

Lei Raymond Cao, Ph.D. (U.S. Citizen)

Professor, Nuclear Engineering
Department of Mechanical and Aerospace Engineering
Director, OSU Nuclear Reactor Laboratory
College of Engineering
The Ohio State University
201 W 9th Avenue
Columbus, OH 43210
Office phone: 614-247-8701
Email: cao.152@osu.edu

Education: Ph.D. **Mechanical Engineering (Nuclear and Radiation Engineering Program)**,
University of Texas at Austin, 2007
Thesis: Development of a High-Resolution Neutron Radiography System and Evaluation Method

MS. **Nuclear Physics**, China Institute of Atomic Energy, 2002
Thesis: Neutron Activation Analysis of Air Particulate Matter and Source Analysis

BS. **Nuclear Physics**, Lanzhou University, 1994

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

Director, OSU Nuclear Reactor Laboratory (OSU-NRL) 2016 - Present

- Director of laboratory that includes a 500-kW pool-type research reactor, managing staff, operation, regulatory compliance, and budgeting of the OSU-NRL
- Strategic planning for the OSU-NRL as a research center within College of Engineering
- Technical POC of U.S. Nuclear Science User Facilities
- Expanding the utilization of OSU-NRL in research, education & training, and service

Program Chair, Nuclear Engineering (NE) Program 2019 - 2023

- Strategic planning and day-to-day operation of the NE graduate and undergraduate minor programs
- Outreach, alumni relationship, government relationship, graduate study policy and implementation, course planning, seminar, industrial connections

Full Professor 2018 - Present
Associate Professor 2015 - 2018
Assistant Professor 2009 - 2015

The Ohio State University
Columbus, OH 43210

- Nuclear non-proliferation
- Wide band-gap semiconductor sensors (e.g., SiC, GaN, Ga₂O₃) for nuclear fuel cycle and advanced reactors
- Perovskite X-ray/gamma-ray detector and medical applications
- Sensor and instrumentation for advanced reactor applications
- Nuclear Voltaic Batteries
- Neutron Radiography and Tomography
- Neutron Depth Profiling (NDP) technologies for materials characterization
- Prompt Gamma Neutron Activation Analysis (PGNAA)
- Teach undergraduate and graduate level nuclear engineering courses

Postdoctoral Research Associate **2007 - 2009**

National Institute of Standards and Technology, Center for
Neutron Research, Gaithersburg, Maryland

- Work on neutron prompt gamma activation analysis beam line
- Work on neutron depth profiling facility
- Determine hydrogen concentrations in hydrogen storage materials
- Determine boron concentration distribution in straw-type neutron detectors
- Determine O-18 concentration in metal oxidation
- Determine helium distribution in fusion first-wall
- Develop neutron imaging apparatus
- Calibrate neutron microscopy capability using a neutron lens

Postdoctoral Research Associate **2007 - 2007**

Positron Emission Tomography (PET) Laboratory
Harvard Medical School, Boston, MA

- Micro-PET, 3D imaging reconstruction, and data analysis
- In-vitro animal imaging using F-18, C-11 positron emitters

Graduate Research Associate **2004 - 2007**

Department of Mechanical Engineering University
of Texas at Austin, Austin, TX

- High-resolution neutron imaging and the performance evaluation

Associate Professor **2003 - 2004**

Department of Nuclear Science and Technology
South China University

Visiting Scholar **2002 - 2002**

Nuclear and Radiation Engineering Program
University of Texas at Austin, Austin, TX

Graduate Research Associate **1999 - 2002**

Neutron Activation Analysis Group
China Institute of Atomic Energy

- Neutron activation analysis and source model development for air pollution

Lecturer, Assistant Professor **1994 - 1999**

Department of Nuclear Science and Technology
South China University

INDUSTRY CONSULTING:

Chief Technology Advisor, Awareability Technologies LLC **2017 - present**

HONORS:

- Outstanding Master's Thesis Award, CIAE, 2002
- International Atomic Energy Agency (IAEA) Fellowship, 2002
- German Academic Exchange Service Fellowship, 2003
- Young Investigator Award, U.S. Defense Threat Reduction Agency, 2011
- OSU College of Engineering's Lumley Interdisciplinary Research Award, 2012
- OSU College of Engineering's Lumley Research Award, 2013
- OSU College of Engineering's Lumley Research Award, 2015
- ANS Graduate Student Design Competition Finalist (Advisor), 2015

- Distinguished Faculty Award, Mechanical and Aerospace Engineering, 2022
- Best Paper Award in year 2021, IEEE Transactions on Nuclear Science, 2023
- Radiation Science and Technology Award, American Nuclear Society, 2023

FOCUSED RESEARCH:

- WBG Semiconductor Radiation Sensor
- Nuclear Safeguards and Nuclear Non-proliferation
- Radiation Effects and Survivability
- Nuclear Voltaic Battery
- Reactor and In-pile Instrumentation
- Neutron Analytical Techniques (Neutron Depth Profiling, Prompt Gamma Neutron Activation Analysis)
- Neutron Radiography and Tomography

COURSE TAUGHT:

- NE5742: Nuclear Radiation and Their Measurement (graduate level)
- NE4506: Undergraduate Nuclear Engineering Lab (Undergraduate level)
- NE6725: Nuclear Reactor Lab (graduate level)
- NE6708: Reactor Physics (graduate level)
- NE4505: Introduction to Nuclear Science and Engineering (Undergraduate level)
- NE6766: Nuclear Engineering Design (graduate level)
- NE880.08: Advanced Nuclear Instrumentation and Control (graduate level)
- NE6881: Nuclear Engineering Graduate Student seminar
- NE8194: Advanced Topics in Semiconductor Radiation Sensor (graduate level)

MEMBERSHIP:

- American Nuclear Society, since 2004
- The Honor Society of Phi Kappa Phi
- IEEE Nuclear Science and Plasma Society, senior member since 2009
- American Association for the Advancement of Science (AAAS), since 2014
- SPIE, Member Since July 2018

EDITORIAL:

Associate Editor, IEEE Transactions on Nuclear Science (2013 – present)

Senior Editor, Special issue on nuclear batteries, IEEE Transactions on Nuclear Science (2023 – present)

Editorial Advisory Board, Journal of Nuclear Science and Engineering (2020 – present)

PROFESSIONAL SOCIETY AND MAJOR EXTERNAL COMMITTEES:

Session Chair, NIST, Neutron for The Future, Nuclear Method and Radiochemistry,

Rockville Maryland

Oct. 2023

Session Chair, DOE Workshop on Radiographic Imaging and Applications (WORIA),

Neutron Sources, Oak Ridge National Lab

Feb. 2023

DOE workshop on Technologies to Reactors: Enabling Accelerated Deployment of Nuclear Energy Systems, July 24-27, 2018

DOE workshop on Fission Battery Initiative: Safeguards and Security of Fission Batteries, April 2nd, 2021

Executive Committee, American Nuclear Society (ANS), Bylaws and Rules

2011-2014

American Nuclear Society, Isotopes and Radiation Division (IRD)

- Executive Committee 2011- present
- Treasurer 2011 - 2014
- Vice Chair/Chair Elect 2014 - 2015
- Chair 2015 - 2016

9th Methods and Applications of Radioanalytical Chemistry Conference

- Assistant Program Chair 2011 - 2013
- Technical Program Committee 2011 - 2013

10th Methods and Applications of Radioanalytical Chemistry Conference

- Assistant Program Chair 2013 - 2015
- Technical Program Committee 2013 - 2015

11th Methods and Applications of Radioanalytical Chemistry Conference

- Assistant Program Chair 2015 - 2018
- Technical Program Committee 2015 - 2018

12th Methods and Applications of Radioanalytical Chemistry Conference

- Assistant Program Chair 2018 - 2022
- Technical Program Committee 2018 - 2022

13th Methods and Applications of Radioanalytical Chemistry Conference

- Assistant Program Chair 2022 - 2025
- Technical Program Committee 2022 - 2025

8th International Conference & Expo on Isotopes

- Technical Program Committee 2012 – 2014

9th International Conference & Expo on Isotopes

- Technical Program Committee 2014 – 2018

10th International Conference & Expo on Isotopes

- Technical Program Committee 2018 – 2020

COORDINATOR:

National Nuclear Forensics Expertise Development Program Nuclear Forensics Graduate Fellowship Program (NFP) 2013 - present

JOURNAL PUBLICATIONS:

