3 and Lu_2O_3 ," *Applied Physics Letters* 112, 7 (2018)
- W.F. Cureton, R.I. Palomares, J. Walters, **C.L. Tracy**, C. Chen, R.C. Ewing, G. Baldinozzi, J. Lian, C. Trautmann, M. Lang, "Grain size effects on irradiated CeO_2 , ThO_2 , and UO_2 ," *Acta Materialia* 160 (2018)
- S. Park, D.R. Rittman, **C.L. Tracy**, K.W. Chapman, F. Zhang, C. Park, S.N. Tkachev, E. O'Quinn, J. Shamblin, M. Lang, W.L. Mao, R.C. Ewing, " A_2TiO_5 ($\text{A} = \text{Dy}, \text{Gd}, \text{Er}, \text{Yb}$) at high pressure," *Inorganic Chemistry* 57, 4 (2018)
- S. Park, **C.L. Tracy**, F. Zhang, C. Park, C. Trautmann, S.N. Tkachev, M. Lang, W.L. Mao, R.C. Ewing, "Radiation-induced disorder in compressed lanthanide zirconates," *Physical Chemistry Chemical Physics* 20, 9 (2018)
- D.R. Rittman, **C.L. Tracy**, C. Chen, J.M. Solomon, M. Asta, M.L. Mao, S.M. Yalisove, R.C. Ewing, "Phase transformation pathways of ultrafast-laser-irradiated Ln_2O_3 ($\text{Ln} = \text{Er-Lu}$)," *Physical Review B* 97, 024104 (2018)
- S. Park, **C.L. Tracy**, F. Zhang, R.I. Palomares, C. Park, C. Trautmann, M. Lang, W.L. Mao, R.C. Ewing, "Swift-heavy ion irradiation response and annealing behavior of A_2TiO_5 ($\text{A} = \text{Nd}, \text{Gd}$, and Yb)," *Journal of Solid State Chemistry* 258 (2018)
- C.L. Tracy**, M. Lang, F. Zhang, S. Park, R.I. Palomares, R.C. Ewing, "Review of recent experimental results on the behavior of actinide-bearing oxides and related materials in extreme environments," *Progress in Nuclear Energy* 104 (2018)
- J.S. Shamblin, **C.L. Tracy**, R.I. Palomares, E.C. O'Quinn, R.C. Ewing, J. Neufeind, M. Feygenson, J. Behrens, C. Trautmann, M. Lang, "Similar local order in disordered fluorite and aperiodic pyrochlore structures," *Acta Materialia* 144 (2018)
- C. Wang, T. Yang, **C.L. Tracy**, J. Xiao, S. Liu, Y. Fang, Z. Yan, W. Ge, J. Xue, J. Zhang, J. Wang, Q. Huang, R.C. Ewing, Y. Wang, "Role of the X and n factors in ion-irradiation induced phase transformations of $\text{M}_{n+1}\text{AX}_n$ phases," *Acta Materialia* 144 (2018)
- C.L. Tracy**, S. Park, D.R. Rittman, S.J. Zinkle, H. Bei, M. Lang, R.C. Ewing, W.L. Mao, "High pressure synthesis of a hexagonal close-packed phase of the high-entropy alloy CrMnFeCoNi ," *Nature Communications* 8, 15634 (2017)
- K.M. Turner, **C.L. Tracy**, W.L. Mao, R.C. Ewing, "Lanthanide stannate pyrochlores ($\text{Ln}_2\text{Sn}_2\text{O}_7$; $\text{Ln} = \text{Nd}, \text{Gd}, \text{Er}$) at high pressure," *Journal of Physics: Condensed Matter* 29, 504005 (2017)
- R.I. Palomares, J. Shamblin, **C.L. Tracy**, J. Neufeind, R.C. Ewing, C. Trautmann, M. Lang, "Defect accumulation in swift heavy ion-irradiated CeO_2 and ThO_2 ," *Journal of Materials Chemistry A* 5, 24 (2017)
- K.M. Turner, D.R. Rittman, R.A. Heymach, **C.L. Tracy**, M.L. Turner, A.F. Fuentes, W.L. Mao, R.C. Ewing, "Pressure-induced structural modifications of rare-earth hafnate pyrochlore," *Journal of Physics: Condensed Matter* 29, 255401 (2017)
- R.I. Palomares, **C.L. Tracy**, J. Neufeind, R.C. Ewing, C. Trautmann, M. Lang, "Thermal defect annealing of swift heavy ion irradiated ThO_2 ," *Nuclear Instruments and Methods in Physics Research B* 405 (2017)
- D.R. Rittman, S. Park, **C.L. Tracy**, L. Zhang, R.I. Palomares, M. Lang, A. Navrotsky, W.L. Mao, R.C. Ewing, "Structure and bulk modulus of Ln-doped UO_2 ($\text{Ln} = \text{La}, \text{Nd}$) at high pressure," *Journal of Nuclear Materials* 490 (2017)
- F.X. Zhang, **C.L. Tracy**, J. Shamblin, R.I. Palomares, M. Lang, S. Park, C. Park, S. Tkachev, R.C. Ewing, "Pressure-induced phase transitions of β -type pyrochlore CsTaWO_6 ," *RSC Advances* 6, 97 (2016)
- C.L. Tracy**, J. Shamblin, S. Park, F. Zhang, C. Trautmann, M. Lang, R.C. Ewing, "Role of composition, bond covalency, and short-range order in the disordering of stannate pyrochlores by swift heavy ion

