

Innovations in Technology

National Laboratory Engagement



Student Development

Outreach

Dr. Shaun Clarke
U. Michigan
CVT Assistant Director
(734) 615-7830, clarkesd@umich.edu

Prof. Sara Pozzi, Ph. D.
U. Michigan
CVT Director
(734) 615-4970, pozzisa@umich.edu

Prof. David Wehe
U. Michigan
CVT Chief Scientist
(734) 763-1151, dkw@umich.edu

Summer 2018

CVT Team: 12 Universities & 9 National Labs. Total funding \$25M over 5 Years



The Consortium for Verification Technology (CVT), consists of twelve leading universities and nine national laboratories, working together to provide the research and development and human capital needed to address technology and policy issues in treaty-compliance monitoring. The underlying issues include nuclear nonproliferation and safeguards in support of the mission of the NNSA's Defense Nuclear Nonproliferation Research and Development office.

The CVT universities and national laboratories form a diverse, geographically distributed team, with faculty and scientists who have demonstrated outstanding research capabilities and well-established collaborations, and who are committed to educating the next generation of nuclear-nonproliferation specialists. The team addresses the major gaps and emerging challenges in treaty verification through six thrust areas: (i) treaty verification: characterizing existing gaps and emerging challenges, (ii) fundamental data and techniques, (iii) advanced safeguards tools for accessible facilities, (iv) detection of undeclared activities and inaccessible facilities, (v) disarmament verification, and (vi) education and outreach. In each of these areas, graduate students play a central role in interdisciplinary research projects led by faculty and laboratory experts in the consortium.

CVT LEADERSHIP



CVT Director
Prof. Sara A. Pozzi
Univ. of Michigan



CVT Assistant Director & Natl Lab POC
Dr. Shaun D. Clarke
Univ. of Michigan



Chief Scientist
Prof. David Wehe
Univ. of Michigan



Project Manager
Mr. John Rodriguez
Univ. of Michigan



Research Coordinator
Dr. Angela Di Fulvio
Univ. of Michigan



Research Coordinator
Dr. Patricia Schuster
Univ. of Michigan



2017 CVT fall workshop group photo, November 29, 2017, Ann Arbor, Michigan



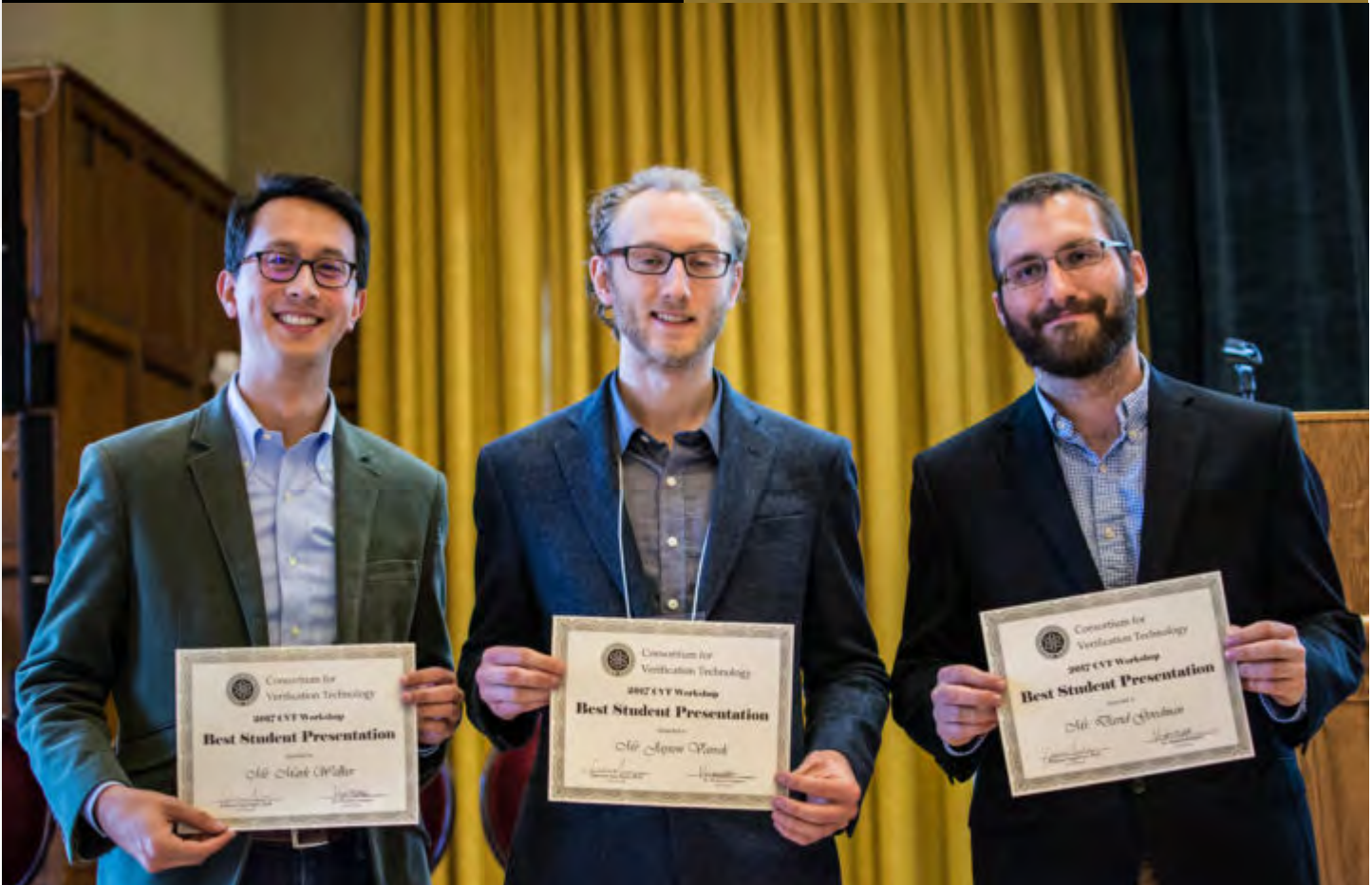
HIGHLIGHTS



Above: Prof. Katy Huff, University of Illinois at Urbana Champaign, receives the Mary Jane Oestmann Professional Women's Achievement Award at the American Nuclear Society meeting, October 2017.



Above: Mr. Steven Czyz, Oregon State University, was awarded 1st place in the 2018 Innovations in Nuclear Technology R&D Award in the category Material Protection, Control and Accountancy. <http://www.nucleartechinnovations.org/>



Above: CVT student speakers are recognized for their outstanding presentations at the 2017 CVT Workshop! (left to right) Mark Walker (Princeton), Jayson Vavrek (MIT), David Goodman (U. Michigan)



<https://cvt.engin.umich.edu>



HIGHLIGHTS



Above: Seven University of Michigan undergraduate students participate in internships at Los Alamos National Laboratory, Summer 2018. (left to right) Ruby Araj, Nathan Giha, Michael Hua, Kyle Beyer, Roxanne Pinsky, Lauren Green, and Aditi Rajadhyaksha.

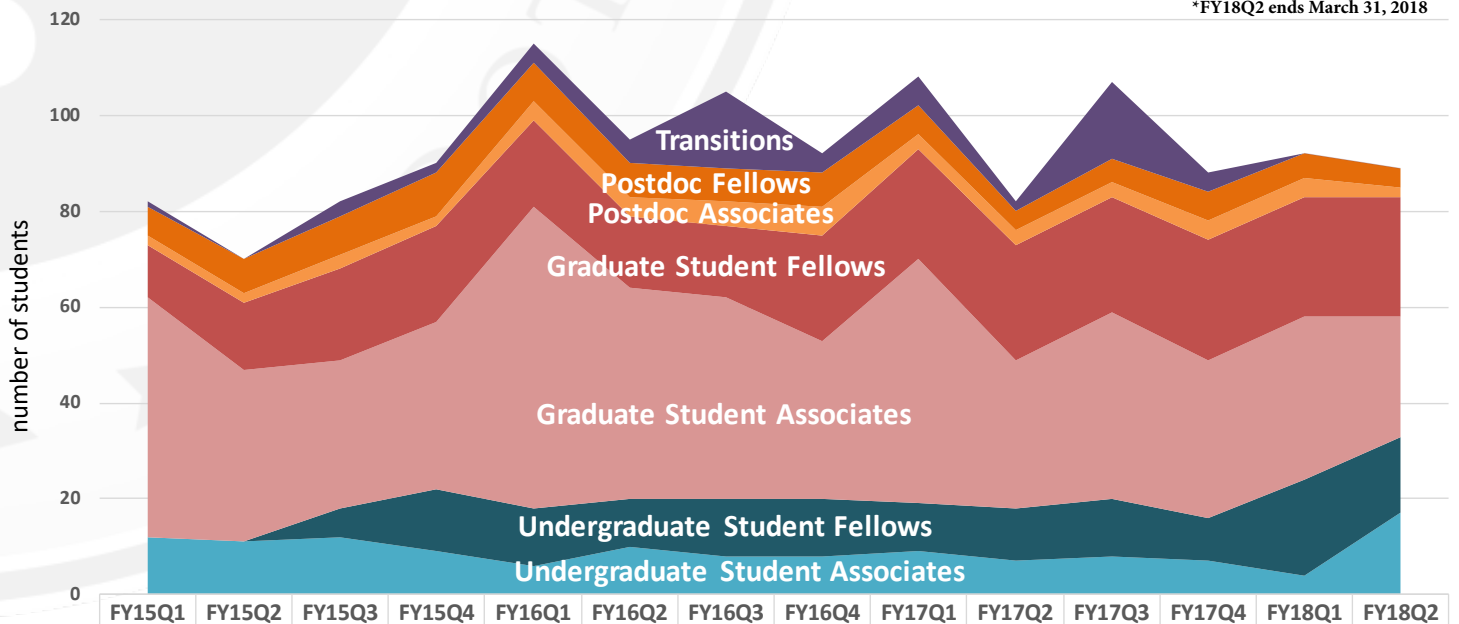
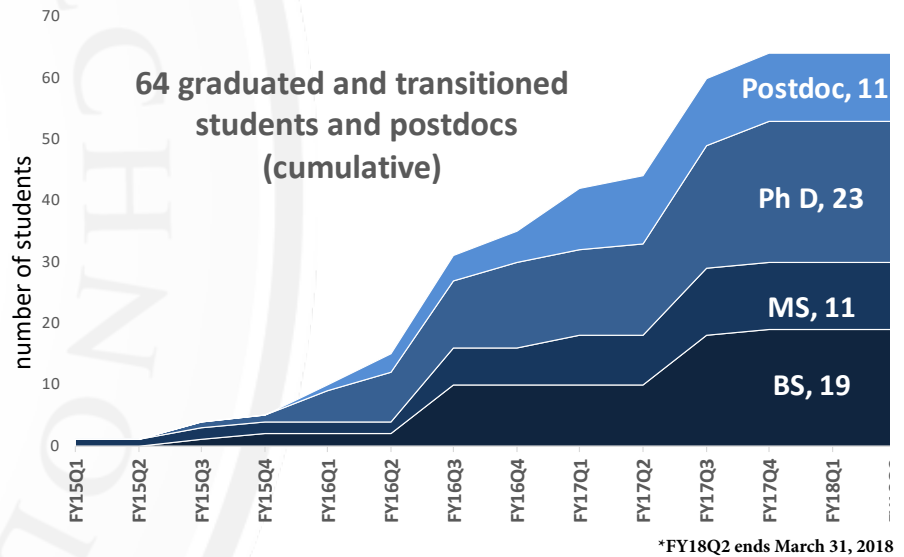
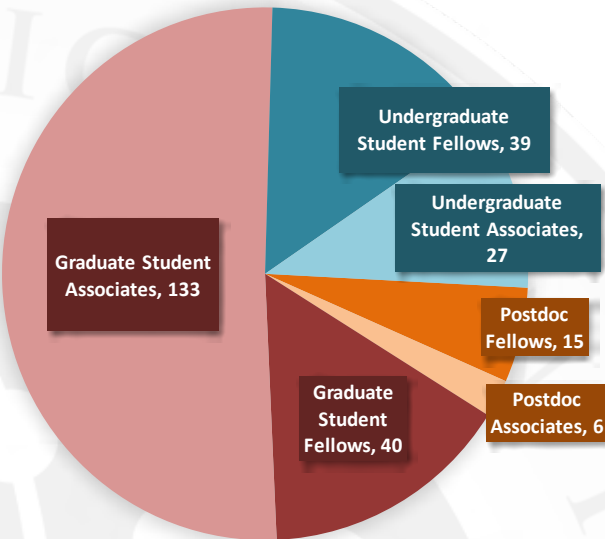
Below: Prof. Paul Richards, Columbia, delivered a plenary lecture at the annual spring meeting of the German Physical Society titled, "Scientific Work in Support of Bans on Nuclear Testing: Lessons for Science Advice." March 8, 2018.