From Google Scholar	
Sum of the Times Cited:	9971
h-index:	26
i10-index:	63

1. Van Zile, Matthew, Kevin Herminghuysen, Andrew Kauffman, Susan White, Praneeth Kandlakunta, Shelly Li, Michael Simpson, and Lei R. Cao. "Gamma-ray spectra of post-irradiated uranium salt for total mass accounting with sodium-22 tracer." *Progress in Nuclear Energy* 168 (2024): 104992.
2. Pakari, Oskari V., Andrew Lucas, Flynn B. Darby, Vincent P. Lamirand, Tessa Maurer, Matthew G. Bisbee, Lei R. Cao, Andreas Pautz, and Sara A. Pozzi. "Gamma-ray Spectroscopy in Low-Power Nuclear Research Reactors." *Journal of Nuclear Engineering* 5, no. 1 (2024): 26-43.
3. K. Goodman, R. S. Aga, R. Aga, R. Cooper, L. R. Cao and E. Heckman, "Investigation on Electrical Properties of Printed Graphene Subjected to Aging, Ambient Environment and Gamma Radiation," in *IEEE Transactions on Device and Materials Reliability*, doi: 10.1109/TDMR.2023.3344019.
4. Wood, David, Matthew Bisbee, Andrew Maier, Praneeth Kandlakunta, Christopher J. Brooks, R. Gregory Downing, and Lei R. Cao. "A demonstration study of lithium-ion battery by neutron depth profiling with a low flux neutron source." *In Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXV*, vol. 12696, pp. 116-129. SPIE, 2023.
5. Bisbee, Matthew, Ibrahim Oksuz, Nerine Quinnan Hetrick, and Andrew Townsend Cherepy. "Improved image stitching method for neutron imaging of large object with small beam size." *In Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXV*, vol. 12696, pp. 1269607-1. 2023.
6. Smidts, Carol, Gustavo Reyes, Cassiano Endres de Oliveira, and Lei Raymond Cao. "The research challenges in security and safeguards for nuclear fission batteries." *Progress in Nuclear Energy* 159 (2023): 104627.
7. Tsai, Hsinhan, Lei Pan, Xinxin Li, Jinkyong Yoo, Sergei Tretiak, Xuedan Ma, Lei R. Cao, and Wanyi Nie. "Quantum Efficiency Gain in 2D Perovskite Photo and X-Ray Detectors." *Advanced Optical Materials* (2023): 2300847. <https://doi.org/10.1002/adom.202300847>
8. Davis, Heath, Cordell Delzer, Xianfei Wen, Lei R. Cao, Jason Hayward, and Eric Lukosi. "Systematic evaluation of fast neutron sensing with Cesium Hafnium Chloride." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 1052 (2023): 168247.
9. Hoffman, M.K., Spitz, H.B., Bissmeyer, P.H. Hlinka V., Cao, Lei R. Molecular plating of Am-241 on a Schottky metal contact. *J Radioanal Nucl Chem* (2022). <https://doi.org/10.1007/s10967-022-08504-w>

10. Bisbee, M. G., I. Oksuz, M. P. VanZile, N. J. Cherepy, and L. R. Cao. "An automated fast neutron computed tomography instrument with on-line focusing for non-destructive evaluation." *Review of Scientific Instruments* 93, no. 11 (2022): 113702.
11. Kandlakunta, Praneeth, Matthew Van Zile, and Lei Raymond Cao. "Silicon Solar Cells for Post-Detonation Monitoring and Gamma-Radiation Effects." *Nuclear Science and Engineering* 196, no. 11 (2022): 1383-1396.
12. Oksuz, M. Bisbee, J. Hall, Nerine Cherepy, Lei R. Cao, "Quantifying spatial resolution in a fast neutron radiography system", *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* (2022), doi: <https://doi.org/10.1016/j.nima.2022.166331>
13. Oksuz, Ibrahim, Matt Bisbee, Nerine Cherepy, Joe Tringe, Andrew Townsend, James Hall, and Lei Cao. "Comparison of thermal and fast neutron computed tomography of complex objects by additive manufacturing and electrical discharge machining." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIV*, vol. 12241, pp. 98-107. SPIE, 2022. <http://dx.doi.org/10.1117/12.2635773>
14. Bisbee, M. G., A. J. Hardy, I. Oksuz, L. R. Cao, N. J. Cherepy, D. J. Schneberk, K. M. Champley et al. "Experimental x-ray and fast neutron CT comparative analysis." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIV*, vol. 12241, pp. 108-116. SPIE, 2022. <http://dx.doi.org/10.1117/12.2635503>
15. Giglio, Daryl, Sha Xue, Katie Hoffman, Praneeth Kandlakunta, Henry Spitz, Vasil Hlinka, and Lei R. Cao. "Longevity evaluation of SiC based alpha voltaic batteries with surface alpha sources." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIV*, vol. 12241, pp. 138-155. SPIE, 2022. <http://dx.doi.org/10.1117/12.2635657>
16. Cao, G., Larson, N., Storms, B. Cao, L. R. Gamma-ray spectra analyses of molten salts in spent nuclear fuels pyroprocessing facilities for mass measurement. *J Radioanal Nucl Chem* (2022). <https://doi.org/10.1007/s10967-022-08339-5>
17. Dai, Xuezheng, Chengbin Fei, Praneeth Kandlakunta, Liang Zhao, Zhenyi Ni, Lei R. Cao, and Jinsong Huang. "Origin of the X-Ray-Induced Damage in Perovskite Solar Cells." *IEEE Transactions on Nuclear Science* 69, no. 8 (2022): 1850-1856.
18. Tan, Ryan, Bogdan Dryzhakov, Kate Higgins, Jessica Charest, Zachary Dancoes, Praneeth Kandlakunta, Lei R. Cao, Mahshid Ahmadi, Bin Hu, and Eric Lukosi. "Lithium Chloride-Substituted Methylammonium Lead Tribromide Perovskites for Dual γ /Neutron Sensing." *ACS Applied Materials & Interfaces* 14, no. 30 (2022): 34571-34582.
19. Tsai, Hsinhan, Shreetu Shrestha, Lei Pan, Hsin-Hsiang Huang, Joseph Strzalka, Darrick Williams, Leeyih Wang, Lei R. Cao, and Wanyi Nie. "Quasi-2D Perovskite Crystalline Layers for Printable Direct Conversion X-Ray Imaging." *Advanced Materials* (2022): 2106498.
20. Hsinhan Tsai , Dibyajyoti Ghosh, Wyatt Panaccione, Li-Yun Su, Cheng-Hung Hou, Leeyih Wang, Lei Raymond Cao, Sergei Tretiak, and Wanyi Nie, Addressing the Voltage Induced Instability Problem of Perovskite Semiconductor Detectors, *ACS Energy Lett.* 2022, 7, 11, 3871–3879, <https://doi.org/10.1021/acsenergylett.2c02054>
21. Taylor, Neil R., Mihee Ji, Lei Pan, Praneeth Kandlakunta, Ivan Kravchenko, Pooran Joshi, Tolga Aytug, M. Parans Paranthaman, and Lei R. Cao. "Large area vertical Ga₂O₃ Schottky diodes for

- X-ray detection." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 1013 (2021): 165664.
22. Taylor, Neil R., Yongchao Yu, Mihee Ji, Pooran Joshi, and Lei R. Cao. "Direct metal contacts printing on 4H-SiC for alpha detectors and inhomogeneous Schottky barriers." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 989 (2021): 164961. IF: 1.265
 23. Cao, Lei R., Lei Pan (Student), Praneeth Kandlakunta, and Wanyi Nie. "Perovskite detectors for x-ray imaging and gamma spectroscopy: overview and current state-of-the-art." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIII*, vol. 11838, p. 118380B. International Society for Optics and Photonics, 2021.
 24. Gao, Hantian, Shreyas Muralidharan, Md Rezaul Karim, Lei R. Cao, Kevin D. Leedy, Hongping Zhao, Siddharth Rajan, David C. Look, and Leonard J. Brillson. "Depth-resolved cathodoluminescence and surface photovoltage spectroscopies of gallium vacancies in β -Ga₂O₃ with neutron irradiation and forming gas anneals." *Journal of Vacuum Science & Technology B, Nanotechnology and Microelectronics: Materials, Processing, Measurement, and Phenomena* 39, no. 5 (2021): 052205.
 25. Oksuz, Ibrahim, Matt Bisbee, Nerine Cherepy, Andrew Townsend, James Hall, Joseph Nicolino, Saphon Hok, and Lei Cao. "Fast neutron computed tomography of multi-material complex objects." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIII*, vol. 11838, p. 118380L. International Society for Optics and Photonics, 2021.
 26. Pan, Lei, Shreetu Shrestha, Neil Taylor, Wanyi Nie, and Lei Cao. "Determination of X-ray detection limit and application in perovskite X-ray detectors." *Nature Communication*, (2021). 12, no. 1 (2021): 1-9.
 27. Lei Pan, Praneeth Kandlakunta, Matt Van Zile, Xuezheng Dai, Jinsong Huang, John McClory, Lei R. Cao, "Acquiring and modeling of Si solar cell transient response to pulsed X-ray." *IEEE Transactions on Nuclear Science*, (2021): doi: 10.1109/TNS.2021.3067193
 28. L Pan, Y Feng, J Huang, L. R Cao, "Comparison of Zr, Bi, Ti, and Ga as metal contacts in inorganic perovskite CsPbBr₃ Gamma-ray Detector", *IEEE Transactions on Nuclear Science*, 2020. DOI: 10.1109/TNS.2020.3018101.
 29. Harris, N.C., Yang, H., Ge, J., Zhang, J., Coble, J., Skutnik, S., Taylor, N.R., Jarrell, J., Blue, T.E., Cao, L. and Simpson, M., 2021. University Research to Support the MPACT 2020 Milestone. *Journal of Nuclear Materials Management*, 49(1), pp.136-151.
 30. Gao, Hantian, Shreyas Muralidharan, Md Rezaul Karim, Susan M. White, Lei R. Cao, Kevin Leedy, Hongping Zhao, David C. Look, and Leonard J. Brillson. "Neutron irradiation and forming gas anneal impact on β -Ga₂O₃ deep level defects." *Journal of Physics D: Applied Physics* 53, no. 46 (2020): 465102.
 31. Oksuz, Ibrahim, Matthew Van Zile, Matt Bisbee, Andrew Kauffman, Joel Hatch, Praneeth Kandlakunta, Nerine J. Cherepy, and Lei R. Cao. "Characterization of a reactor-based fast neutron beam facility for fast neutron imaging." In *Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXII*, vol. 11494, p. 114940T. International Society for Optics and Photonics, 2020.