irradiation,” *Physical Review B* 94, 064102 (2016)

J. Shamblin, **C.L. Tracy**, R.C. Ewing, F. Zhang, W. Li, C. Trautmann, M. Lang, “Structural response of titanate pyrochlores to swift heavy ion irradiation,” *Acta Materialia* 117 (2016)

J. Shamblin, M. Feyngenson, J. Neuefeind, **C.L. Tracy**, F. Zhang, S. Finkeldei, D. Bosbach, H. Zhou, R.C. Ewing, M. Lang, “Probing disorder in isometric pyrochlore and related complex oxides,” *Nature Materials* 15 (2016)

C.L. Tracy, M. Lang, D. Severin, M. Bender, C. Trautmann, R.C. Ewing, “Anisotropic expansion and amorphization of Ga_2O_3 irradiated with 946 MeV Au ions,” *Nuclear Instruments and Methods in Physics Research B* 374 (2016)

F.X. Zhang, **C.L. Tracy**, M. Lang, R.C. Ewing, “Stability of fluorite-type $\text{La}_2\text{Ce}_2\text{O}_7$ under extreme conditions,” *Journal of Alloys and Compounds* 674 (2016)

C.L. Tracy, M. Lang, F. Zhang, C. Trautmann, R.C. Ewing, “Phase transformations in Ln_2O_3 materials irradiated with swift heavy ions,” *Physical Review B* 92, 174101 (2015)

M.K. Lang, **C.L. Tracy**, R.I. Palomares, F.X. Zhang, D. Severin, M. Bender, C. Trautmann, C. Park, V. Prakapenka, V.A. Skuratov, R.C. Ewing, “Characterization of ion-induced radiation effects in nuclear materials using synchrotron x-ray techniques,” *Journal of Materials Research* 30, 9 (2015)

D.R. Rittman, **C.L. Tracy**, A.B. Cusick, M.J. Abere, B. Torralva, R.C. Ewing, S.M. Yalisove, “Ultrafast laser and swift heavy ion irradiation: Response of Gd_2O_3 and ZrO_2 to intense electronic excitation,” *Applied Physics Letters* 106, 17 (2015)

S. Park, M. Lang, **C.L. Tracy**, J. Zhang, F. Zhang, C. Trautmann, M.D. Rodriguez, P. Kluth, R.C. Ewing, “Response of $\text{Gd}_2\text{Ti}_2\text{O}_7$ and $\text{La}_2\text{Ti}_2\text{O}_7$ to swift-heavy ion irradiation and annealing,” *Acta Materialia* 93 (2015)

R.I. Palomares, **C.L. Tracy**, F. Zhang, C. Park, D. Popov, C. Trautmann, R.C. Ewing, M. Lang, “In situ defect annealing of swift heavy ion irradiated CeO_2 and ThO_2 using synchrotron X-ray diffraction and a hydrothermal diamond anvil cell,” *Journal of Applied Crystallography* 48 (2015)

C.L. Tracy, M. Lang, J.M. Pray, F. Zhang, D. Popov, C. Park, C. Trautmann, M. Bender, D. Severin, V.A. Skuratov, R.C. Ewing, “Redox response of actinide materials to highly-ionizing radiation,” *Nature Communications* 6, 6133 (2015)