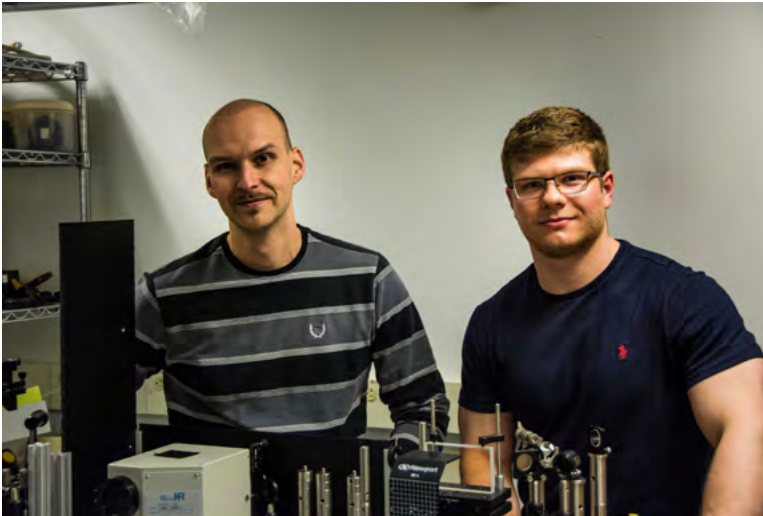
Below: Prof. Kim Kearfott, U. Michigan, is recognized for her achievements with multiple awards including the Claudia Joan Alexander Trailblazer award, 2017, and the Sarah Goddard Power Award at the Academic Women's Caucus, 2018.



STUDENT AND POSTDOC FELLOWS & ASSOCIATES

260 Students and Postdocs: 94 Fellows & 166 Associates





Left: Milos Burger (photo left), Patrick Skrodzki (photo right), work with Prof. Igor Jovanovic to unravel a favorable energy scaling of intense laser filament-solid interactions for remote sensing, furthering the prospects for far-field sensing in nonproliferation applications. (October 2017). <https://www.nature.com/articles/s41598-017-13188-4>

CVT ADVISORY BOARD



Dr. Mona Dreicer
LLNL



Dr. James Duderstadt
U. Michigan



Dr. Richard Kouzes
PNNL



Dr. Nancy Jo Nicholas
LANL



Dr. Vladimir Portopopescu
ORNL

Institute of Nuclear Materials Management
INMM

**Professor Andreas Enqvist
Awarded the Institute of Nuclear
Materials Management (INMM)
Early Career Award**

Dr. Andreas Enqvist has been selected for the Institute of Nuclear Materials Management (INMM) Early Career Award which recognizes members who are 35 years of age or younger. July 17, 2017, INMM Annual Opening Plenary



HIGHLIGHTS



Left: Dr. Patricia Schuster receives the 2017 Glenn F. Knoll Postdoctoral Education Grant.

NPSS newsletter here: http://iee-npss.org/wp-content/uploads/2014/03/NPSS-NEWS-Q2-2017-FINAL_WEB.pdf

Linked-in: <https://www.linkedin.com/feed/update/urn:li:activity:6333261535170875392/>

Twitter: <https://twitter.com/pfschus/status/922464576775577602>

Right: Prof. Sara Pozzi sits near her group's new 9 MeV linear electron accelerator within the newly renovated Nuclear Engineering Lab (NEL) at the University of Michigan.

The new laboratory facility provides a high quality environment for students and faculty to operate while developing cutting edge technologies.



Left: CVT Associate Marc Paff is the recipient of the J.D. Williams Student Paper Award, 1st place, at the 58th annual proceedings of the Institute of Nuclear Materials Management. Marc's paper is titled, "Identification of mixed sources with an organic scintillator-based radiation portal monitor".



EDUCATION and OUTREACH



More than 60 Middle school aged students and their parents join in the Xplore Engineering program annually. These students participate in an introduction to radiation class and work together in small groups to build homemade cloud chambers. Photo: Ciara Sivels, CVT fellow, assists students with the class activity

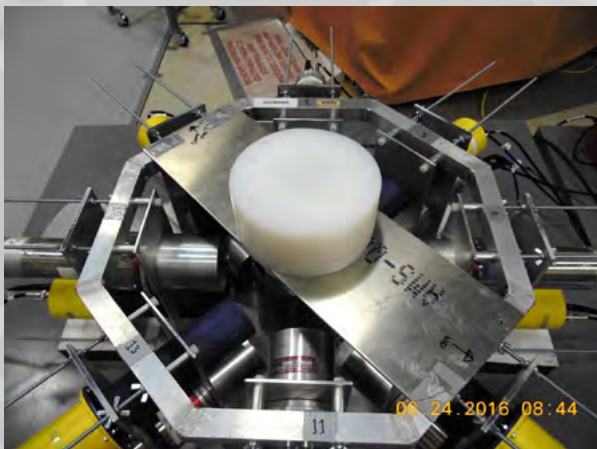
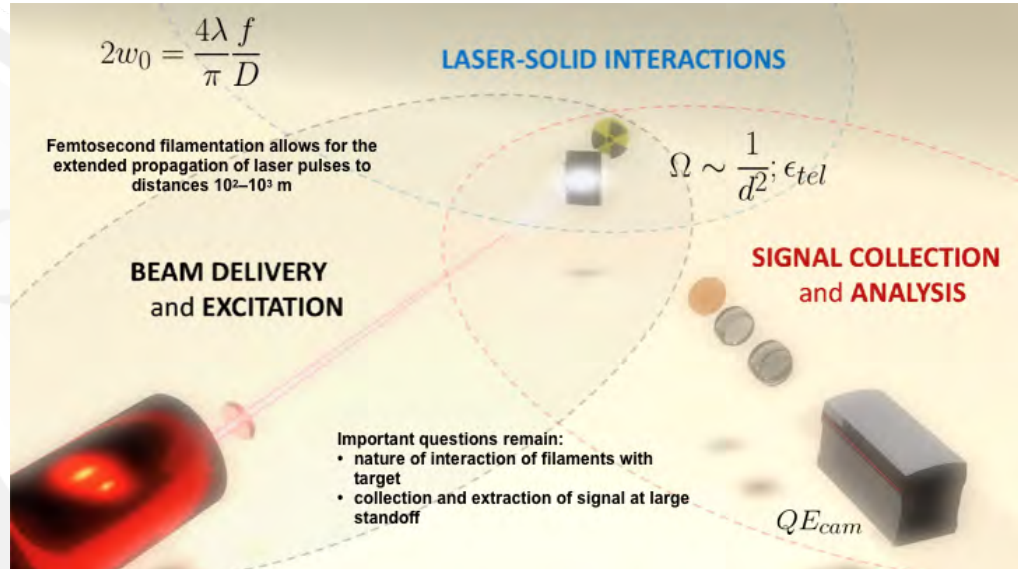


MAE 354/574: Unmaking the Bomb: The Science and Technology of Nuclear nonproliferation, Disarmament, and Verification. Princeton University, Prof. Alex Glaser