32. Cherepy, Nerine J., Zachary Seeley, Saphon Hok, Daniel Schneberk, Philip Kerr, Sean O'Neal, Ibrahim Oksuz et al. "Scintillators and detectors for MeV X-ray and neutron imaging." In **Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXII**, vol. 11494, p. 114940N. International Society for Optics and Photonics, 2020.
33. Taylor, Neil R., Yongchao Yu, Mihee Ji, Tolga Aytug, Shannon Mahurin, Richard Mayes, Sacit Cetiner et al. "Thermal and radiation response of 4H-SiC Schottky diodes with direct-write electrical contacts." **Applied Physics Letters** 116, no. 25 (2020): 252108.
34. Ji, Mihee, Neil R. Taylor, Ivan Kravchenko, Pooran Joshi, Tolga Aytug, Lei R. Cao, and M. Parans Paranthaman. "Demonstration of Large-Size Vertical Ga₂O₃ Schottky Barrier Diodes." **IEEE Transactions on Power Electronics**, 36, no. 1 (2020): 41-44.
35. Pan, Lei, Yuanxiang Feng, Praneeth Kandlakunta, Jinsong Huang, and Lei R. Cao. "Performance of Perovskite CsPbBr₃ Single Crystal Detector for Gamma-Ray Detection." **IEEE Transactions on Nuclear Science** 67, no. 2 (2020): 443-449.
[Top 3 most popular papers in this journal]
36. Y Feng, L Pan, H Wei, Y Liu, Z Ni, J Zhao, PN Rudd, Lei R Cao, Jinsong Huang, "Low defects density CsPbBr₃ single crystals grown by an additive assisted method for gamma-ray detection", **Journal of Materials Chemistry C**, vol 8, 33, (2020): 11360-11368.
37. Kandlakunta, Praneeth, Chuting Tan, Nathan Smith, Sha Xue, Neil Taylor, R. Gregory Downing, Vasil Hlinka, and Lei R. Cao. "Silicon carbide detectors for high flux neutron monitoring at near-core locations." **Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment** 953 (2020): 163110.
38. Holmes, Jason, Jesse Brown, Franz A. Koeck, Holly Johnson, Manpuneet K. Benipal, Praneeth Kandlakunta, Anna Zaniewski et al. "Performance of 5-μm PIN diamond diodes as thermal neutron detectors." **Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment** 961 (2020): 163601.
39. Taylor, Neil R., W. Kuang, M. Saeidjavash, Praneeth Kandlakunta, Y. Zhang, and Lei R. Cao. "Direct printing of metal contacts on 4H-SiC for radiation detection." **AIP Advances** 9, no. 9 (2019): 095041.
40. Wang, Jinghui, Padhraic Mulligan, Leonard Brillson, and Lei R. Cao. "Erratum: "Review of using gallium nitride for ionizing radiation detection" **Applied Physics Reviews** 6, no. 2 (2019): 029902.
41. Taylor, Neil R., Nora Alnajjar, Joshua Jarrell, Praneeth Kandlakunta, Michael Simpson, Thomas E. Blue, and Lei R. Cao. "Isotopic concentration of uranium from alpha spectrum of electrodeposited source on 4H-SiC detector at 500 °C." **Journal of Radioanalytical and Nuclear Chemistry** 320, no. 2 (2019): 441-449.
42. Yang, Shuang, Zeyuan Xu, Sha Xue, Praneeth Kandlakunta, Lei Cao, and Jinsong Huang. "Organohalide Lead Perovskites: More Stable than Glass under Gamma-Ray Radiation." **Advanced Materials** 31, no. 4 (2019): 1805547.
43. Xue, Sha, Chuting Tan, Praneeth Kandlakunta, Ibrahim Oksuz, Vasil Hlinka, and Lei R. Cao. "Methods for improving the power conversion efficiency of nuclear-voltaic batteries." **Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment** 927 (2019): 133-139.

44. Yang, Shuang, Zeyuan Xu, Sha Xue, Praneeth Kandlakunta, Lei Cao, and Jinsong Huang. "Organohalide Lead Perovskites: More Stable than Glass under Gamma-Ray Radiation." *Advanced Materials* (2018): 1805547.
45. Jarrell, Joshua T., Milan Stika, Michael Simpson, Thomas E. Blue, and Lei R. Cao. "4H–SiC alpha spectrometry for nuclear forensics with electrodeposited sources." *Journal of Radioanalytical and Nuclear Chemistry* 318, no. 1 (2018): 667-672.
46. Stika, M., S. Padilla, J. Jarrell, T. Blue, L. R. Cao, and M. Simpson. "Thin-Layer Electrodeposition of Uranium Metal from Molten LiCl-KCl." *Journal of The Electrochemical Society* 165, no. 3 (2018): D135.
47. Chuirazzi, William C., Ibrahim Oksuz, Praneeth Kandlakunta, Thomas N. Massey, Carl R. Brune, Nerine J. Cherepy, H. Paul Martinez, and Lei Cao. "Evaluation of polyvinyl toluene scintillators for fast neutron imaging." *Journal of Radioanalytical and Nuclear Chemistry* 318, no. 1 (2018): 543-551.
48. Hardtmayer, Douglas, Kevin Herminghuysen, Susan White, Andrew Kauffman, Jeff Sanders, Shelly Li, and Lei Cao. "Determination of molten salt mass using ^{22}Na tracer mixed with ^{154}Eu and ^{137}Cs ." *Journal of Radioanalytical and Nuclear Chemistry* 318, no. 1 (2018): 457-463.
49. Gao, Hantian, Shreyas Muralidharan, Nicholas Pronin, Md Rezaul Karim, Susan M. White, Thaddeus Asel, Geoffrey Foster et al. "Optical signatures of deep level defects in Ga₂O₃." *Applied Physics Letters* 112, no. 24 (2018): 242102.
50. Wang, Lei, Josh Jarrell, Sha Xue, Chuting Tan, Thomas Blue, and Lei R. Cao. "Fast neutron detection at near-core location of a research reactor with a SiC detector." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 888 (2018): 126-131.
51. Cao, Lei, Josh Jarrell, Susan White, Kevin Herminghuysen, Andrew Kauffman, Douglas E. Hardtmayer, Jeff Sanders, and Shelly Li. "A radioactive tracer dilution method to determine the mass of molten salt." *Journal of Radioanalytical and Nuclear Chemistry* 314, no. 1 (2017): 387-393.
52. Wei, Haotong, Dylan DeSantis, Wei Wei, Yehao Deng, Dengyang Guo, Tom J. Savenije, Lei Cao, and Jinsong Huang. "Dopant compensation in alloyed CH₃NH₃PbBr_{3-x}Cl_x perovskite single crystals for gamma-ray spectroscopy." *Nature Materials* 16, no. 8 (2017): 826.
53. Wei Wei, Yang Zhang, Qiang Xu, Haotong Wei, Yanjun Fang, Qi Wang, Yehao Deng et al. "Monolithic integration of hybrid perovskite single crystals with heterogenous substrate for highly sensitive X-ray imaging." *Nature Photonics* 11, no. 5 (2017): 315.
54. Tan, Chuting, Nicholas H. Bashian, Chase W. Hemmelgarn, Wesley J. Thio, Daniel J. Lyons, Yuan F. Zheng, Lei R. Cao, and Anne C. Co. "Ex-situ and in-situ observations of the effects of gamma radiation on lithium-ion battery performance." *Journal of Power Sources* 357 (2017): 19-25.
55. Qiang Xu, Haotong Wei, Wei Wei, William Chuirazzi, Dylan DeSantis, Jinsong Huang, Lei Cao, "Detection of charged particles with a methylammonium lead tribromide perovskite single crystal," *Nuclear Instruments and Methods in Physics Research, Section A*, Volume 848, 11, Pages 106–108, 2017.

56. Qiang Xu, Padhraic Mulligan, Jinghui Wang, William Chuirazzi, Lei Cao, "Bulk GaN alpha-particle detector with large depletion region and improved energy resolution," ***Nuclear Instruments and Methods in Physics Research, Section A***, Volume 849, 21, Pages 11–15, 2017.
57. Stika, M., S. Padilla, J. Jarrell, T. Blue, L. R. Cao, and M. Simpson. "Thin-Layer Electrodeposition of Thorium Metal from Molten LiCl-KCl." ***Journal of The Electrochemical Society*** 164, no. 8 (2017): H5078-H5085.
58. Moore, Eric, Joshua Jarrell, and Lei Cao. "Heteroepitaxial diamond growth on 4H-SiC using microwave plasma chemical vapor deposition." ***Heliyon*** 3, no. 9 (2017): e00404.
59. Stika, Milan, Max Chaiken, Joshua Jarrell, Thomas Blue, Lei Raymond Cao, and Michael Forrest Simpson. "Thin-Layer Electrodeposition of Thorium and Uranium from Molten LiCl-KCl." ***ECS Transactions*** 75, no. 15 (2016): 603-608.
60. Chuting Tan, Daniel J. Lyons, Ke Pan, Kwan Yee Leung, William C. Chuirazzi, Marcello Canova, Anne C. Co, Lei R. Cao, "Radiation effects on the electrode and electrolyte of a lithium-ion battery," ***Journal of Power Sources***. Vol. 318, 242–250. 2016.
61. Josh Jarrell, Milan Stika, Max Chaiken, Michael Simpson, Thomas E. Blue, Lei R. Cao. "Determination of the thickness of an electrodeposited thorium film with SiC alpha detectors," ***Journal of Radioanalytical and Nuclear Chemistry***. Vol. 1, no. 1. pp:1-7. 2016.
62. Danny X. Liu, Lei R. Cao, and Anne C. Co. "Demonstrating the Feasibility of Al as Anode Current Collector in Li-Ion Batteries via In Situ Neutron Depth Profiling," ***Chemistry of Materials***. Vol. 28, no. 2. 556-563. 2016.
63. Haotong Wei, Yanjun Fang, Padhraic Mulligan, William Chuirazzi, Hong-Hua Fang, Congcong Wang, Benjamin R. Ecker, Yongli Gao, Maria Antonietta Loi, Lei Cao, Jinsong Huang, "Sensitive X-ray detectors made of methylammonium lead tribromide perovskite single crystals," ***Nature Photonics***. Vol. 10, 333–339. 2016.
64. Qingfeng Dong, Yanjun Fang, Yuchuan Shao, Pahraic Mulligan, Jie Qiu, Lei Cao, Jinsong Huang, "Electron-hole diffusion lengths >175 μm in solution grown $\text{CH}_3\text{NH}_3\text{PbI}_3$ single crystals," ***Science***. Vol. 347, no. 6225. 967-970. 2015.
65. Adib Samin, Michael Kurth, Lei R. Cao, "An Analysis of Radiation Effects on NdFeB Permanent Magnets," ***Nuclear Instruments and Methods in Physics Research, Section B***, Vol. 342, no. 1. 2015.
66. Jinghui Wang, Padhraic Mulligan, Len Brillson, Lei Cao, "Review of Using Gallium Nitride for Ionizing Radiation Detection," ***Applied Physics Reviews*** 2 (3), 031102, 2015.
67. Adib Samin, Lei Cao, "Monte Carlo study of radiation-induced demagnetization using the two-dimensional Ising model," ***Nuclear Instruments and Methods in Physics Research, Section B***, Vol. 360, 111–117. 2015.
68. Chuting Tan, Robinson James, Bin Dong, M. Sky Driver, Jeffry A. Kelber, Greg Downing, Lei R. Cao. "Characterization of a boron carbide-based polymer neutron sensor," ***Nuclear Instruments and Methods in Physics Research, Section A***. Vol. 803, 82-88, 2015.
69. Adib Samin, Michael Kurth, Lei Cao. "Ab initio study of radiation effects on the $\text{Li}_4\text{Ti}_5\text{O}_{12}$ electrode used in lithium-ion batteries," ***AIP Advances***. Vol. 5, no. 4. 6. 2015.