S. Park, M. Lang, **C.L. Tracy**, F. Zhang, C. Trautmann, Z. Wang, R.C. Ewing, “Synchrotron x-ray diffraction analysis of gadolinium and lanthanum titanate oxides irradiated by xenon and tantalum swift heavy ions,” *MRS Proceedings* 1743 (2015)

M. Lang, M. Toulemonde, J. Zhang, F. Zhang, **C.L. Tracy**, J. Lian, Z. Wang, W.J. Weber, D. Severin, M. Bender, C. Trautmann, R.C. Ewing, “Swift heavy ion track formation in $\text{Gd}_2\text{Zr}_{2-x}\text{Ti}_x\text{O}_7$ pyrochlore: Effect of electronic energy loss,” *Nuclear Instruments and Methods in Physics Research B* 336 (2014)

F.X. Zhang, M. Lang, **C.L. Tracy**, R.C. Ewing, D.J. Gregg, G.R. Lumpkin, “Incorporation of uranium in pyrochlore oxides and pressure-induced phase transitions,” *Journal of Solid State Chemistry* 219 (2014)

C.L. Tracy, J.M. Pray, M. Lang, D. Popov, C. Park, C. Trautmann, R.C. Ewing, “Defect accumulation in ThO_2 irradiated with swift heavy ions,” *Nuclear Instruments and Methods in Physics Research B* 326 (2014)

S. Park, M. Lang, **C.L. Tracy**, J. Zhang, F. Zhang, C. Trautmann, P. Kluth, M.D. Rodriguez, R.C. Ewing, “Swift heavy ion irradiation-induced amorphization of $\text{La}_2\text{Ti}_2\text{O}_7$,” *Nuclear Instruments and Methods in Physics Research B* 326 (2014)

M. Lang, F. Zhang, J. Zhang, **C.L. Tracy**, A.B. Cusick, J. VonEhr, Z. Chen, C. Trautmann, R.C. Ewing, “Swift heavy ion-induced phase transformation in Gd_2O_3 ,” *Nuclear Instruments and Methods in Physics*

C.L. Tracy, M. Lang, J. Zhang, F. Zhang, Z. Wang, R.C. Ewing, “Structural response of A_2TiO_5 ($A = La, Nd, Sm, Gd$) to swift heavy ion irradiation,” *Acta Materialia* 60 (2012)

OP-EDS AND COMMENTARY

D. Wright, **C.L. Tracy**, “Hypersonic weapons are mediocre. It’s time to stop wasting money on them,” *Bulletin of the Atomic Scientists*, 12 March 2024

D. Wright, **C.L. Tracy**, “Drag race: Hypersonic threats are slow enough for US missile defenses,” *Defense News*, 8 December 2023

D. Wright, **C.L. Tracy**, “Over-hyped: The physics and hype of hypersonic weapons,” *Scientific American* (translated to Spanish in *Investigación y Ciencia*), August 2021

D. Wright, **C.L. Tracy**, “Why hypersonic weapons cannot live up to their hype,” *The Hill*, 2 March 2021

C.L. Tracy, D. Wright, “Don’t believe the hype about hypersonic missiles,” *IEEE Spectrum*, 5 February 2021

M. Polleri, **C.L. Tracy**, E. Likhacheva, E. Stepnykh, “Improving the communication of risks before, during, and after a nuclear accident,” *Bulletin of the Atomic Scientists*, 31 August 2020

V. Kostikov, A. Kudriavtseva, **C.L. Tracy**, “The future of global nuclear power” *Bulletin of the Atomic Scientists*, 20 June 2019

INVITED PRESENTATIONS

Los Alamos National Laboratory, Futures & Foresight Discussion Series, July 2026
“The plasticity of prediction: Expert forecasting of the US-China AI race”

Institute for Peace Research and Security Policy (IFSH), University of Hamburg, Dec. 2025
“New sensors and seekers for the Golden Dome missile defense system”

University of Bridgeport, School of Engineering Colloquium Series, Nov. 2025
“Hypersonic hype: The performance and security implications of hypersonic glide missiles”

University of California, Berkeley, Goldman School of Public Policy, Nov. 2025
“The integration of artificial intelligence in strategic early warning systems”

UK Student/Young Pugwash, Oct. 2025
“Golden Dome and hypersonic missile defense”