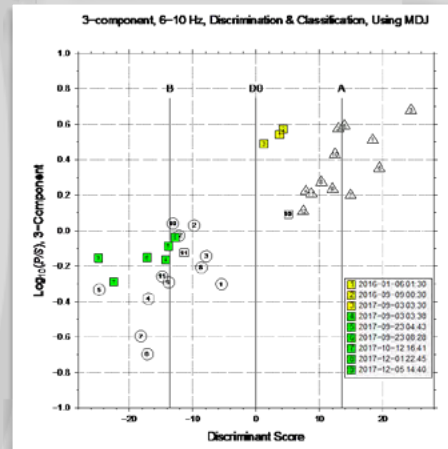


TECHNICAL ACHIEVEMENTS

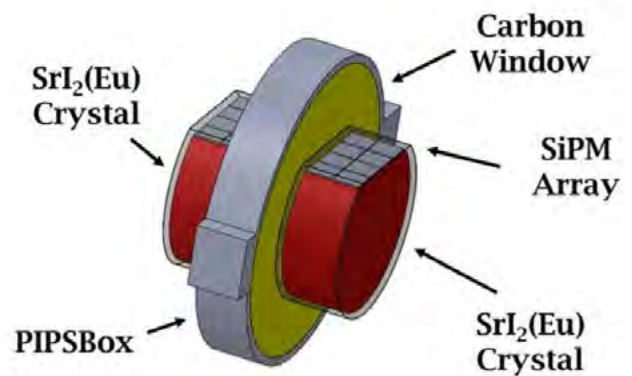
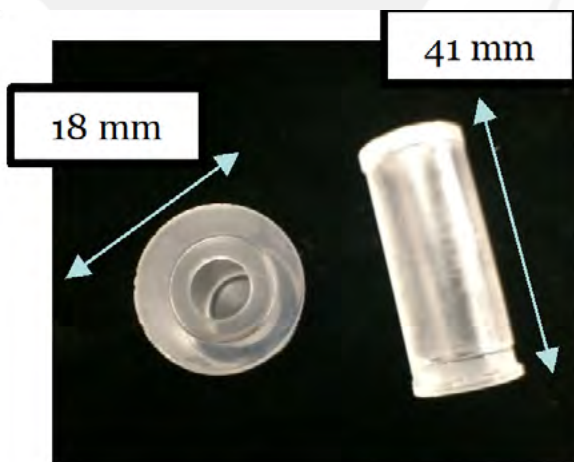
Detected atomic and molecular signatures of uranium in near- and far-field configurations and employing emission- and absorption-based techniques



Left: An active-mode fast neutron multiplicity counter has been demonstrated as a viable technology and is being adopted by the IAEA



Left: Seismic event discrimination of earthquakes from nuclear events

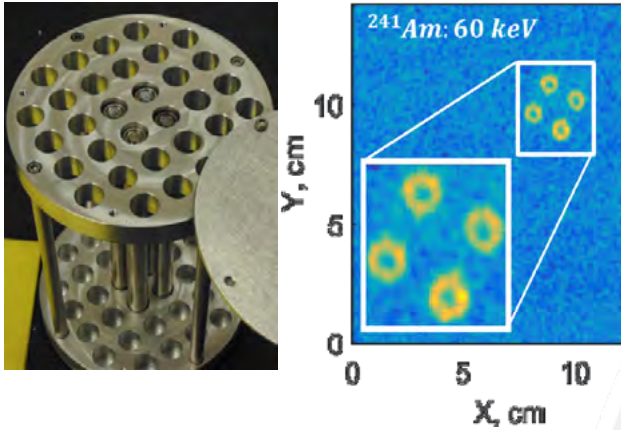


Developing tools to enhance CTBT verification using radioxenon monitoring. Prototype systems have been developed using stilbene (figure left) and SrI₂(Eu) arrays (figure right)



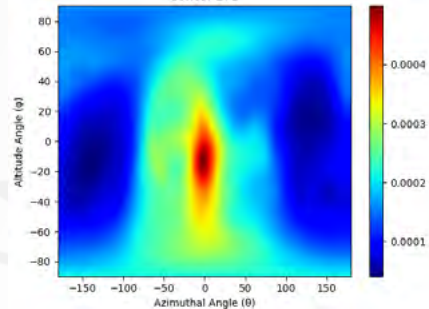
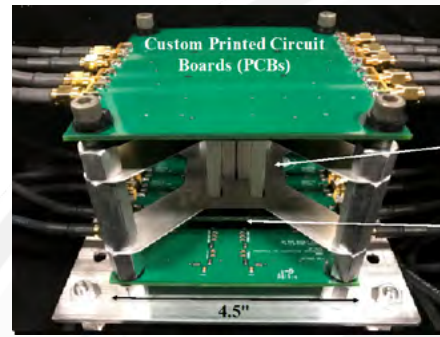
TECHNICAL ACHIEVEMENTS

Advanced Safeguards Instruments



Above: CZT time-encoded imaging of mixed oxide fuel pins at Idaho National Laboratory shows better than 1 cm² spatial resolution

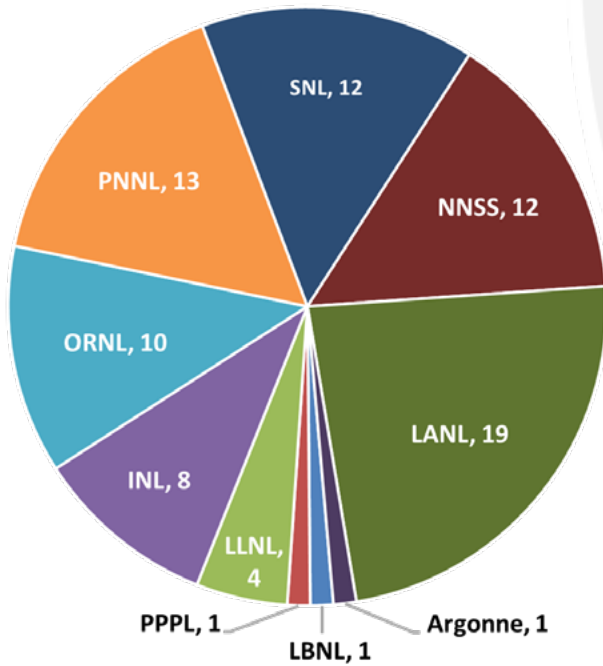
A handheld version of the dual-particle imager



Imaging the W-reflected BeRP ball at DAF

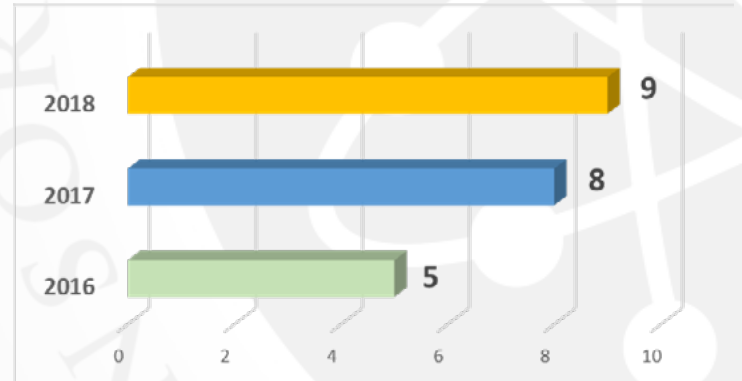
JOINT NATIONAL LAB COLLABORATION

81* Student - Lab Internships



*2014 - Present

22* National Lab Scientist Fellowships



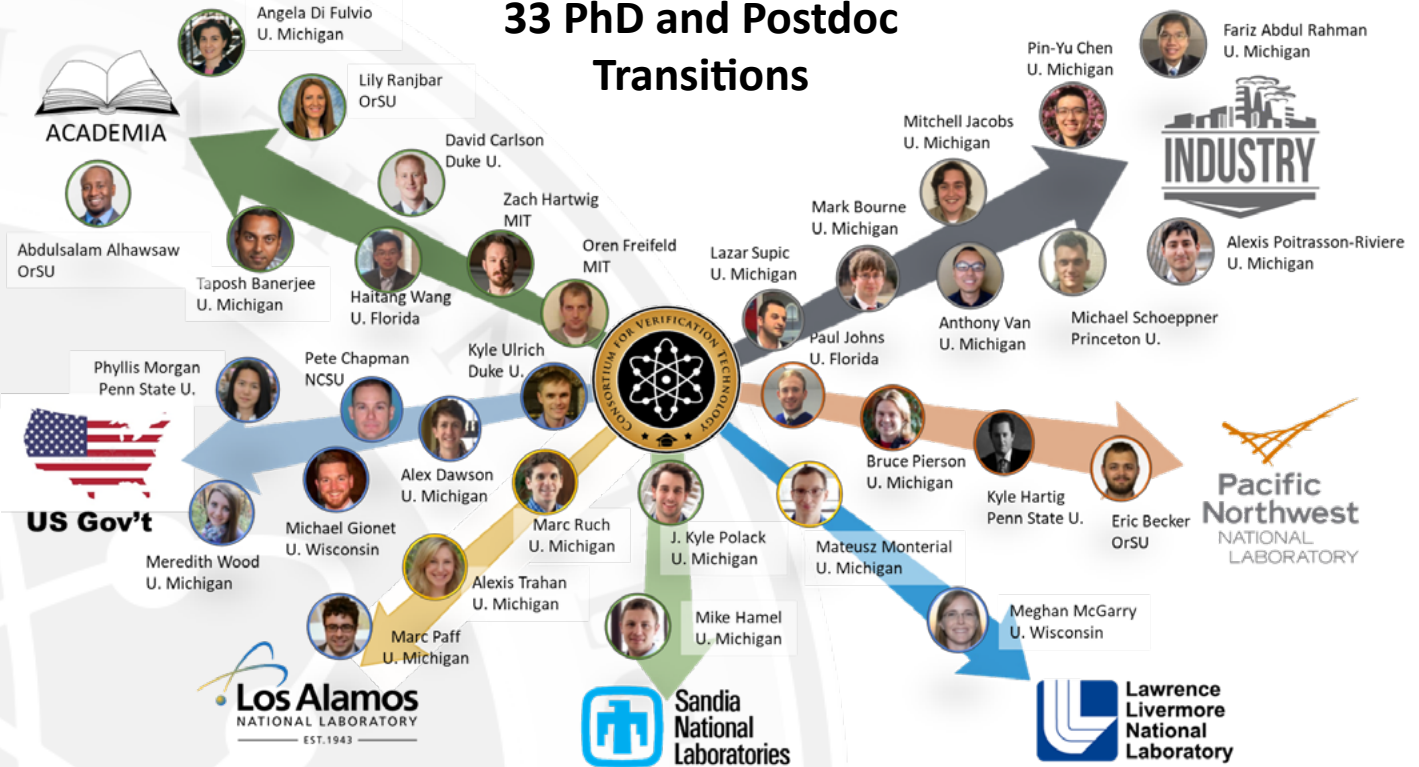
2018 Lab Fellows

- Dr. Eric Becker, PNNL-Michigan
- Dr. Hari Harilal, PNNL-Michigan
- Dr. Paul Johns, PNNL-Florida
- Dr. Kari Pazdernik, PNNL-NCSU
- Dr. Daniel Skroski, PNNL-Michigan
- Dr. Glen Warren, PNNL-MIT, OrStU, Princeton
- Dr. Amanda Rynes, INL-OrStU