70. Jie Qiu, Dandan He, Mingzhai Sun, Shimeng Li, Cun Wen, Jason Hattrick-Simpers, Yuan F. Zheng, Lei Cao. "Effects of neutron and gamma radiation on lithium-ion batteries," ***Nuclear Instruments and Methods in Physics Research, Section B***, Vol. 345, 27-32, 2015.
71. Chuting Tan, Kwan Yee Leung, Danny X Liu, Marcello Canova, R Gregory Downing, Lei R Cao. "Gamma radiation effects on Li-ion battery electrolyte in neutron depth profiling for lithium quantification," ***Journal of Radioanalytical and Nuclear Chemistry***. Vol. 1, 1-6, 2015.
72. Shimeng Li, Yuan Zheng, Jie Qiu, and Lei Cao. "Performance degradation estimation of robot in highly radioactive environment," ***International Journal of Mechatronics and Automation***, Vol. 5, no. 2-3, 69-79, 2015.
73. Shimeng Li, Adib Samin, J. Qiu, J., Yuan Zheng, and Lei Cao, "Study on radation induced performance degradation of BLDC motor in robot servo systems," ***International Journal of Mechatronics and Automation***, Vol. 5, No. 2/3, pp. 154-162, 2015.
74. J.H. Wang, P. Mulligan, L. R. Cao, "Transient Current Analysis of a GaN Radiation Detector by TCAD," ***Nuclear Instruments and Methods in Physics Research, Section A***, Vol. 761, no. 11: 7-12. 2014.
75. Danny X. Liu, Jinghui Wang, Pan Ke, Jie Qiu, Marcello Canova, Lei R. Cao and Anne C. Co, "In Situ Quantification and Visualization of Lithium Transport with Neutrons," ***Angewandte Chemie International***. Vol. 53, 9498-9502. 2014.
76. Padhraic Mulligan, Jie Qiu, Jinghui Wang, Lei R. Cao, "Study of GaN Radiation Sensor after In-core Neutron Irradiation," ***IEEE Transaction on Nuclear Science***. Vol. 61, Issue 4, 2040-2044. 2014.
77. Adib Samin, Travis Ciccarello, Lei Cao, "A methodology for solving the one-dimensional mono-energetic transport equation in homogeneous semi-infinite medium," ***Journal of Non-Equilibrium Thermodynamics***. Vol. 39, Issue 3: 135-146. 2014.
78. Jinghui Wang, Danny Liu, Anne Co, Marcello Canova, R. Gregory Downing, Lei R. Cao. "Profiling lithium distributions in Sn anode of Lithium-Ion Batteries with neutrons," ***Journal of Radioanalytical and Nuclear Chemistry***. Vol. 301, no. 1. 277 – 284, 2014.
79. Adib Samin, Jie Qiu, Jason Hattrick-Simpers, Liyang Dai-Hattrick, Yuan F Zheng, Lei Raymond Cao, "Characterization of the Magnetic Degradation Mechanism in a High-Neutron-Flux Environment," ***Nuclear Instruments and Methods in Physics Research, Section B***, Vol. 334, no. 1: 43-47. 2014.
80. Praneeth Kandlakunta, Lei R. Cao, "Neutron conversion efficiency and gamma interference with gadolinium," ***Journal of Radioanalytical and Nuclear Chemistry***. Vol. 300, no. 3: 953-961. 2014.
81. Shrikant C. Nagpurea, Padhraic Mulligan, Marcello Canova, Lei R. Cao, "Neutron depth profiling of Li-ion cell electrodes with a gas-controlled environment," ***Journal of Power Sources***. Vol. 248, 489-497. 2014.
82. Evan J. Katz, Chung-Han Lin, Jie Qiu, Zhichun Zhang, Umesh K. Mishra, Lei Cao, Leonard J. Brillson "Neutron Irradiation Effects on Metal-Gallium Nitride Contacts," ***Journal of Applied Physics***, 115, 123705, 2014.
83. Chung-Han Lin, Evan J. Katz, Jie Qiu, Zhichun Zhang, Umesh K. Mishra, Lei Cao and Leonard J. Brillson, "Neutron irradiation effects on gallium nitride-based Schottky diodes," ***Applied Physics Letters***. Vol. 103, no. 16: 1-9. 2013.

84. Jie Qiu, Evan Katz, Chung-Han Lin, Lei Cao, Leonard J. Brillson, "The Effect of Neutron Irradiation on Semi-insulating GaN," *Radiation Effects and Defects in Solids*. Vol. 168, 1- 9. 2013.
85. J. Qiu, L. Cao, P. Mulligan, D. Turkoglu, S. Nagpure, M. Canova, A. Co, "The Potential of Using Li-ion Batteries for Radiation Detection," *IEEE Transactions on Nuclear Science*. Vol. 60, no. 2: 662 - 667. 2013.
86. Joseph W. Talnagi, Samuel E. Glover, Henry Spitz and Lei Cao, "Fabrication and characterization of an irradiation facility for large-sample geometry," *Journal of Radioanalytical and Nuclear Chemistry*. Vol. 292, no. 1: 83-88. 2013.
87. P. Mulligan, J.H. Wang, L. R. Cao, "Evaluation of Freestanding GaN as an Alpha and Neutron Detector," *Nuclear Instruments and Methods in Physics Research Section A*:. Vol. 719, 13-16. 2013.
88. D. Turkoglu, L. Cao, R. Lewandowski, "A low-cost neutron radiography device," *Physics Procedia*. Vol. 43, 54-65. 2013.
89. P. Kandlakunta, L. R. Cao, P. Mulligan, "Measurement of Internal Conversion Electrons from Gd Neutron Capture," *Nuclear Instruments and Methods in Physics Research Section A*: Vol. 705, 36 - 41. 2013.
90. T. Yang, A. Samin, L. Cao, "A Review of Low-level Ionizing Radiation and Risk Models of Leukemia," *Journal of Radiation Oncology*, Vol. 2012, 1-7. 2012.
91. P. L. Mulligan, L. R. Cao, D. Turkoglu, "A multi-detector, digitizer based neutron depth profiling device for characterizing thin film materials," *Review of Scientific Instruments*. Vol. 83, no. 7: 073303. 2012.
92. Praneeth Kandlakunta, Lei Cao, "Gamma ray rejection, or detection, with gadolinium as a converter," *Radiation Protection Dosimetry*. Vol. 149, no. 2: 1-5. 2012.
93. D. Turkoglu, J. Burke, R. Lewandowski, L. Cao, "Characterization of a new external neutron beam facility at the Ohio State University," *Journal of Radioanalytical and Nuclear Chemistry*. Vol. 291, no. 2: 321-327. 2012.
94. Radoslaw Lewandowski, Lei Cao, Danyal Turkoglu, "Noise Evaluation of a Digital Neutron Imaging Device," *Nuclear Inst. and Methods in Physics Research, A*. Vol. 674, 46-50. 2012.
95. Shrikant C. Nagpure, R. Gregory Downing, Bharat Bhushan, S.S. Babu and Lei R. Cao, "Neutron Depth Profiling Technique for Studying Aging in Li-ion Batteries," *Electrochimica Acta*. Vol. 13, no. 56: 4735-4743. 2011.
96. Jason R Hattrick-Simpers, Ke Wang, Lei Cao, Chun Chiu, Edwin Heilweil, Robert Gregory Downing, Leonid A. Bendersky, "Observation of phase transitions in hydrogenated Yttrium films via normalized infrared emissivity," *Journal of Alloys and Compounds*, Vol. 490, no. 1-2: 42-46. 2010.
97. L. Cao, J. R. Hattrick-Simpers, R. Bindel, B. Tomlin, R. Zeisler, R. Paul, L. Bendersky, R. G. Downing, "Combinatorial study of thin film metal hydride by prompt gamma activation analysis," *Journal of Radioanalytical and Nuclear Chemistry*. Vol. 283, no. 1: 63-68. 2010.
98. Z. Tun, J.J. Noël, Th. Bohdanowicz, L.R. Cao, R.G. Downing and L.V. Goncharova, "Cold-Neutron Depth Profiling as a Research Tool for the Study of Surface Oxides on Metals," *Canadian Journal of Physics*. Vol. 10, no. 88: 751-758. 2010.
99. Bakirtzi, Kyriaki; Belfort, Gabriel; Lopez-Coviella, Ignacio; Kuruppu, Darshini; Cao, Lei; Abel, E. Dale; Brownell, Anna-Liisa; Kandror, Konstantin V., "Cerebellar Neurons Possess a Vesicular