International Studies Association Annual Meeting, Chicago, USA, Mar. 2025
“Emerging technologies and security studies: A research agenda to counter hype”

Shield Capital, NatSec Tech Talk Series, Feb. 2025
“Hypersonic hype: The performance and security implications of hypersonic glide missiles”

George Mason University, Schar School of Public Policy, Jan. 2025
“Controversy at the technology/security interface: From hypersonic missiles to nuclear waste repositories”

Plutonium Futures—The Science 2024, Charleston, USA, Sep. 2024
“The sociotechnical challenges of the geologic disposition of weapons plutonium”

Institute for Peace Research and Security Policy (IFSH), University of Hamburg, Aug. 2024
“Hypersonic hype? Technical analysis of hypersonic missile capabilities”

Xiamen University, School of Management, May 2024
“US-China technology competition and cooperation”

IEEE International Symposium on Ethics in Engineering, Science, and Technology, West Lafayette, USA, May 2023
“The ethics of weapons technology development”

Technical University of Darmstadt, Department of Physics, May 2023
“Controversy at the science/security interface: From hypersonic missiles to geologic repositories”

Institute for International and Strategic Studies, Missile Dialogue Initiative, Apr. 2023
“A taxonomy of missile technologies”

Naval Postgraduate School, Meyer Scholar Seminar, Aug. 2022
“Missile hype: Modelling the performance of hypersonic boost-glide weapons”

Global Governance Institution, Beijing, May 2022
“A hypersonic revolution? Implications of hypersonic missile use in the Russo-Ukrainian War”

Center for Strategic and International Studies (CSIS), Project on Nuclear Issues, Apr. 2022
“Emerging technologies: Hypersonic weapons”

German Physical Society (DPG) Spring Meeting, Erlangen, Germany, Mar. 2022
“Missile hype: Modelling the performance of hypersonic boost-glide weapons”

Sandia National Laboratory, Bay Area Strategic Engagement Seminar, Feb. 2022
“Missile hype: Modelling the performance of hypersonic boost-glide weapons”

University of Hawai’i, Mānoa, Department of Physics and Astronomy, Apr. 2021
“Hype and the hypersonic arms race: Modelling the performance of hypersonic boost-glide missiles”

Stanford University, Center for International Security and Cooperation, Apr. 2021
“Controversy at the technology/policy interface: From hypersonic weapons to geologic repositories”

University of Cincinnati, Science Policy Ambassadors Series, Mar. 2021
“Working as a scientist at the science/policy interface”

Aerospace Corporation, Center for Space Policy and Strategy, Feb. 2021
“The hypersonic missile debate”

University of Massachusetts, Amherst, Department of Physics, Feb. 2021
“Missile hype and the hypersonic arms race: Modelling the performance of hypersonic boost-glide missiles”

Cato Institute, Restraint and Emergent Technology Series, Feb. 2021
“Missile hype and the hypersonic arms race: Modelling the performance of hypersonic boost-glide missiles”

Carnegie Mellon University, Department of Engineering and Public Policy, Nov. 2020
“Missile hype and the hypersonic arms race: Computational modelling of hypersonic missile performance”

Princeton University, Program on Science & Global Security, Sep. 2020
“Modelling the performance of hypersonic boost-glide missiles”

Pugwash Conferences on Science and World Affairs, Workshop on Hypersonic Weapons, Geneva, Switzerland, Dec. 2019
“Hypersonic weapons: Defining the technology and technical challenges”

Middlebury Institute of International Studies, Center for Nonproliferation Studies, July 2019
“Dropping the bomb: The challenges of US chemical and nuclear weapon stockpile reductions”

Massachusetts Institute of Technology, Lab. for Nuclear Security and Policy, Jan. 2019
“Atomic structure as a signature for nuclear forensics and archaeology”

Plutonium Futures—The Science 2018, San Diego, USA, Sep. 2018
“Effects of irradiation-induced electronic excitation on simple and complex oxides”

29th Internat. Summer Symposium on Science and World Affairs, Darmstadt, Germany, July 2017
“Feasibility of the clandestine recovery of weapons plutonium from a geological repository”

19th International Conference on Radiation Effects in Insulators, Versailles, France, July 2017
“Synthesis of metastable oxide phases by dense electronic excitation”

University of California, Berkeley, Department of Nuclear Engineering, Apr. 2017
“Phase stability of complex materials in extreme environments”