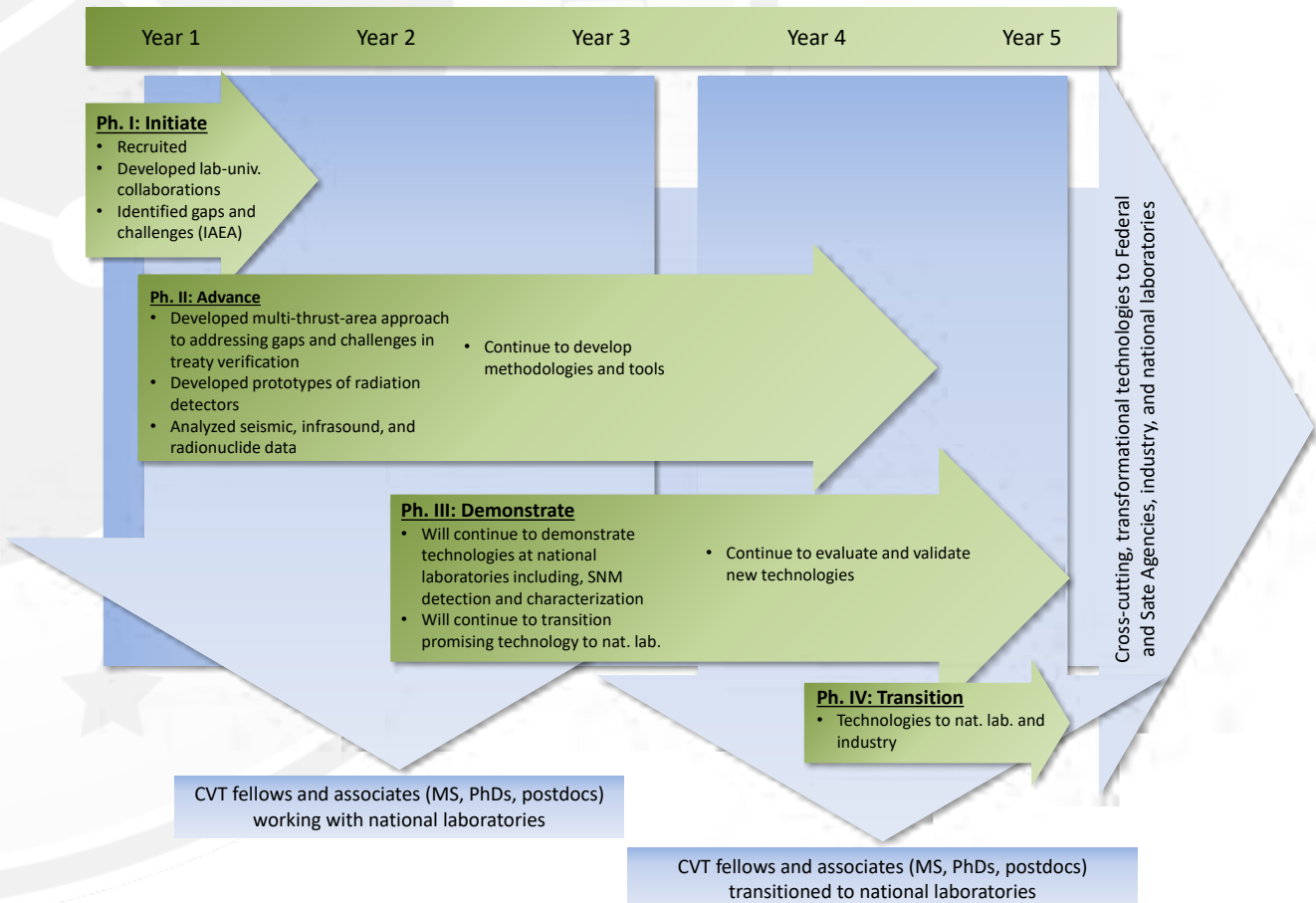


STUDENT ADVANCEMENT MODEL

33 PhD and Postdoc Transitions



ADDRESSING GAPS & CHALLENGES



PUBLICATIONS: 138 Journal Articles

1. Caudron, C., B. Taisne, M. A. Garcés, A. Le Pichon. On the use of remote infrasound and seismic stations to constrain eruptive sequence and intensity during the 2014 Kelud eruption, *Geophysical Research Letters*, 2015, DOI 10.1002/2015GL064885.
2. Pilger, C., L. Ceranna, J. Ole Ross, A. Le Pichon, P. Mialle, M. A. Garcés (2015). CTBT infrasound network performance to detect the 2013 Russian fireball event, *Geophysical Research Letters*, Volume 42, Issue 7, 16 April 2015, Pages 2523-2531, DOI, April 2015. 10.1002/2015GL063482.
3. S. A. Pozzi, M. M. Bourne, J. L. Dolan, K. Polack, C. Lawrence, M. Flaska, S. D. Clarke, A. Tomanin, P. Peerani, "Plutonium Metal vs. Oxide Determination with the Pulse-Shape-Discrimination-Capable Plastic Scintillator EJ-299-33," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 767, pp. 188-192, 2014. <https://doi.org/10.1016/j.nima.2014.08.002>
4. M. J. Marath, S.D. Clarke, B.M. Wieger, E. Padovani, E.W. Larsen, S.A. Pozzi, "An Implicit Correlation Method for Cross-Correlation Sampling, with MCNPX-PoliMi Validation." Accepted for publication in *Nucl. Sci. Eng.*, , vol. 181, No. 1, 2015. <http://dx.doi.org/10.13182/NSE14-89>
5. Marc G. Paff, Mateusz Monterial, Peter Marleau, Scott Kiff, Aaron Nowack, Shaun D. Clarke, Sara A. Pozzi, "Gamma/Neutron Time-Correlation for Special Nuclear Material Detection –Active Stimulation of Highly Enriched Uranium," *Annals of Nuclear Energy*, vol. 72, pp. 358-366, 2014, <https://doi.org/10.1016/j.anucene.2014.06.004>
6. C. Kaplan, V. Henzl, H. O. Menlove, M. T. Swinhoe, A. P. Belian, M. Flaska, S. A. Pozzi, "Determination of Total Plutonium Content in Spent Nuclear Fuel Assemblies with the Differential Die-Away Self-Interrogation Instrument", *NIM-A*, vol. 764, No. 1, pp. 347-351, August 2014. <https://doi.org/10.1016/j.nima.2014.08.003>
7. C. C. Lawrence, M. Febraro, T. N. Massey, M. Flaska, F. D. Becchetti, and S. A. Pozzi, "Neutron Response Characterization for an EJ299-33 Plastic Scintillation Detector," *Nuclear Instruments and Methods A*, Vol. 759, pp. 16-22, 2014. <https://doi.org/10.1016/j.nima.2014.04.062>
8. J. L. Dolan, M. Flaska, A. Poitrasson-Riviere, A. Enqvist, P. Peerani, D. L. Chichester, and S. A. Pozzi, "Plutonium Measurements with a fast neutron multiplicity counter for nuclear safeguards applications," *Nuclear Instruments and Methods in Physics Section A*, vol. 763, pp. 565-574, 2014. <https://doi.org/10.1016/j.nima.2014.06.028>
9. S. A. Pozzi, B. Wieger, A. Enqvist, S. D. Clarke, M. Flaska, M. Marath, E. Larsen, R. C. Haight, and E. Padovani, "Correlated Neutron Emissions from Cf-252," *Nuclear Science and Engineering*, vol. 178(2), pp. 250 – 260, 2014. <http://dx.doi.org/10.13182/NSE13-96>
10. M. M. Bourne, J. Whaley, J. L. Dolan, M. Flaska, S. D. Clarke, A. Tomanin, P. Peerani, and S. A. Pozzi, "Cross-Correlation Measurements with the EJ-299-33 Plastic Scintillator", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 784, pp. 460-464, 2015. <http://dx.doi.org/10.1016/j.nima.2014.10.052>
11. D. L. Chichester, S. J. Thompson, M. T. Kinlaw, J. T. Johnson, J. L. Dolan, M. Flaska, and S. A. Pozzi, "Statistical Estimation of the Performance of a Fast-Neutron Multiplicity System for Nuclear Material Accountancy", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 784, pp. 448-454, 2015. <http://dx.doi.org/10.1016/j.nima.2014.09.027>
12. A. Glaser, Z. Mian, H. Mousavian, and F. von Hippel, "Agreeing on Limits for Iran's Centrifuge Program: A Two-Stage Strategy," *Arms Control Today*, July/August 2014.
13. A. Ahmad, F. von Hippel, A. Glaser, and Z. Mian, "A Win-Win Solution For Iran's Arak Reactor," *Arms Control Today*, April 2014.
14. H. Feiveson, A. Glaser, Z. Mian, and F. von Hippel, "Unmaking the Bomb: A Fissile Material Approach to Nuclear Disarmament and Nonproliferation", MIT Press, Cambridge, MA, September 2014.
15. S. Philippe and A. Glaser, "Nuclear Archaeology for Gaseous Diffusion Enrichment Plants," *Science & Global Security*, 22 (1), 2014, pp. 27–49. <http://dx.doi.org/10.1080/08929882.2014.871881>
16. F. von Hippel, "Scope and Verification of a Fissile Material (Cutoff) Treaty in P. S. Corden," in D. Hafemeister and P. Zimmerman (eds.), *Nuclear Weapon Issues in the 21st Century*, AIP Conference Proceedings, 1596, 2014. doi: <http://dx.doi.org/10.1063/1.4876470>
17. K. Mayer and A. Glaser, "Nuclear Forensics," in N. E. Busch and J. F. Pilat (eds.), *The Routledge Handbook of Nuclear Proliferation and Policy*, Routledge, 2015. <https://www.routledgehandbooks.com/doi/10.4324/9780203709528.ch18>
18. Zia Mian and Frank N. von Hippel, "Policy and Technical Issues Facing a Fissile Material (Cutoff) Treaty," in N. E. Busch and J. F. Pilat (eds.), *The Routledge Handbook of Nuclear Proliferation and Policy*, Routledge, 2015. <https://www.routledgehandbooks.com/doi/10.4324/9780203709528.ch14>
19. A. Glaser, B. Barak, and R. Goldston, "A Zero-knowledge Protocol for Nuclear Warhead Verification," *Nature*, 510, June 2014, pp. 497–502. doi:10.1038/nature13457
20. M. F. Becchetti, M. Flaska, S. D. Clarke, and S. A. Pozzi, "Measurements and Simulations of the Cosmic-Ray-Induced Neutron Background," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 777, pp. 1-5, 2015. <http://dx.doi.org/10.1016/j.nima.2014.10.077>
21. A. Poitrasson-Rivière, B. A. Maestas, M. C. Hamel, S. D. Clarke, M. Flaska, S. A. Pozzi, G. Pausch, C.-M. Herbach, A. Gueorguiev, M. Ohmes, and J. Stein, "Monte Carlo Investigation of a High Efficiency Two-Plane Compton Camera for Long-Range Localization of Radioactive Material", *Progress in Nuclear Energy*, vol. 81, pp. 127-133, 2015(doi:10.1016/j.pnucene.2015.01.009)"
22. Bruce D. Pierson, Henry C. Griffin, Marek Flaska, Jeff A. Katalenich, Brian B. Kitchen, Sara A. Pozzi, Benchmarking the repeatability of a pneumatic cyclic neutron activation analysis facility using $^{16}\text{O}(n,p)^{16}\text{N}$ for nuclear forensics, *Applied Radiation and Isotopes*, Volume 96, February 2015, Pages 20-26, ISSN 0969-8043, <http://dx.doi.org/10.1016/j.apradiso.2014.11.010>. (<http://www.sciencedirect.com/science/article/pii/S0969804314003959>)
23. K. Hartig, J. Colgan, D. Kilcrease, J. Barefield II, and I. Jovanovic, "Laser-induced breakdown spectroscopy using mid-infrared femtosecond pulses", *Journal of Applied Physics* 118, 043107 (2015). <http://dx.doi.org/10.1063/1.4927624>
24. P. Ko, J. Scott, and I. Jovanovic, "Analysis of High-Resolution Spectroscopy from a Hybrid Interferometric/Dispersive Method", *Optics Communications* 357, 95-99 (2015). <http://dx.doi.org/10.1016/j.optcom.2015.08.077>
25. A. Ahmad and A. Glaser, "A Conversion Proposal for Iran's IR-40 Reactor with Reduced Plutonium Production," *Science & Global Security*, 23 (1), 2015, pp. 3–19. <http://dx.doi.org/10.1080/08929882.2015.996074>
26. M. Monterial, P. Marleau, S. Clarke, S.A. Pozzi, "Application of Bayes' theorem for pulse shape discrimination," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 793, pp. 318-324, 2015. <http://dx.doi.org/10.1016/j.nima.2015.06.014>
27. A. Glaser, Z. Mian, and F. von Hippel, "After the Iran deal: Multinational Enrichment," *Science*, 348, 19 June 2015, pp. 1320–1322. DOI: 10.1126/science.aac5989