- Compartment Structurally and Functionally Similar to Glut4-Storage Vesicles from Peripheral Insulin-Sensitive Tissues," *Journal of Neuroscience*, Vol. 29, no. 16: 5193-5201. 2009.
100. S. Gupta, M. Muralikiran, J. Farmer, L.R. Cao, R.G. Downing, "The effect of boron doping and gamma irradiation on the structure and properties of microwave chemical vapor deposited boron-doped diamond films," *Journal of Materials Research*, Vol. 24, no. 4: 1498-1512. 2009.
101. Sanchez-Pernaute, Rosario, J-Q. Wang, D. Kuruppu, L. Cao, W. Tueckmantel, A. Kozikowski, Ole Isacson, and A-L. Brownell. "Enhanced binding of metabotropic glutamate receptor type 5 (mGluR5) PET tracers in the brain of parkinsonian primates." *Neuroimage* 42, no. 1, 248-251. 2008.
102. Kuruppu, Darshini, Aijun Zhu, Ji-Quan Wang, Lei Cao, Anna-Liisa Brownell, and Kenneth Tanabe. "Imaging viral oncolysis by HSV-1 in murine tumors by Micro-PET." *Journal of Nuclear Medicine* 48, no. supplement 2 (2007): 328P-328P.
103. Shoup, Timothy, David Elmaleh, Anna-Liisa Brownell, L. Cao, D. Kuruppu, E. Carter, D. Winter, P. Dagostino, and Alan Fischman. "Fluorine-18 labeled FP-21399 for lymph node PET imaging." *Journal of Nuclear Medicine*, 48, no. supplement 2 (2007): 318P-318P.
104. Raymond Lei Cao, Steven R. Biegalski, "The measurement of the presampled MTF of a high spatial resolution neutron imaging system," *Nuclear Inst. and Methods in Physics Research, A*. Vol. 582, no. 2: 621-628. 2007.
105. L. Cao, S. Landsberger, S. Basunia, Y. Tao, "Study of PM2.5 in Beijing suburban site by neutron activation analysis and source apportionment," *Journal of Radioanalytical and Nuclear Chemistry*. Vol. 261, no. 1: 87-94. 2004.
106. Wang, Jiangxue, Lanying Guo, Lei Cao, and Liyun Jin. "Research of the technology of TXRF analysis in airborne particulate matter." *Journal of Nanhua University*. Science and Engineering Edition 18, no. 1 (2004): 63-66.
107. Ni, Banfa, Weizhi Tian, Yangmei Zhang, Lanzhi Zhang, Lei Cao, and Pingsheng Wang. K 0-NAA and its extension, software as well as automation. No. JAERI-CONF-2003-004. 2003.
108. W Tian, B Ni, Y Zhang, L Cao, P Wang, "Metrological role of neutron activation analysis. III. Role of INAA in sampling behavior characterization," *Accreditation and Quality Assurance*. Vol. 7, no. 3: 101-105. 2002.
109. L Cao, W Tian, B Ni, P Wang, Y Zhang, "Radiochemical neutron-activation analysis of uncertified ultra-trace rare earth elements in two biological certified reference materials," *Anal Bioanal Chem*. Vol. 2, no. 372: 397-400. 2002.
110. L Cao, W Tian, B Ni, "Preliminary study of airborne particulate matter in a Beijing sampling station using instrumental neutron activation analysis," *Atmospheric Environment*. Vol. 12, no. 36: 1951-1956. 2002.
111. Tian WZ, Ni BF, Cao L, Zhang YM, Wang PS, "Metrological role of neutron activation analysis. II. Parametric INAA - an ideal back-up for INAA as a primary ratio method of measurement," *Accreditation and Quality Assurance*. Vol. 8, no. 7: 50-54. 2002.
112. W. Tian, B. Ni, P. Wang, L. Cao, Y. Zhang, "Metrological role of neutron activation analysis. IB. Inherent characteristics of relative INAA as a primary ratio method of measurement," *Accreditation and Quality Assurance*. Vol. 7, no. 1: 7-12. 2002.
113. Y. Zhang, B.F. Ni, W. Z. Tian, P.S. Wang, L. Cao, "Study on bioavailability of dietary iron of women by using activable isotopic tracer and neutron activation analysis techniques," *Atomic Energy Science and Technology*. Vol. 36 (3), 266-269 2001.

114. Cao Lei, Ni Bang Fa, Tian Wei Zhi, Wang Ping Sheng, Zhag Yang Mei, "Certification Study of Rare Earth Elements in Two Chinese CRMs Wheat and Hair by NAA," *Atomic Energy Science and Technology*. Vol. 10, 105. 2001.
115. W. Tian, B. Ni, P. Wang, L. Cao, Y. Zhang, "Metrological role of neutron activation analysis. IA. Inherent characteristics of relative INAA as a primary ratio method of measurement," *Accreditation and Quality Assurance*, Vol. 6, no. 12: 488-492. 2001.
116. Zhang, Yangmei, Bangfa Ni, Pingsheng Wang, Weizhi Tian, and Lei Cao. "Study on bioavailability of zinc for children's diet by using activable isotopic tracer ^{70}Zn and neutron activation analysis techniques." *Atomic Energy Science and Technology*, 35, no. 5 (2001): 416-421.
117. Yu, Tao, Xiaoping Qiu, and Lei Cao. "Dynamic simulation of reactor core control system using SIMULINK." *Journal of Nanhua University*. Science and Engineering Edition 15, no. 4 (2001): 15-17.
118. L Guo, X He, L Cao, X Zhao, X Gong, "Concentration measurement of ^{13}N in light water reactor primary loop", *Atomic Energy Science and Technology*, Volume 32 Issue 5, Pages 466-470, 1998.
119. Guo, Lanying, Xiuliang Zhao, Lihong Zhao, Xueyu Gong, Lei Cao, Xian He, and Qiu Ling. "The ^{13}N monitoring system for measuring the water leakage in the primary coolant circuit of a PWR nuclear power station", *Nuclear Electronics and Detection Technology* 18, no. 4 (1998): 282-284.

REPROTS and BOOK CHAPTER:

120. G. Downing, Lei Cao, "Neutron Imaging Straw Detectors: Getting the Efficiency Right". NIST Center for Neutron Research: Accomplishments and Opportunities ed. Vol. 1089. Gaithersburg: *NIST Special publication*. 2008
121. Kenneth Tobin...et al, Lei Cao...et al, "DOE workshop on Technologies to Reactors: Enabling Accelerated Deployment of Nuclear Energy Systems, ORNL, July 24-26, 2018.
122. Cao, Lei. "A High Temperature-tolerant and Radiation-resistant In-core Neutron Sensor for Advanced Reactors." 2016
123. Cao, Lei, etc., "Monitoring of Actinide Concentrations in Molten LiCl-KCl Salt using Alpha Spectroscopy" <https://doi.org/10.2172/1501882>
124. Lei Pan, Praneeth Kundlakunta, Lei Raymond Cao, "Inorganic Perovskite CsPbBr_3 Gamma-ray Detector", 2021 CRC Press

PAPERS IN CONFERENCE PROCEEDINGS:

1. Parts M. Bisbee, I. Oksuz, K. Harke, N. Cherepy, A. Townsend, L. R. Cao, "Image Stitching in Neutron Radiography for Surface Extraction of Additively Manufactured", Transactions of American Nuclear Society 128, no. 1, 206-209 (2023)
2. L. R. Cao, D. Giglio, I. Oksuz, V. Hlinka, P. Kandlakunta and S. Xue, "Explore the Use of Nuclear Voltaic Batteries as Power Supplies for Monitoring Nuclear Fuel Cycles," 2023 *IEEE Nuclear Science Symposium, Medical Imaging Conference and International Symposium on*