23rd International Conference on the Applications of Accelerators in Research and Industry, San Antonio, USA, May 2014
“Effects of composition on the response of oxides to highly ionizing radiation”

CONTRIBUTED CONFERENCE PRESENTATIONS

International Studies Association Annual Meeting, San Francisco, USA, April 2024
“Issue salience, casualty aversion, and US public opinion on nuclear weapons governance”

21st International Conference on Radiation Effects in Insulators, Fukuoka, Japan, September 2023
“Formation of X-type phases in binary and ternary oxides irradiated with swift heavy ions”

Materials Research Society Spring Meeting, Phoenix, USA, April 2018
“Measurement of UO₂ surface oxidation using grazing-incidence x-ray diffraction: Implications for nuclear forensics”

Materials Research Society Spring Meeting, Phoenix, USA, April 2018
“Role of composition, bond covalency, and short-range order in the disordering of stannate pyrochlores by swift heavy ion irradiation”

Materials Research Society Spring Meeting, Phoenix, USA, April 2017
“High pressure phase stability of transition metal high-entropy alloys”

20th International Conference on Ion Beam Modification of Materials, Wellington, New Zealand, November 2016
“Synthesis of metastable lanthanide sesquioxide phases by irradiation with swift heavy ions”

Geological Society of America Annual Meeting, Baltimore, USA, November 2015
“Redox response of actinide oxides and oxyhydroxides to highly ionizing radiation”

9th International Symposium on Swift Heavy Ions in Matter, Darmstadt, Germany, May 2015
“Systematic study of the phase behavior of *f*-block oxides irradiated with swift heavy ions”

European Materials Research Society Spring Meeting, Lille, France, May 2015
“Response of lanthanide and actinide oxides to swift heavy ion irradiation”

Plutonium Futures—The Science 2014, Las Vegas, USA, September 2014
“Structural transformations in actinide oxides under extreme conditions”

Materials Research Society Spring Meeting, San Francisco, USA, April 2014
“Redox response of actinide materials to highly ionizing radiation”

Fuel Cycle Technologies Annual Review Meeting, DOE Office of Nuclear Energy, Argonne, USA, November 2013
“Structural and chemical response of actinide materials to highly ionizing radiation”

17th International Conference on Radiation Effects in Insulators, Helsinki, Finland, July 2013
“Swift heavy ion irradiation of ceria and thoria”

8th International Symposium on Swift Heavy Ions in Matter, Kyoto, Japan, October 2012
“Compositional effects on track formation in A₂TiO₅ (A = La, Nd, Sm, Gd) irradiated with swift heavy ions”

POLICY BRIEFINGS

Netherlands Ministry of Defence: Arms Procurement and Personnel, Berkeley, USA, Apr 2025
“Hypersonic missiles: Performance, implications, and limitations”

Consulate-general of the Netherlands in San Francisco, United States, Berkeley, USA, Mar 2025
“Hypersonic missiles: Performance, implications, and limitations”

UK Foreign, Commonwealth & Development Office, London, UK, Mar 2025
“Towards a quantitative treatment of emerging technologies, risk, and governance”

Pacific Center for Island Security, Hagåtña, Guam, Aug 2023
“Missile defense in Guam”

Council for Security Cooperation in the Asia-Pacific, Nuclear Energy Experts Group, Stanford, USA, September 2022
“Safeguarding spent nuclear fuel”

UK Ministry of Defense: Development, Concepts and Doctrine Centre, Chief of the Defence Staff Strategy Forum, Cambridge, UK, Feb 2022
“Hypersonics – Implications for UK Defence?”

US Congressional Military Legislative Assistant Workshop, Washington, DC, USA, October 2020
“The hype on hypersonic weapons”

United Nations First Committee: 74th session, UN Office of Disarmament Affairs, New York, USA, October 2019
“Hypersonic weapons: A challenge and opportunity for strategic arms control”

The National Academies of Sciences, Engineering, and Medicine: Committee on Disposal of Surplus Plutonium in the Waste Isolation Pilot Plant, Washington, DC, USA, April 2019
“Feasibility and risks of human intrusion in the Waste Isolation Pilot Plant”

TEACHING

Technology, Risk, and Security Colloquium Fall, Spring 2025-26
University of California, Berkeley, Goldman School of Public Policy: PUBPOL 118