PUBLICATIONS: 138 Journal Articles

28. L. Wang, J. Huang, X. Yuan, K. Krishnamurthy, J. Greenberg, V. Cevher, M.R.D. Rodrigues, D. Brady, R. Calderbank, and L. Carin, "Signal Recovery and System Calibration from Multiple Compressive Poisson Measurements," *SIAM J. Imaging Sciences*, 2015 (DOI: 10.1137/140998779)
29. P. Llull, X. Yuan, L. Carin, and D.J. Brady, "Image translation for single-shot focal tomography," *Optica*, 2015. (<http://dx.doi.org/10.1364/OPTICA.2.000822>)
30. T.-H. Tsai, P. Llull, X. Yuan, L. Carin, and D.J. Brady, "Spectral-temporal compressive imaging," *Optics Letters*, 2015 (<http://dx.doi.org/10.1364/OL.40.004054>)
31. Haitang Wang, Andreas Enqvist, "Pulse height model for deuterated scintillation detectors", *Nucl. Instr. & Meth. A*, Sept 17, 2015. <http://dx.doi.org/10.1016/j.nima.2015.09.061>
32. M. L. Ruch, M. Flaska, S. A. Pozzi, "Pulse shape discrimination performance of stilbene coupled to low-noise silicon photomultipliers," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 793, pp. 1-5, 2015. <http://dx.doi.org/10.1016/j.nima.2015.04.053>
33. A. Di Fulvio, T. H. Shin, M. C. Hamel, S. A. Pozzi, "Digital pulse processing for NaI(Tl) detectors". *Nuclear Instruments & Methods in Physics Research A* (2015), vol 806, p 167-174, 2016. <http://dx.doi.org/10.1016/j.nima.2015.09.080>
34. J. K. Polack, M. Flaska, A. Enqvist, C. S. Sosa, C. C. Lawrence, S. A. Pozzi, "An Algorithm for Charge-Integration, Pulse-Shape Discrimination and Estimation of Neutron/Photon Misclassification in Organic Scintillators," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 795, pp. 253-267, 2015. <http://dx.doi.org/10.1016/j.nima.2015.05.048>
35. A. Poitrasson-Rivière, J. K. Polack, M. C. Hamel, D. D. Klemm, K. Ito, A. T. McSpaden, M. Flaska, S. D. Clarke, S. A. Pozzi, A. Tomanin, and P. Peerani, "Angular-Resolution and Material-Characterization Measurements for a Dual-Particle Imaging System with Mixed-Oxide Fuel". *Nuclear Instruments and Methods in Physics Research Section A*, vol. 797, pp. 278-284, 2015 <http://dx.doi.org/10.1016/j.nima.2015.06.045>
36. M. G. Paff, M. L. Ruch, A. Poitrasson-Riviere, A. Sagadevan, S. D. Clarke, S. A. Pozzi, "Organic Liquid Scintillation Detectors For On-The-Fly Neutron/Gamma Alarming And Radionuclide Identification In A Pedestrian Radiation Portal Monitor," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 789, pp. 16-27, 2015. <http://dx.doi.org/10.1016/j.nima.2015.03.088>
37. M. M. Bourne, S. D. Clarke, N. Adamowicz, S. A. Pozzi, N. Zaitseva, and L. Carman, "Neutron Detection in a High-Gamma Field Using Solution-Grown Stilbene," *Nuclear Instruments & Methods in Physics Research A*, vol. 806, pp. 348-355, 2015. <http://dx.doi.org/10.1016/j.nima.2015.10.025>
38. H. A. Feiveson, A. Glaser, Z. Mian and F. von Hippel, *Unmaking the Bomb: A Fissile Material Approach to Nuclear Disarmament and Nonproliferation*, Forum on Physics & Society, American Physical Society, College Park, Maryland, 2015.
39. Y. Jie and A. Glaser, "Nuclear Warhead Verification: A Review of Attribute and Template Systems," *Science & Global Security*, vol. 44, #3, July, 2015, pg. 4. <http://dx.doi.org/10.1080/08929882.2015.1087221>
40. D.E. Carlson, Y.-P. Hsieh, E. Collins, L. Carin and V. Cevher, "Stochastic Spectral Descent for Discrete Graphical Models," *IEEE Journal of Selected Topics in Signal Processing*, 2016 (Digital Object Identifier 10.1109/JSTSP.2015.2505684)
41. R. Henao, J.T. Lu, J.E. Lucas and L. Carin, "Electronic Health Record Analysis via Deep Poisson Factor Models," *J. Machine Learning Research*, 2015
42. Robert Weinmann-Smith et al. , "Measurement and Simulation of Cosmic Rays Effects on Neutron Multiplicity Counting", *Nuclear Instruments and Methods in Physics Research A* 814 50-55. January 2016. <http://dx.doi.org/10.1016/j.nima.2016.01.012>
43. Y. Yilmaz, G. V. Moustakides, X. Wang and A.O. Hero, "Event based statistical signal processing," in *Event Based Control and Signal Processing*, Ed. M. Miskowicz, CRC/Taylor Francis, Dec. 2015.
44. Chen, G. Golovin, D. Haden, S. Banerjee, P. Zhang, C. Liu, J. Zhang, B. Zhao, D. Umstadter, C. Miller, S. Clarke, S. A. Pozzi, "Shielded radiography with a laser driven MeV energy x-ray source," *Nuclear Instruments & Methods in Physics Research B*, vol. 366, pp. 217-223, 2016. <http://dx.doi.org/10.1016/j.nimb.2015.11.007>
45. M. C. Hamel, J.K. Polack, A. Poitrasson-Rivière, M. Flaska, S.D. Clarke, S.A. Pozzi, A. Tomanin, P. Peerani, "Stochastic Image Reconstruction for a Dual-particle Imaging System," *Nuclear Instruments & Methods in Physics Research A*, vol. 810, pp. 120-131, 2016. <http://dx.doi.org/10.1016/j.nima.2015.12.002>
46. A. Glaser, Z. Mian, S. H. Mousavian, and F. von Hippel, "Building on the Iran Deal: Steps Toward a Middle Eastern Nuclear-Weapon-Free Zone," *Arms Control Today*, December 2015.
47. F. von Hippel, "Overcoming the Challenge of Disposing of Separated Plutonium," *Disarmament Review*, 6 (6), November 2015, pp. 13-18.
48. M. G. Paff, S. D. Clarke, S. A. Pozzi, "Organic liquid scintillation detector shape and volume impact on radiation portal monitors," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 825, pp. 31-39, 2016. <https://doi.org/10.1016/j.nima.2016.03.102>
49. M. J. Marcath, T.H. Shin, S.D. Clarke, P. Peerani, S.A. Pozzi, "Neutron Angular Distribution in Plutonium-240 Spontaneous Fission", *Nuclear Instruments and Methods in Physics Research Section A*, submitted for review March 31, 2016. <http://dx.doi.org/10.1016/j.nima.2016.05.064>
50. A.O. Hero and B. Rajaratnam, "Foundational principles for large-scale inference: illustrations through correlation mining," *Proceedings of the IEEE*, vol. 104, no. 1, pp. 93-110, Jan 2016. (Invited paper to special issue on Big Data). Digital Object Identifier: 10.1109/JPROC.2015.2494178
51. S. Avdic, P. Marinkovic, S.A. Pozzi, M. Flaska, Z. Dedić, and A. Osmanovic, "Study of the Filter Method for Neutron Pulse-Height Distributions Measured with Organic Scintillators," *Radiation Measurements*, vol. 86, pp. 32-38, 2016; <http://dx.doi.org/10.1016/j.radmeas.2016.01.011>
52. Whetstone, Z. D., Kearfott, K. J., "Layered Shielding Design for an Active Neutron Interrogation System", *Radiation Physics and Chemistry*, 125: 69-74, 2016. <http://dx.doi.org/10.1016/j.radphyschem.2016.03.018>
53. F.D. Becchetti, R.S. Raymond, and R.O.Torres-Isea, A. Di Fulvio, S.D. Clarke, S.A. Pozzi, and M. Febraro "Deuterated-xylene (xylene-d10; EJ301D): a new, improved deuterated liquid scintillator for neutron energy measurements without time-of-flight", *Nuclear Inst. and Methods in Physics Research A*, vol. 810, pp. 112-120, 2016. (<http://dx.doi.org/10.1016/j.nima.2016.02.058>)
54. Zachary S. Hartwig, "The ADAQ framework: An integrated toolkit for data acquisition and analysis with real and simulated radiation detectors", *Nuclear Instruments and Methods in Physics Research A* 815 (2016) 42-49. <http://dx.doi.org/10.1016/j.nima.2016.01.017>
55. P. Eslinger, M. Schoepner, et al., "International Challenge to Predict the Impact of Radioxenon Releases from Medical Isotope Production on a Comprehensive Nuclear Test Ban Treaty Sampling Station," *Journal of Environmental Radioactivity*, 157, pp. 41-51. (<http://dx.doi.org/10.1016/j.jenvrad.2016.03.001>)
56. Haitang Wang, Donald Carter, Thomas N. Massey, Andreas Enqvist, "Neutron light output function and resolution investigation of the deuterated organic liquid scintillator EJ-315", *Vol 89*, pp 99-106 (2016) (<http://dx.doi.org/10.1016/j.radmeas.2016.03.009>)
57. Caudron, C., B. Taisne, A. Perttu, M. Garcés, E. Silber, P. Mialle (2016). Infrasound and seismic detections associated with the 7 September 2015 Bangkok fireball. *Geoscience Letters*, DOI 10.1186/s40562-016-0058-z