- Room-Temperature Semiconductor Detectors (NSS MIC RTSD)*, Vancouver, BC, Canada, 2023, pp. 1-1, doi: 10.1109/NSSMICRTSD49126.2023.10338132
3. T. E. Maurer *et al.*, "Characterizing a Research Reactor Based Fast Neutron Beam with Organic Scintillators," *2023 IEEE Nuclear Science Symposium, Medical Imaging Conference and International Symposium on Room-Temperature Semiconductor Detectors (NSS MIC RTSD)*, Vancouver, BC, Canada, 2023, pp. 1-1, doi: 10.1109/NSSMICRTSD49126.2023.10338751.
4. Jarod Remy, Yuxuan Zhang, Vishank Talesara, Hongping Zhao, Wu Lu, Tadao Hashimoto, Lei R. Cao, "MOCVD Epilayer on NEAT Grown GaN Schottky Diodes for Radiation Detection", *Transactions of American Nuclear Society* 128, no. 1, 218-221 (2023)
5. Jarod Remy, Thomas Blue, Parans Paranthaman, Lei R. Cao, "Investigation of Ga₂O₃ Radiation Sensitivity and Resistance to High Temperatures", *Transactions of American Nuclear Society* 128, no. 1, 227-230, (2023)
6. Matthew Van Zile, Emily Gordon, Praneeth Kandlakunta, Andrew Kauffman, Matthew Bisbee, Shelly Li, Michael Simpson, Shayan Shahbazi, Lei R. Cao, "Design of Fuel Salt Irradiation for Fission Products Gamma Spectroscopy and Off-Gassing Study", *Transactions of American Nuclear Society* 127, no. 1 (2022): 593– 596
7. P. Kandlakunta, M. Van Zile, W. Panaccione, L. R. Cao, "Response of Silicon Photovoltaic Cell to Neutrons", *Transactions of American Nuclear Society* 127, no. 1 (2022): 373– 376
8. Christopher Heckert, Neil R. Taylor, Sushovan Dhara, Siddharth Rajan, Lei R. Cao, Thomas E. Blue, "Gallium Oxide Schottky Barrier Diodes for Alpha Spectroscopy", *Transactions of American Nuclear Society*, Volume 126, Number 1, June (2022): 80-82.
9. Ibrahim Oksuz, Matt Bisbee, Nerine Cherepy, James Hall, Lei Cao, "Automated Fast Neutron Computed Tomography at Ohio State University Research Reactor", *Transactions of American Nuclear Society* 125, no. 1 (2021): 368-370
10. Matthew Bisbee, Ibrahim Oksuz, Matthew VanZile, Lei Cao, "Fast Neutron Computed Tomography Station at The Ohio State University Research Reactor", *Transactions of American Nuclear Society*, Volume 125, no. 1, (2021): 118-121
11. Matthew Van Zile, Emily Gordon, Praneeth Kandlakunta, Andrew Kauffman, Matthew Bisbee, Shelly Li, Michael Simpson, Lei R. Cao, "Design of Fuel Salt Irradiation for Fission Products Gamma Spectroscopy and Off Gassing Study", *Transactions of American Nuclear Society* 125, no. 1 (2021): 118-121.
12. Matt Van Zile, Andrew Kauffman, Joel Hatch, L. Raymond Cao, "High Temperature Silicon-Carbide Furnace for Near Core Irradiation Testing at The Ohio State University Research Reactor, *Transaction of American Nuclear Society.*" *Transactions* 122, no. 1 (2020): 284-286.
13. P. Kandlakunta, X. Dai, J. Midkiff, M. Van Zile, L. Pan, J. Huang, J. McClory, L. R. Cao, "Solar Photovoltaic Devices as Radiation Sensors for Post-detonation Nuclear Forensics," *IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) Record*, Nov 2020 (Accepted)
14. Kandlakunta, Praneeth, Chuting Tan, Nathan Smith, Sha Xue, Neil Taylor, R. Gregory Downing, Vasil Hlinka, and Lei R. Cao. "High Flux Neutron Detection Using Silicon Carbide from Near-core Locations." *Transactions* 121, no. 1 (2019): 427-430.
15. Taylor, N., Dun, C., Saeidjavash, M., Kuang, W., Zhang, Y., Cao, R. "3D Printing Assisted 4H-SiC Schottky Diodes Fabricated for Alpha Particle Spectroscopy." *Transactions of American Nuclear Society*. Vol. 120. Minneapolis, Minnesota, USA. (June 2019).

16. Taylor, N., Jarrell, J., Cao, R. "Modeling of Fission Fragment Detection in 4H-SiC Schottky Diodes." Transactions of American Nuclear Society. Vol. 119. Orlando, Florida, USA. (November 2018)
17. Tan, Chuting, Nicholas H. Bashian, Chase W. Hemmelgarn, Wesley J. Thio, Daniel J. Lyons, Yuan F. Zheng, and Lei R. Cao. "Latent Effects of Radiation on Li-ion Batteries in Robots." Transactions 116, no. 1 (2017): 934-936.
18. Wang, Lei, Josh Jarrell, Sha Xue, Thomas E. Blue, and Lei R. Cao. "The Fast Neutron Sensitivity of a SiC Detector." Transactions 117, no. 1 (2017): 493-495.
19. Oksuz, Ibrahim, William Chuirazzi, H. Paul Martinez, Nerine Cherepy, and Lei Cao. "Characterization of Polyvinyl Toluene (PVT) scintillators for fast neutron imaging." In Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XX, vol. 10762, p. 107620D. International Society for Optics and Photonics, 2018.
20. Li, Ying, Sihao Ding, Chuting Tan, Yuan F. Zheng, and Lei Raymond Cao. "The impact of radiation degraded li-ion battery to mobile robots." In Mechanical, System and Control Engineering (ICMSC), 2017 International Conference on, pp. 201-205. IEEE, 2017.
21. Jarrell, Joshua, Eric Moore, Thomas Blue, and Lei Cao. "Elevated Temperature Alpha Spectroscopy with Nickel-Platinum 4H-SiC Schottky Diodes." Transactions 116, no. 1 (2017): 123-125.
22. Jarrell, Josh, Milan Stika, Michael Simpson, Thomas E. Blue, and Lei R. Cao. "Depleted Uranium and Th-232 Decay Chain Daughter Isotope Identification with 4H-SiC Alpha Spectroscopy." Transactions 117, no. 1 (2017): 116-118.
23. William Chuirazzi, Richard Shawger, Lei Cao. "Water Scintillation under Electron Beam Exposure." In: Transactions of American Nuclear Society. (June 2017).
24. Ying Li, Sihao Ding, Chuting Tan, Yuan Zheng and Lei Cao. "The Impact of Radiation Degraded Li-ion Battery to Mobile Robots." In: ICMSC 2017 conference proceeding. (May 2017).
25. Tan, Chuting, Daniel Joseph Lyons, Yuan Fang Zheng, and Lei Raymond Cao. "Performance of Lithium-Ion Battery When Operating in Radioactive and High Temperature Environment." In Meeting Abstracts, no. 2, pp. 657-657. The Electrochemical Society, 2016.
26. William Chuirazzi, Ryan Gallagher, Douglas Hardtmayer, Hao Chen, Niek Schreuder, Lei Cao. "Water Scintillation under Proton Beam Exposure." In: Transactions of American Nuclear Society. (Nov 2016). 115 (1). 32-35.
27. Z. Xia, V.P. Derenchuk, D. Hardtmayer, L. Cao, H. Chen, R. Moore, Z. Nevitt, J. Volk. "Comparison of the MCNP6 and FLUKA Codes in Shielding Calculation at ProNova Proton Therapy Facility." In: Transactions of American Nuclear Society. (Nov 2016). 115 (1). 1045-1047.
28. Joshua T. Jarrell, Benjamin Reinke, Max Chaiken, Brandon Wilson, Wolfgang Windl, Brian Esser, Lei Cao, Thomas Blue. "Charge Carrier Diffusion Length Determination in 4H-SiC Schottky Alpha Detectors." In: Transactions of American Nuclear Society. (Jun 2016). 114 (1). 300-304.
29. Milan Stika, Max Chaiken, Joshua Jarrell, Thomas Blue, Lei R. Cao, Michael Simpson. "Electrodeposition of Actinides on a Semiconductor Detector for Concentration Monitoring." In: Transactions of American Nuclear Society. (Jun 2016). 114 (1). 340-344.
30. Benjamin Reinke, Joshua Jarrell, Max Chaiken, Brandon A. Wilson, Thomas E. Blue, Wolfgang Windl, Bryan D. Esser, Lei Cao. "Long-term 500 C testing of high-temperature 4H-SiC Schottky

- iodine alpha particle detectors for pyroprocessing." In: Transactions of American Nuclear Society. (Nov 2015). 113 (1). 489-491.
31. Cetiner, Sacit M., Kenan Ünlü, Lei Raymond Cao, and R. Gregory Downing. "Cross Electric and Magnetic Field (CEM) Field Spectrometer for Neutron Depth Profiling." Nuclear Science and Engineering (2022).
32. MaxChaiken, Andrew Clark, Brian Cohn, James Cutright, Michael Kurth, Richard Shawger, Raymond Cao. "Neutron Activated Fluoride Salt Test Loop at The Ohio State University." In: Transactions of American Nuclear Society. (Nov 2015). 113 (1). 60-63.
33. Michael Kurth, Richard Shawger, Danyal Turkoglu, Sam Glover, Henry Spitz, and Lei R. Cao. "Development of an Active Imaging Method for Examining Environmental Samples in Nuclear Safeguards." In: Transactions of American Nuclear Society. (Jun 2015). 112 (1). 253-255.
34. Shimeng Li, Adib Samin, Jie Qiu, Lei Cao, Yuan Zheng, "Performance analysis on radiation degraded BLDC motor in robot servo systems," IEEE International Conference on Electro/Information technology, May 21-23, 2015, DeKalb, IL, pp. 38-43.
35. Danyal Turkoglu, Shamsuzzoha Basunia, Aaron Hurst, Richard Firestone, Laszlo Szentmiklosi, Lei Cao. "93Nb Thermal Neutron Capture Cross-section from Prompt Gamma-Ray Intensities." In: Transactions of American Nuclear Society. (Nov 2014). 111 (1). 560-563.
36. Jie Qiu, Adib Samin, Jason Hattrick-Simpers, Yuan F. Zheng, Lei Cao. "Effect of Neutron Irradiation on the Nd-Fe-B Rare-Earth Permanent Magnet." In: Transactions of American Nuclear Society. (Jun 2014). 110 934 - 936.
37. Jinghui Wang, Padhraic L. Mulligan, and Lei R. Cao. "TCAD Simulation of Charge Collection in GaN Schottky Diode Radiation Detector" In: American Nuclear Society 2014 Annual Meeting. Vol. 110. (2014). 167 - 169.
38. Li, S., Zheng, Y. F., Samin, A. J., and Cao, L. R. "On the study of degrading and loss of the function of harmonic drive due to nuclear radiation effect." In: Proc. International Conference on Mechanical Design, Manufacture and Automation Engineering. (May 2014). 440-446.
39. Shimeng Li, Adib Samin, Jie Qiu, Lei Cao, Yuan Zheng, "New approach for modeling and testing of harmonic drive in robotic systems," Proc. 2014 IEEE International Conference on Mechatronics and Automation, August 3 - 6, Tianjin, China, (2014). pp. 1079-1084.
40. Shimeng Li, Adib Samin, Jie Qiu, Lei Cao, Yuan Zheng, "The effects of radiation-induced demagnetization on the performance of the brushless dc motor in robot servo systems," International Symposium on Fundamentals of Electrical Engineering, Nov. 28-29. 2014, Bucharest, Romania, pp. 1-6.
41. Padhraic L. Mulligana, Jinghui Wang, and Lei R. Cao. "Developing a Radiation Detector on Freestanding n-GaN" In: American Nuclear Society 2013 Annual Meeting. Vol. 108. (2013): 253 - 254.
42. Danyal Turkoglu, Lei R. Cao. "A Preliminary Study of ^{157}Gd Thermal Neutron Capture Cross Section with Activated Prompt Gamma Rays" In: American Nuclear Society 2013 Annual Meeting. Vol. 108. (2013): 270 - 273.
43. D. Turkoglu, S. Glover, H. Spitz, L. Cao. "Applying method of integral thermal neutron cross-section measurement using activated prompt gamma rays to non-1/v isotopes" In: American Nuclear Society 2014 Winter Meeting. Vol. 109. (2013): 118 - 10.