Blueprint to Battlefield: Weapons Technology and Sociotechnical Change Fall 2022-24
Stanford University, Master’s in International Policy Program: INTLPOL 296

Honors Program in International Security Studies Fall, Winter, Spring 2021-25
Stanford University, Institute for International Studies: IIS 198 and 199

Materials Laboratory II Winter 2014
University of Michigan, Department of Materials Science & Engineering: MSE 365

Research Problems in Materials Science and Engineering Winter 2013
University of Michigan, Department of Materials Science & Engineering: MSE 490

GUEST LECTURES

Space Technology and National Security Policy Fall 2025
University of California, Berkeley, School of Public Policy: PUBPOL 151/AEROENG C193P

Physics and Politics of Missile Defense Fall 2024
University of Hamburg, Institute for Peace Research and Security Policy: 96-5.09

Technology & Strategic Planning Winter 2022
Naval Postgraduate School, Department of National Security Affairs: NS 4253

Sustainable Energy Systems

Fall 2021

Pennsylvania State University, Department of Nuclear Engineering: NUCE 497

International Security in a Changing World

Winter 2016

Stanford University, Department of Political Science: PS 114S

DISSERTATION COMMITTEES

Alex Solomon, PhD: University of Tennessee, Knoxville, Department of Nuclear Engineering 2023
 “Investigating metastable phases in ion-irradiated binary oxides”

William Cureton, PhD: University of Tennessee, Knoxville, Department of Nuclear Engineering 2021
 “Nuclear fuel materials under extremes: Redox behavior and resulting defect structure”

SERVICE

Advisor to the Defense & Dual-Use Technology Club 2026
 University of California, Berkeley, Haas School of Business

Organizer of the Risk & Security Seminar Series 2025-26
 University of California, Berkeley, Goldman School of Public Policy

Fellowship Selection Committee 2025
 Stanford University, Center for International Security and Cooperation (CISAC)

Book reviewer 2025
 Cambridge University Press

Fellowship Program Review Committee 2024
 Stanford University, Center for International Security and Cooperation (CISAC)

Nuclear Security Fellowship Selection Committee 2023-24
 Stanford University, Center for International Security and Cooperation (CISAC)

Undergrad Honors Program Selection Committee 2022-24
 Stanford University, Center for International Security and Cooperation (CISAC)

Social Science Fellowship Selection Committee 2022
 Stanford University, Center for International Security and Cooperation (CISAC)

Research report reviewer 2022
 UK Parliamentary Office of Science and Technology (POST)

Research proposal reviewer 2021
 Stanford Synchrotron Radiation Lightsource (SSRL), SLAC National Accelerator Laboratory

Research Proposal Reviewer 2017
 National Centre of Science and Technology Evaluation, Kazakhstan

JOURNAL REFEREEING

*Acta Materialia**American Mineralogist**Applied Physics Letters**Chemical Communications**Conflict Management & Peace Science**Corrosion Science**Crystals**Inorganic Chemistry Frontiers**International Journal**International Journal of Hydrogen Energy**International Journal of Nuclear Security**International Security**Journal for Peace and Nuclear Disarmament**Journal of Alloys and Compounds*

Journal of Applied Physics
Journal of the European Ceramic Society
Journal of Materials Science & Technology
Journal of Nuclear Materials
Journal of Physical Chemistry
Journal of Radioanalytical & Nuclear Chemistry
Journal of the Australian Ceramic Society
Nuclear Instruments and Methods in Physics Res.

Philippine Journal of Science
Physica Status Solidi
Physical Chemistry Chemical Physics
Radiation Physics and Chemistry
Science & Global Security
Scripta Materialia
The Nonproliferation Review

HONORS AND AWARDS

Term Member , Council on Foreign Relations (CFR)	2026
Mid-Career Cadre , Center for Strategic and International Studies (CSIS)	2022
Kendall Fellowship , Union of Concerned Scientists	2019
Stanton Nuclear Security Fellowship , Stanton Foundation	2018
Nuclear Security Postdoctoral Fellowship , MacArthur Foundation	2015
Young Scientist Award , European Materials Research Society (E-MRS)	2015
Innovations in Fuel Cycle Research Award , US Department of Energy (DOE)	2013
Graduate Research Fellowship , US National Science Foundation (NSF)	2012
Rackham Merit Fellowship , University of Michigan	2011
1st Place, Science and Energy Research Challenge , US Department of Energy (DOE)	2009