PUBLICATIONS: 138 Journal Articles

58. Y. Yilmaz and A. Hero, "Multimodal Event Detection in Twitter Hashtag Networks," *Journ. of Signal Processing Systems*, 2016. Available as arxiv 1601.00306, Jan 2016. Yilmaz, Y. & Hero, A.O. *J Sign Process Syst* (2018) 90: 185. <https://doi.org/10.1007/s11265-016-1151-4>
59. Whetstone, Z. D., Flaska, M., Kearfott, K. J., "Experimental Verification of a Method to Create a Variable Energy Neutron Beam from a Monoenergetic, Isotropic Source using Neutron Elastic Scatter and Time of Flight", *Nuclear Instrumentation and Methods in Physics Research A*, 827:95-101, 2016. <http://dx.doi.org/10.1016/j.nima.2016.04.084>
60. C. Sosa, M. Flaska, S. A. Pozzi, "Comparison of analog and digital pulse-shape-discrimination systems", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 826, pgs. 72-79, 2016. <https://doi.org/10.1016/j.nima.2016.03.088>
61. S. A. Pozzi, M. C. Hamel, K. Polack, M. J. Marcat, T. H. Shin, A. Di Fulvio, and S. D. Clarke. "Detection for Nuclear Nonproliferation," *Proceedings of International Symposium on Radiation Detectors and Their Uses (ISR2016)*. DOI: 10.7566/JPSCP.11.050001
62. R. Scott Kemp, Areg Danagouliau, Ruairidh R. Macdonald and Jayson R. Vavrek, "Physical Cryptographic Verification of Nuclear Warheads" accepted for publication June 3, 2016 [doi:10.1073/pnas.1603916113](https://doi.org/10.1073/pnas.1603916113)
63. Ranjbar, L.; Farsoni, A. T.; Becker, E. M. "A CZT-based Radioxenon Detection System in support of the Comprehensive Nuclear-Test-Ban Treaty," *Journal of Radioanalytical and Nuclear Chemistry*. DOI: 10.1007/s10967-016-4872-8 (<http://link.springer.com/article/10.1007/s10967-016-4872-8>); 2016
64. M. Schoepfner and A. Glaser, "Present and Future Potential of Krypton-85 for the Detection of Clandestine Reprocessing Plants for Treaty Verification," *Journal of Environmental Radioactivity*, 162-163, 2016: 300-309. (<http://dx.doi.org/10.1016/j.jenvrad.2016.06.001>)
65. B.K. Cogswell and P. Huber, "Detection of Breeding Blankets Using Antineutrinos," *Science & Global Security* 24, 2016: 114-130. <http://dx.doi.org/10.1080/08929882.2016.1184531>
66. A. Brown and A. Glaser, "On the Origins and Significance of the Limit Demarcating Low-Enriched Uranium from Highly Enriched Uranium," *Science & Global Security*, 24 (2), 2016: 131-137. <http://dx.doi.org/10.1080/08929882.2016.1184533>
67. S. Philippe, R. J. Goldston, A. Glaser and F. d'Errico, "A Physical Zero-Knowledge Object-Comparison System for Nuclear Warhead Verification," *Nature Communications*, 7:12890 (2016) DOI: 10.1038/ncomms12890
68. S.S. Gokahle, H. Han, O. Pelaez, J.E. Baciak, J.C. Nino, K.A. Jordan, "Fabrication and Testing of Antimony Doped Bismuth Tri-Iodide Semiconductor Gamma-Ray Detectors" *Journal of Radiation Measurements*, Vol. 91, pp. 1-8, August 2016. (<https://doi.org/10.1016/j.radmeas.2016.04.004>)
69. P. M. John, J. E. Baciak, and J. C. Nino, Enhanced Gamma-Ray Sensitivity in Bismuth Triiodide Sensors Through Volumetric Defect Control, *Applied Physics Letters*, Vol. 109, 092105, 2016. (doi: <http://dx.doi.org/10.1063/1.4962293>)
70. Ryan Kelley, Andreas Enqvist, Kelly Jordan, "Pulse shape discrimination in helium-4 scintillation detectors", *NIMA*, Vol 830, pp 44-52 (2016) (<http://dx.doi.org/10.1016/j.nima.2016.05.065>)
71. G. Blanchard, M. Flaska, G. Handy, S. A. Pozzi, and C. Scott, "Classification with Asymmetric Label Noise: Consistency and Maximal Denoising," *Electronic Journal of Statistics*, ISSN: 1935-7524, 2016. DOI: 10.1214/16-EJS1193
72. M. Streicher, S. Brown, Y. Zhu, D. Goodman, and Z. He. "A Method to Estimate the Atomic Number and Mass Thickness of Intervening Materials in Uranium and Plutonium Gamma-ray Spectroscopy Measurements." *IEEE TNS* 2016, vol. 63, pp. 2639-2648, id 2606763. Digital Object Identifier 10.1109/TNS.2016.2606763
73. M. Streicher, S. Brown, Y. Zhu, D. Goodman, and Z. He. "Special Nuclear Material Characterization using Digital 3-D Position Sensitive CdZnTe Detectors and High Purity Germanium Spectrometers." *IEEE TNS* 2016, vol. 63, pp. 2649-2656, id 2593631. Digital Object Identifier 10.1109/TNS.2016.2593631
74. Di Fulvio, A., Becchetti, F., Raymond, R. S., Torres-Isea, R. O., Clarke, S. D., Pozzi, S. A., Characterization of Deuterated-xylene Scintillator as Neutron Spectrometer in press *IEEE Transactions on Nuclear Science (TNS)*, 2016. DOI 10.1109/TNS.2016.2629480,
75. M. Bourne, S. Clarke, M. Paff, A. Di Fulvio, M. Norsworthy, S. Pozzi, "Digital Pileup Rejection of Plutonium Experiments with Solution-Grown Stilbene", in press *Nuclear Instr and Meth A*. <http://dx.doi.org/10.1016/j.nima.2016.10.023>
76. S. D. Clarke, E. Pryser, B. M. Wieger, R. Arghal, S. A. Pozzi, R. A. Halg, V. A. Bashkirov, R. W. Schulte, "A Scintillator-based Approach to Monitor Neutron Production During Proton Therapy," *Med. Phys.* 43(11), 5915 - 5924, 2016. (<http://dx.doi.org/10.1118/1.4963813>)
77. P. J. Skrodzki, N. P. Shah, N. Taylor, K. C. Hartig, N. L. LaHaye, B. E. Brumfield, I. Jovanovic, M. C. Phillips, S. S. Harilal, "Significance of Ambient Conditions in U Absorption and Emission Features of Laser Ablation Plasmas", *Spectrochimica Acta Part B: Atomic Spectroscopy* 125, 112-119 (2016). <http://dx.doi.org/10.1016/j.sab.2016.09.012>
78. O. Freifeld, S. Hauberg, K. Batmanghelich, J. Fisher III, "Transformations based on continuous piecewise-affine velocity fields", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2016. DOI 10.1109/TPAMI.2016.2646685
79. R.S. Kemp, A. Danagouliau, R.R. Macdonald, J.R. Vavrek, "Physical Cryptographic Verification of Nuclear Warheads," *Proceedings of the National Academy of Sciences*, vol. 113 no. 31 (2016), doi:10.1073/pnas.1603916113
80. J. M. Mueller and J. Mattingly, "Using anisotropies in prompt fission neutron coincidences to assess the neutron multiplication of highly multiplying subcritical plutonium assemblies," *Nuclear Instruments and Methods, Section A*, Vol. 825, pp. 87-92, July 2016. <http://dx.doi.org/10.1016/j.nima.2016.04.027>
81. I. Ghebregziabher, K. C. Hartig, and I. Jovanovic, "Propagation distance-resolved characteristics of filament-induced copper plasma", *Optics Express* 24, 5263-5276 (2016). DOI:10.1364/OE.24.005263
82. P. K. Morgan, J. R. Scott, and I. Jovanovic, "Hybrid Interferometric/Dispersive Atomic Spectroscopy of Laser-induced Uranium Plasma", *Spectrochimica Acta Part B: Atomic Spectroscopy* 116, 58-62 (2016). <http://dx.doi.org/10.1016/j.sab.2015.12.006>
83. M. G. Paff, A. Di Fulvio, S. D. Clarke, and S. A. Pozzi, "Radionuclide identification algorithm for organic scintillator-based radiation portal monitor," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 849C, pp. 41-48, 2017. (10.1016/j.nima.2017.01.009).
84. M. A. Norsworthy, A. Poitrasson-Riviere, M. L. Ruch, S. D. Clarke, S. A. Pozzi, "Evaluation of Neutron Light Output Response Functions in EJ-309 Organic Scintillators," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 842, pgs. 20-27, 2017. (<http://dx.doi.org/10.1016/j.nima.2016.10.035>)
85. M. C. Hamel, J. K. Polack, A. Poitrasson-Riviere, S. D. Clarke, S. A. Pozzi, "Localization and spectral isolation of special nuclear material using stochastic image reconstruction," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 841, pgs. 24-33, 2017. <http://dx.doi.org/10.1016/j.nima.2016.10.004>
86. M. Monterial, P. Marleau, S. Pozzi, "Single-View 3D Reconstruction of Correlated Gamma-Neutron Sources" submitted to *IEEE Transactions on Nuclear Science (TNS)* on July 1, 2016; (<http://dx.doi.org/10.1109/TNS.2017.2647952>)