44. Lei R. Cao, Praneeth Kandlakunta. "Measure Internal Conversion Electron Spectrum of Gadolinium Neutron Capture Using Neutron Beam" In: American Nuclear Society 2013 Annual Meeting. Vol. 108. (2013): 267 - 269.
45. Jie Qiu, Evan Katz, Lei R. Cao, Leonard J. Brillson. "The Evaluation of GaN for Neutron Detector with Cathodoluminescence Spectroscopy" In: American Nuclear Society 2012 Winter Meeting. Vol. 107. (2012): 357 - 359.
46. Praneeth Kandlakunta, Padhraic Mulligan, Danyal Turkoglu and Lei Cao. "A Neutron Flux Monitor for a Reactor Neutron Beam Facility" In: 2012 IEEE Nuclear Science Symposium and Medical Imaging Conference. (2012): 1. 243-247
47. J. Ralston, P. Kandlakunta, L. Cao. "Electron Emission Following ^{157}Gd Neutron Capture" In: American Nuclear Society 2012 Annual Meeting. Vol. 106. (2012): 313 - 315.
48. Praneeth Kandlakunta, Danyal Turkoglu, Padhraic Mulligan, Lei Cao. "A Neutron Beam Monitor for a Neutron Depth Profiling Facility" In: American Nuclear Society 2012 Annual Meeting. Vol. 106. (2012): ,324-325.
49. Walter Powell, Lei Cao. "Reconsideration of Inherent Neutron Sources in Liquid Fuel of Molten Salt Reactors" In: American Nuclear Society 2012 Annual Meeting. Vol. 106. (2012): ,915-918.
50. Jinghui Wang, Praneeth Kandlakunta, Thomas F. Kent, John Carlin, Daniel R. Hoy, Roberto C. Myers, Lei Cao. "A Gadolinium Doped Superlattice GaN Schottky Diode for Neutron Detection" In: The Transaction of America Nuclear Society. Vol. 104. (2011): ,207-209.
51. Padhraic L. Mulligan, Danyal J. Turkoglu, Praneeth Kandlakunta, Lei Cao. "Improving Neutron Depth Profiling at The Ohio State University Using Multiple Detectors" In: Transactions of American Nuclear Society. Vol. 104. (2011): 227-229.
52. Praneeth Kandlakunta, Lei Cao. "A Neutron Detector with Gamma Discrimination" In: Transactions of the American Nuclear Society. Vol. 105. (2011): ,335-336.
53. D. Turkoglu, J. Straha, P. Kandlakunta, L. Cao. "Development of an External Neutron Beam Facility at The Ohio State University" In: The Transaction of America Nuclear Society. Vol. 102. (2010): 231-232.
54. S. R. Biegalski, L. Cao, M. Deinert, W. Wilson, D.S. O'Kelly, R. Kapsimalis. "Status of the Texas Neutron Imaging Facility" In: Transaction of America Nuclear Society. (2009): 235-236.
55. Lei Cao, Richard Bindel. "The Use of Webcam for Neutron Imaging" In: Transaction of America Nuclear Society. Vol. 100. (2009): 243-244.
56. L. R. Cao, J. R. Hattrick-Simpers, H. Oguchi R. Paul, L. Bendersky, R. G. Downing. "The Study of Thin Film Metal Hydride with Prompt Gamma Activation Analysis" In: Transaction of America Nuclear Society. (2008): 268-269.
57. L. Cao, S. Gupta, R. G. Downing. "The Analysis of Gamma Irradiated Boron-doped Diamond Films by CNDP using Computerized Data Reduction" In: The Transaction of America Nuclear Society. (2008): 423-423.
58. Nalin R. Parikh, R Parker, R. Gregory Downing, Lei Cao. "High Dose of Helium Implanted in Nano-Cavity Tungsten to Evaluate Threshold of Surface Blistering due to He Bubble Formation" In: Transaction of America Nuclear Society. (2008): 416-417.
59. S. M. Cetiner, K. Ünlü, L. R. Cao, R. G. Downing. "Cross Electric and Magnetic Field Field Spectrometer for Neutron Depth Profiling" In: The Transaction of American Nuclear Society. (2008): 420-421.

60. Paul, R.L., Cao, L. "Characterization of Materials for a Hydrogen- Based Economy by Cold Neutron Prompt Gamma-Ray Activation Analysis" In: Res. Soc. Symp. Proc: The Hydrogen Economy. Vol. 1098E. (2008): 100-104.
61. L. Cao, Steven.Biegalski, Sean O'Kelly. "A high-resolution neutron radiography device by using micro-channel plate detector" In: The 8th World Conference on Neutron Radiography. Gaithersburg, United States: Springer. (2008): 305-312.
62. S. Biegalski, L. Cao, D.A.Haas, D.S.O'Kelly. "Neutron radiography development at the University of Texas at Austin TRIGA Reactor" In: The Transaction of American Nuclear Society. (2005): 880-88.

PATENTS:

	Pat. Ref. #	Pat. Title	Pat. Inventors	Filing Date	Pat. Type
1	P2023-035-7477	Gas and sample extraction system for high-temperature irradiated samples of molten salt, radiopharmaceutical, tritium gas, and noble gas production	Van Zile, Matthew, Cao, Raymond, Kauffman, Andrew	8/26/2022	Provisional
2	P2023-029-7455	Devices, systems, and methods for tritium gas detection	Cao, Raymond, Co, Anne, Kandlakunta, Praneeth	8/10/2022	Provisional
3	P2022-065-7589	Devices and kits for detection of a target analyte and methods of use thereof	Cao, Raymond, Co, Anne	9/23/2022	Provisional
4	P2022-056-6679	Tritium detection devices and methods of making and use thereof	Cao, Raymond, Kandlakunta, Praneeth	6/24/2022	Provisional
5	P2021-072-7091	Nuclear reactor core with rotating fuel modules and related systems	Smidts, Carol, Aldemir, Tunc, Cao, Raymond, Horack, John, Khafizov, Marat	4/29/2022	PCT
6	P2021-072-6236	Rotating fuel core with fuel strips for small modular reactor	Smidts, Carol, Aldemir, Tunc, Cao, Raymond, Horack, John, Khafizov, Marat	4/29/2021	Provisional
7	P2020-301-7612	Charge or electricity generating devices and methods of making and use thereof	Cao, Raymond, Pan, Lei	10/26/2022	PCT
8	P2020-301-6442	Charge or electricity generating devices and methods of making and use thereof	Cao, Raymond, Pan, Lei	6/9/2021	PCT

9	P2020-301-5792	Beta voltaic battery	Cao, Raymond, Pan, Lei	6/9/2020	Provisional
10	P2017-137-4484	Charge generating devices and methods of making use thereof	Cao, Raymond	6/19/2018	Utility
11	P2017-137-090	Charge generating devices and methods of making use thereof	Cao, Raymond	6/19/2017	Provisional
12	P2011-181-03	Detection Devices and Methods	Cao, Raymond	8/28/2014	Utility
13	P2011-181-02	Detection Devices and Methods	Cao, Raymond	2/28/2013	PCT
14	P2011-181-01	Detection Devices and Methods	Cao, Raymond	2/28/2012	Provisional

GRANTS AND CONTRACTS (2009-2023, in bold fonts are active):

	Total (as PI)
Number of Funded Projects	41 (32)
Funding Level	~\$18.5 million (~\$13 million)

	Role	Sponsor	Total Amount	PoP	Abbreviated Title
1	PI	Nuclear Regulatory Commission	\$500,000	01/01/2024-12/31/2026	Rad-hard FPGA for NPP I&C
2	PI	Nuclear Regulatory Commission	\$400,000	05/31/2023-05/30/2027	Ohio State University Fellowship
3	PI	DOE NNSA	\$180,000	04/01/2024-03/31/2027	Fast neutron imaging
4	PI (also subarea lead for TA3)	Georgia Tech and National Nuclear Security Administration (NNSA)	\$2,831,858 as PI (total \$25 millions led by Georgia Tech)	10/01/2019-9/30/2024	Consortium for Enabling Technologies and Innovation
5	PI	Nuclear Regulatory Commission	\$450,000	04/01/2022-3/31/2025	Ohio State University Nuclear Engineering Faculty Development Program
6	PI	DOE/UNLP	\$161,000	08/01/2022 - 07/31/2025	DOE UNLP fellowship award (Jack Lanza)
7	PI	State of Ohio	\$100,000	10/1/2023-9/30/2024	Tritium gas detector

8	PI	OSU Presidential Catalyst award	\$199,000	10/01/2021-12/31/2023	Self-scintillating Perovskite
9	PI	DOE/NEUP	\$400,000	10/01/2021-12/31/2023	Total Mass Accounting in Advanced Liquid-Fueled Reactors
10	PI	DOE/UNLP	\$161,000	01/01/2021 - 12/31/2023	DOE UNLP fellowship award (Matt Bisbee)
11	PI	DOE/NEUP	\$400,000	10/01/2020-9/30/2023	Gallium Oxide Schottky Diode Detectors for Measurement of Actinide Concentrations in Molten Salts
12	PI	NSF SBIR PHASE 2 /AwareAbility Technologies LLC	\$750,000 (\$150,000 subcontractor)	5/01/2019-6/01/2023	Wide bandgap semiconductor betavoltaic powered sensor controller
13	PI	DOD-Defense Threats Reduction Agency	\$1,050,000	6/06/2019-1/30/2023	Solar Panel for Prompt Detection of Nuclear Detonations
14	PI	Lawrence Livermore National Lab	\$430,000	9/01/2016-09/30/2022	Fast neutron radiography and tomography
15	PI	Idaho National Lab	\$110,000	9/1/2021 - 9/30/2023	Electrochemical and aqueous spike-based reprocessing nuclear material accounting
16	PI	NSF SBIR PHASE 1 /AwareAbility Technologies LLC	\$225,000 (\$36,000 subcontractor)	10/01/2017-11/30/2018	Wide bandgap semiconductor betavoltaic powered sensor controller
17	PI	DOE/NEUP	\$719,969	10/01/2015-12/31/2018	Monitoring of actinide concentrations in molten LiCl-KCl
18	PI	DOE SBIR/AwareAbility Technologies LLC	\$150,000 (\$39,000 subcontractor)	10/01/2018-04/30/2019	Intelligent III-V GaN neutron detector array
19	PI	DOE/NSUF	\$322,000	2/12/2019-09/30/2021	In-pile heating experiment in support of in-core/near-core sensor
20	PI	DOD-Defense Threats Reduction Agency	\$750,000	12/03/2012-2/28/2018	On the radiation sensitivity and failure mechanism of critical radiation- hardened robotic components
21	PI	ORNL	\$100,000	1/27/2016 – 12/31/2018	Near-core irradiation of fission chamber
22	PI	LANL	\$80,000	2016-2017	Multi-column equipment testing

23	PI	DOD-Defense Threat Reduction Agency	\$615,000	5/10/2014-08/31/2019	High efficiency, low-cost nanocomposite radiation detector
24	PI	Apple Inc	\$50,000	7/1/2016-06/30/2017	Neutron for energy storage materials
25	PI	Idaho National Lab	\$220,000	5/1/2016-9/30/2018	Molten salt mass determination using a trace method
26	PI	DOE	\$230,000	9/01/2016-08/31/2017	A NEUP reactor upgrade request for replacement and enhancement of the control-rod drive system for the Ohio State University Research Reactor
27	PI	DOE	\$61,167	3/01/2017- 3/31/2019	Irradiation and evaluation of BN, fiber optics, and Ga2O3
28	PI	Ohio	\$290,000	7/01/2017-6/30/2019	Research agreement with Ohio Emergency Management Agency
29	PI	DOE	\$243,454	8/01/2014 - 7/31/2015	Equipment for Education, Training, and Research in Advanced Instrumentation and Control at The Ohio State University
30	PI	DOE	\$455,629	9/01/2011 – 8/31//2014	A High Temperature-tolerant and Radiation-resistant In-core Neutron Sensor
31	PI	DOE	\$180,000	1/01/2012 – 12/31/2013	An Integrated Upgrade of Scientific Equipment for Strengthening the Research and Education in Nuclear Energy at the Ohio State University
32	PI	DOD-Defense Threat Reduction Agency	\$200,000	5/01/2011 - 9/30/2013	Gadolinium-GaN for Neutron Detection with Gamma Discrimination
33	PI	Nuclear Regulatory Commission	\$450,000	10/01/2010-9/31/2013	Ohio State University Nuclear Engineering Faculty Development Program
34	Co-PI	DOE	\$990,000 (\$75,000)	10/01/2021-9/30/2024	Gallium Nitride-based 100-Mrad Electronics Technology for Advanced Nuclear Reactor Wireless Communications

35	Co-PI	DTRA/SBIR Phase II	\$1,094,004 (OSU share: \$361,000)	09/08/2022 – 09/07/2024	Phase II: In-field analysis of trace U and Pu
36	Co-PI	DARPA	\$150,000	9/1/2023-5/30/2023	Fast X-ray tube
37	Co-PI	DOE	\$275,361	01/01/2011-12/31/2011	Ohio State's DOE NEUP General Scientific Infrastructure Support
38	Co-PI	DOE-University of Michigan-Sub	\$173,677	10/01/2011-09/30/2016	In-situ Neutron Depth Profiling of Lithium Ion Battery Materials for Improved Electrochemical Performance and Aging Models
39	Co-PI	DOE	\$517,692	10/01/2014-09/30/2017	Advanced instrumentation for transient reactor testing
40	Co-PI	DOE-University of Michigan-Sub	\$1,340,000	10/01/2011-09/30/2016	Battery characterization
41	Co-PI	Nuclear Regulatory Commission	\$383,247	8/01/2015-7/31/2018	Ohio State University fellowship program
42	Co-PI	NSF	\$249,974	5/1/2017 – 4/30/2020	IRES: Forming and Manufacturing Research in Germany

STUDENT ADVISING:

Dr. Cao has graduated **14 PhD students** and **18 MS students**, He has also mentored **7 post-doctorate researchers** and **30+ undergraduate students**. Dr. Cao is currently advising **8 PhD students** and **2 undergraduate students**.

Ph.D. Supervision Completed: 14

	Name	Status/position	Graduation time
1.	Praneeth Kandlakunta	Research Assistant Professor, The Ohio State University	May 2014
2.	Adib Samin	Assistant Professor, Air Force Institute of Technology	August 2014
3.	Jinghui Wang	Physicist at Varian Medical Systems	August 2014
4.	Danyal Turkoglu	Ultra Safe Nuclear Corporation	December 2014
5.	Padhraic Mulligan	Staff Scientist, Oak Ridge National Lab	December 2015
6.	Chuting Tan	Staff Scientist, Idaho National Lab	December 2017
7.	Josh Jarrell	Staff Scientist, Lawrence Livermore National Lab	May 2018

8.	William Chuirazzi	Staff Scientist, Idaho National Lab	May 2020
9.	Sha Xue	Research Scientist, AwareAbility Technologies, LLC	May 2020
10.	Lei Pan	Post-doc, Lawrence Berkeley National Lab	May 2021
11.	Neil Taylor	Staff Scientist, Oak Ridge National Lab	May 2021
12.	Ibrahim Oksuz	Research Scientist, AwareAbility Technologies, LLC	July 2022
13.	Ryan Gallagher	Kairos Power	December 2022
14.	Matt Bisbee	MPR	December 2023

Ph.D. Supervision in Progress: 8

	Name	Status/position	Graduation time	Thesis topic
1.	Matt Van Zeil	GRA	Spring 2024	Molten mass determination
2.	Xander Bart	GRA	December 2025	SMR for hydrogen production
3.	Daryl Giglio	GRA	December 2024	SiC detector
4.	Jarod Remy	GRA	Spring 2025	Ga ₂ O ₃ detector
5.	Wyatt Panaccione	GRA	Spring 2025	Perovskite for gamma detection
6.	Jack Lanza	DOE UNLP Fellow	Spring 2026	Rad-hard GaN wireless emitter
7.	Andrew Maier	GRA	Spring 2026	Scintillating Perovskite
8.	Luke Sheon	University Fellow	Spring 2027	Nuclear battery

Postdoctoral researcher completed: 7**M.S. Supervisions Completed: 18**

	Name	Status/position	Graduation time
1.	Richard Shawger	Assistant Professor, United States Military Academy	June 2016
2.	Padhraic Mulligan	Staff scientist, Oak Ridge National Lab	December 2015
3.	Michael Kurth	Techman Sales, Inc	August 2015
4.	Praneeth Kandlakunta	Research Assistant Professor	May 2014
5.	Adib Samin	Assistant Professor, AFIT	August 2014
6.	Dandan He	China National Nuclear Power Company	June 2014
7.	Jinghui Wang	Research Associate, Stanford University	December 2013
8.	Danyal Turkoglu	Research Associate, NIST	December 2013
9.	James Ralston	Total Quality Logistics	May 2013
10.	Jonathon Lin	Accenture	June 2012

11.	Walt Powell	Defense Information Systems Agency	June 2013
12.	Chuting Tan	Research Scientist, Idaho National Lab	June 2015
13.	Doug Hardtmayer	Industry	December 2017
14.	Matt Van Zeil	OSU Nuclear Reactor Lab	Spring 2020
15.	Zuolong Zhu	OSU	Spring 2020
16.	Chris Heckert	Industry	Spring 2023
17.	Matt Bisbee	Industry	Spring 2023
18.	Daryl Giglio	Industry	Spring 2022

Undergraduate Student Supervisions in Progress: 2

	Name	Status/position	Graduation time	Thesis topic
1.	Jacob Sklebar	Undergraduate Research Assistant	Spring 2024	Tritium gas detector
2.	Hetric Quinnan	Undergraduate Research Assistant	Spring 2024	Machine learning for neutron noise

PROPOSAL REVIEWER AND PANELIST:

U.S. Department of Energy
 U.S. Department of Energy/NNSA-NA22
 U.S. National Science Foundation
 U.S. Nuclear Regulatory Commission
 U.S. Department of Homeland Security
 U.S. Department of Defense, Defense Threat Reduction Agency
 U.S. Department of Energy, National Nuclear Security Administration
 Canada National Research Council
 Research Council of Norway
 Israel PAZY foundation

JOURNAL REVIEWER:

Nature Photonics
 Nature Materials
 Journal of Applied Physics
 IEEE Transactions on Nuclear Science
 Nuclear Instruments and Methods in Physics Research A
 Nuclear Instruments and Methods in Physics Research B
 Journal of Radioanalytical and Nuclear Chemistry
 Applied Radiation and Isotopes
 Nuclear Technology
 Journal of Vacuum Science and Technology
 Review of Scientific Instrumentation
 ACS Applied Materials & Interfaces