PUBLICATIONS: 138 Journal Articles

87. Ranjbar, L.; Farsoni, A. T.; Becker, E.M. "135Xe Measurements with a Two-element CZT-based Radioxenon Detector for Nuclear Explosion Monitoring," *Journal of Environmental Radioactivity*, Vol. 169–170, 221–228; 2017. <http://dx.doi.org/10.1016/j.jenvrad.2016.12.003>
88. M. Goettsche, J. Schirm and A. Glaser, "Low-Resolution Gamma-ray Spectrometry for an Information Barrier Based on a Multi-Criteria Template-Matching Approach," *Nuclear Instruments and Methods A*, 840, 2016: 139-144. <http://dx.doi.org/10.1016/j.nima.2016.10.013>
89. S. Philippe and F. von Hippel, "The Feasibility of Ending HEU Fuel Use in the U.S. Navy," *Arms Control Today*, November 2016: 15-22
90. Paul G. Richards, "The History and Outlook for Seismic Monitoring of Nuclear Explosions in the Context of the Comprehensive Nuclear Test Ban Treaty", *The Nonproliferation Review*, 23: 3–4, pp 287–300, doi:10.1080/10736700.2016.1272207; acknowledges federal support.
91. Xianfei Wen, Andreas Enqvist, "Measuring the scintillation decay time for different energy deposited by γ -rays and neutrons in a Cs₂LiYCl₆:Ce³⁺ detector", *Nuclear Instruments and Methods A* 853 (2017) pp 9–15 <https://doi.org/10.1016/j.nima.2017.02.019>
92. . Zhu, Y. Liang; L. Rolison; S. Gokhale; J. Lewis, R. Chandra; S. Kiff, H. Chung; H. Ray, J. E. Baciak; A. Enqvist; and K. A Jordan, "Improved Fission Neutron Energy Discrimination with Helium-4 Detectors Through Pulse Filtering," *T Nuclear Instruments and Methods in Physics Research Part A*, 2017 (<http://dx.doi.org/10.1016/j.nima.2016.12.016>)
93. "Variations in AmLi source spectra and their estimation utilizing the 5 Ring Multiplicity Counter", R. Weinmann-Smitha, D.H. Beddingfield, A. Enqvist, M.T. Swinhoe, *Nuclear Instruments and Methods A* 856 (2017) pp 17–25. (<http://dx.doi.org/10.1016/j.nima.2017.02.083>)
94. Marty, J., S. Denis, T. Gabrielson, M. A. Garcés and D. Brown (2017). Comparison and validation of acoustic response models for wind-noise-reduction pipe arrays. *J. Atmospheric and Oceanic Technology*, DOI: <http://dx.doi.org/10.1175/JTECH-D-16-0118.1>
95. M. Kamuda*, J. Stinnett*, and C.J. Sullivan, "Automated Isotope Identification Algorithm Using Artificial Neural Networks," *IEEE Transactions on Nuclear Science*, DOI: 10.1109/TNS.2017.2693152.
96. J. Stinnett*, C.J. Sullivan, H. Xiong, "Uncertainty Analysis of Wavelet-Based Feature Extraction for Isotope Identification on NaI Gamma-Ray Spectra," *IEEE Transactions on Nuclear Science*, DOI: 10.1109/TNS.2017.2676045.
97. Y. Altmann, A. Maccarone, A. McCarthy, G. Newstadt, G. S. Buller, S. McLaughlin and A. Hero "Robust Spectral Unmixing of Sparse Multispectral Lidar Waveforms using Gamma Markov Random Fields," accepted in *IEEE Journal of Computational Imaging*, DOI 10.1109/TCI.2017.2703144
98. M. G. Paff, A. Di Fulvio, S. D. Clarke, and S. A. Pozzi, "Radionuclide identification algorithm for organic scintillator-based radiation portal monitor," *Nuclear Instruments and Methods in Physics Research Section A*, vol. 849C, pp. 41-48, 2017. <http://dx.doi.org/10.1016/j.nima.2017.01.009>
99. M. Monterial, P. Marleau, M. Paff, S. Clarke, S. Pozzi, "Multiplication and Presence of Shielding Material from Time-Correlated Pulse-Height Measurements of Subcritical Plutonium Assemblies", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 851, pp. 50-56, 2017. (<http://dx.doi.org/10.1016/j.nima.2017.01.040>)
100. K. C. Hartig, I. Ghebregziabher, and I. Jovanovic, "Standoff Detection of Uranium and its Isotopes by Femtosecond Filament Laser Ablation Molecular Isotopic Spectrometry", *Scientific Reports (Nature)* 7, 43852 (2017). doi: 10.1038/srep43852
101. K. C. Hartig, S. S. Harilal, M. C. Phillips, B. E. Brumfield, and I. Jovanovic, "Evolution of uranium monoxide in femtosecond laser-induced uranium plasmas", submitted to *Optics Express*. <https://doi.org/10.1364/OE.25.011477>
102. M. C. Phillips, B. E. Brumfield, N. LaHaye, S. S. Harilal, K. C. Hartig, and I. Jovanovic, "Two-dimensional fluorescence spectroscopy of uranium isotopes in femtosecond laser ablation plumes", submitted to *Scientific Reports (Nature)*. DOI:10.1038/s41598-017-03865-9
103. Di Fulvio, T. H. Shin, T. Jordan, C. Sosa, M. L. Ruch, S. D. Clarke, D. Chichester, S. A. Pozzi, "Passive assay of plutonium metal plates using a fast-neutron multiplicity counter", *Nuclear Instruments and Methods in Physics Research Section A*, vol. 855, pp. 92-101, 2017. <http://dx.doi.org/10.1016/j.nima.2017.02.082>
104. S. D. Clarke, B. M. Wieger, A. Enqvist, R. Vogt, J. Randrup, R. C. Haight, H. Y. Lee, B. A. Perdue, E. Kwan, C. Y. Wu, R. A. Henderson, and S. A. Pozzi, "Measurement and Simulation of Correlated Neutrons from Photofission of 235U," *Phys. Rev. C* 95, 064612, 2017. <https://doi.org/10.1103/PhysRevC.95.064612>
105. Pulse shape discrimination of Cs₂LiYCl₆:Ce³⁺ detectors at high count rate based on triangular and trapezoidal filters, Xianfei Wen, Andreas Enqvist, *Nucl. Instr. Meth. A*, 866 (2017) pp 129-133. <https://doi.org/10.1016/j.nima.2017.06.007>
106. Y. Altmann, A. Maccarone, A. McCarthy, G. Newstadt, G. S. Buller, S. McLaughlin and A. Hero "Robust Spectral Unmixing of Sparse Multispectral Lidar Waveforms using Gamma Markov Random Fields," accepted in *IEEE Journ of Computational Imaging*, Apr 2017. Also available as arxiv:1610.00195 Oct. 2016, (.html)
107. P.-Y. Chen and A.O. Hero, "Multilayer Spectral Graph Clustering via Convex Layer Aggregation: Theory and Algorithms," accepted in *IEEE Journ. of Selected Topics in Signal Processing*, 2017. Arxiv:1609.07200, <https://arxiv.org/abs/1609.07200> (.html) .
108. K. C. Hartig, S. S. Harilal, M. C. Phillips, B. E. Brumfield, and I. Jovanovic, "Evolution of uranium monoxide in femtosecond laser-induced uranium plasmas", *Optics Express* 10, 11477-11490 (2017). <https://doi.org/10.1364/OE.25.011477>
109. M. C. Phillips, B. E. Brumfield, N. LaHaye, S. S. Harilal, K. C. Hartig, and I. Jovanovic, "Two-dimensional fluorescence spectroscopy of uranium isotopes in femtosecond laser ablation plumes", *Scientific Reports* 7, 3784 (2017). doi:10.1038/s41598-017-03865-9
110. Czyz, S.; Farsoni, A. T. "A Radioxenon Detection System Using CdZnTe, an Array of SiPMs, and a Plastic Scintillator," *Journal of Radioanalytical and Nuclear Chemistry* Volume 313, Issue 1, 131–140; 2017. DOI 10.1007/s10967-017-5287-x
111. M. Schoepfner, "Performance Assessment of the CTBTO Noble Gas Network to Detect Nuclear Explosions", *Pure Appl. Geophys.* (2017) 10.1007/s00024-017-1541-y
112. F. von Hippel and M. Schoepfner, "Economic Losses from a Fire in a Dense-Packed U.S. Spent Fuel Pool," *Science & Global Security*, 25 (2), 2017. <https://doi.org/10.1080/08929882.2017.1318561>
113. E. Lyman, M. Schoepfner and F. von Hippel, Nuclear safety regulation in the post-Fukushima era, *Science*, May 26, 2017, 356, pp. 808–809. DOI: 10.1126/science.aal4890
114. M. E. Walker and R.J. Goldston, "Timely Verification at Large-Scale Gas Centrifuge Enrichment Plants," *Science & Global Security*, 25 (2) 2017. <https://doi.org/10.1080/08929882.2017.1318563>
115. M. Kamuda, J. Stinnett, and C. J. Sullivan, "Automated Isotope Identification Algorithm Using Artificial Neural Networks," *IEEE Transactions on Nuclear Science*, vol. 64, no. 7, pp. 1858–1864, Jul. 2017. DOI: 10.1109/TNS.2017.2693152
116. P. J. Skrodzki, M. Burger, and I. Jovanovic, "Transition of Femtosecond-Filament-Solid Interactions from Single to Multiple Filament Regime", *Scientific Reports* 7, 12740 (2017). doi:10.1038/s41598-017-13188-4



PUBLICATIONS: 138 Journal Articles

117. M. C. Hamel, J. K. Polack, M. L. Ruch, M. J. Marcatch, S. D. Clarke, S. A. Pozzi, "Active neutron and gamma-ray imaging of highly enriched uranium for treaty verification," *Scientific Reports* 7, Article number 7997. doi:10.1038/s41598-017-08253-x
118. S. D. Clarke, M. C. Hamel, A. Di Fulvio, S. A. Pozzi, "Neutron and Gamma-ray Energy Reconstruction for Characterization of Special Nuclear Material," *Nuclear Engineering and Technology* 49, pp. 1354 - 1357, 2017. (<https://doi.org/10.1016/j.net.2017.06.005>)
119. M. C. Phillips, B. E. Brumfield, N. LaHaye, S. S. Harilal, K. C. Hartig, and I. Jovanovic, "Two-dimensional fluorescence spectroscopy of uranium isotopes in femtosecond laser ablation plumes," *Scientific Reports* 7, 3784 (2017). doi:10.1038/s41598-017-03865-9
120. C. B. Sivals, J. I. McIntyre, T. W. Bowyer, M. B. Kalinowski, S. A. Pozzi, "A review of the developments of radioxenon detectors for nuclear explosion monitoring," *Journal of Radioanalytical and Nuclear Chemistry*, vol. 314, 2, pp. 829-841, 2017. (<https://doi.org/10.1007/s10967-017-5489-2>)
121. T.H. Shin, M.Y. Hua, M.J. Marcatch, D.L. Chichester, I. Pázsit, A. Di Fulvio, S.D. Clarke, S.A. Pozzi, "Neutron Multiplicity Counting Moments for Fissile Mass Estimation in Scatter-Based Neutron Detection Systems," *Nuclear Science & Engineering*, <https://doi.org/10.1080/00295639.2017.1354591>
122. M. Kütt, M. Göttische, and A. Glaser, "Information Barrier Experimental: Toward a Trusted and Open-source Computing Platform for Nuclear Warhead Verification," *Measurement* 114, 2018. <https://doi.org/10.1016/j.measurement.2017.09.014>
123. C. Greulich, C. Hughes, A. Enqvist, and J. E. Baciak, "High Energy Neutron Transmission Analysis of Dry Cask Storage," *Nuclear Instruments and Methods in Physics Research Part A*, Vol. 874, pp. 5-11, December 2017. <https://doi.org/10.1016/j.nima.2017.08.014>
124. S. D. Clarke, M. C. Hamel, M. M. Bourne, and S. A. Pozzi, "Detectors for Active Interrogation Applications," *Physics Procedia*, vol. 90, pp. 266-270, 2017. <https://doi.org/10.1016/j.phpro.2017.09.006>
125. S. D. Clarke, M. C. Hamel, A. Di Fulvio, and S. A. Pozzi, "Neutron and Gamma-ray Energy Reconstruction for Characterization of Special Nuclear Material," *Nuclear Engineering and Technology* 49, pp. 1354 - 1357, 2017. <https://doi.org/10.1016/j.net.2017.06.005>
126. F.D. Becchetti, R.S. Raymond, R.O. Torres-Isea, A. Di Fulvio, S.D. Clarke, S.A. Pozzi, M. Febraro, Recent Developments in Deuterated Scintillators for Neutron Measurements at Low-energy Accelerators, *Nuclear Instruments and Methods in Physics Research Section A*, vol 874, 72, 2017. <https://doi.org/10.1016/j.nima.2017.08.034>
127. Becchetti, F., Raymond, R. S., Torres-Isea, R., Di Fulvio, A., Clarke, S., Pozzi, S., & Febraro, M. (2017). Recent developments in deuterated scintillators for neutron measurements at low-energy accelerators. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 874(Supplement C) 72–78. <https://doi.org/10.1016/j.nima.2017.08.034>
128. M. A. Norsworthy, M. L. Ruch, M. C. Hamel, S. D. Clarke, P. A. Hausladen, and S. A. Pozzi, "Light output response of EJ-309 liquid organic scintillator to 2.86–3.95 MeV carbon recoil ions due to neutron elastic and inelastic scatter," *Nucl. Instr. Meth. A* 884, 82 - 91 (2018). <https://doi.org/10.1016/j.nima.2017.11.084>
129. K. A. Beyer, A. Di Fulvio, L. Stolarczyk, W. Parol, N. Mojżeszek, R. Kopec, S. D. Clarke, and S. A. Pozzi. "Organic scintillator for real-time neutron dosimetry in radiation therapy" *Radiation Protection Dosimetry*.
130. K. Weinfurther, J. Mattingly, E. Brubaker, and J. Steele, "Model-based Design Evaluation of a Compact, High-Efficiency Neutron Scatter Camera," *Nuclear Instruments and Methods, Section A*, Vol. 883, to be published March 2018. Accepted November 2017; <https://doi.org/10.1016/j.nima.2017.11.025>
131. Czyz, S.; Farsoni, A. T.; Ranjbar, L. "A Prototype Detection System for Atmospheric Monitoring of Xenon Radioisotopes," *Nuclear Instruments and Methods in Physics Research - Section A*, Volume 884, pages 64-69, 2018. <https://doi.org/10.1016/j.nima.2017.10.044>
132. Kelsey Stadnikia, Kristofer Henderson, Allan Martin, Phillip Riley, Sanjeev Koppal, Andreas Enqvist, "Data fusion for a vision-aided radiological detection system: Calibration algorithm performance", *Nuclear Instruments and Methods in Physics Research Section A: Volume 890*, pp. 8-17 (2018), <https://doi.org/10.1016/j.nima.2018.01.102>.
133. Y. Gao, C. R. Hughes, C. R. Greulich, J. S. Tulenko, A. Enqvist, and J. E. Baciak, "Spent Fuel Cask Dose Rate Distribution Obtained Using MAVRIC in Detail Geometry and Continuous Energy," *Annals of Nuclear Energy*, 2018, accepted.
134. E. Hou, K. Sricharan and A. O. Hero, "Latent Laplacian Maximum Entropy Discrimination for Detection of High-Utility Anomalies," to appear in *IEEE Transactions on Information Forensics and Security*, vol. 13, no. 6, pp. 1446-1459, June 2018. Also available on Arxiv: 1702.05148 (.html)
135. M. J. Marcatch, R. C. Haight, R. Vogt, M. Devlin, P. Talou, I. Stetcu, J. Randrup, P. F. Schuster, S. D. Clarke, S. A. Pozzi, "Measured and simulated 252-Cf(sf) prompt neutron-photon competition," *Physical Review C*, accepted, 6 April 2018.
136. JR Vavrek, BS Henderson, A Danagoulian (2018), Experimental demonstration of an isotope-sensitive warhead verification technique using nuclear resonance fluorescence." *Proceedings of the National Academy of Sciences*: <https://doi.org/10.1073/pnas.1721278115>
137. J. Bravermana, J. Brennana, E. Brubakera, B. Cabrera-Palmera, S. Czyz, P. Marleaua, J. Mattinglyb, A. Nowacka, J. Steelea, M. Sweanya, K. Weinfurthera,b, E. Woodsa, "Single-Volume Neutron Scatter Camera for High-Efficiency Neutron Imaging and Spectroscopy," *Nuclear Instruments and Methods in Physics Research - Section A*, 2018. <https://arxiv.org/abs/1802.05261>
138. M. Schöppner, "Detecting Clandestine Reprocessing Activities in the Middle East," *Science & Global Security*, 26, 2018.

Publications reported are from 09/01/2014 through 03/31/2018