

# *Haori Yang, Ph.D.*

School of Nuclear Science and Engineering  
Oregon State University  
3451 SW Jefferson Way, E108 Rad Center, Corvallis, OR 97331  
E-mail: [haori.yang@oregonstate.edu](mailto:haori.yang@oregonstate.edu)  
Office: (541) 737-7057

## **EDUCATION**

### **University of Michigan, Ann Arbor, Michigan, USA**

2009 Ph.D. in Nuclear Engineering and Radiological Sciences

2006 M.S. in Nuclear Engineering and Radiological Sciences

### **Tsinghua University, Beijing, China**

2003 M.S. in Engineering Physics

2001 B.S. in Engineering Physics

## **PROFESSIONAL EXPERIENCE**

### **Oregon State University, Corvallis, OR**

**September 2013 - Present**

#### **Assistant Professor**

- Investigating muon imaging for monitoring dry storage casks
- Researching nuclear material characterization based on delayed fission gamma rays
- Studying laser-based techniques for remote sensing, nuclear safeguards and PIE
- Developing Cherenkov detectors for active interrogation

### **University of Utah, Salt Lake City, UT**

**January 2011 – September 2013**

#### **Assistant Professor**

- Investigated photofission technique for nuclear safeguards, nuclear security applications
- Studied spintronics radiation sensors
- Researched nano-scale radiation detector materials
- Investigated remote sensing techniques based on laser-induced plasma in air
- Participated in research on used nuclear fuel storage and transport

#### **Senior Reactor Operator**

- Operated the University of Utah's 100 kW TRIGA reactor
- Participated in teaching, training and research involving the reactor
- Hosted tours and taking part in other outreach activities at the reactor facility

### **Canberra Industries, Meriden, CT**

**July 2008 - December 2010**

#### **Research Scientist**

- Performed calibration on non-destructive assay systems, e.g. TGS, SGS, and HENC
- Conducted Factory Acceptance Tests for large-scale non-destructive assay systems
- Developed a platform to study pulse shape of semiconductor detector signals
- Involved in the development of Canberra's in-situ object counting systems (ISOCS)
- Contributed to the development of a handheld spectrometer funded by DTRA
- Participated in the development of the next-generation Radiation Monitoring Systems
- Provided consultation to clients regarding nuclear power plant effluent monitors

University of Michigan, Ann Arbor, MI

September 2003 - July 2008

Research Assistant

- Demonstrated the concept of detection and identification of hidden nuclear materials based on delayed fission gamma-rays
- Researched detection and identification methods utilizing the Nuclear Resonance Fluorescence (NRF) technique
- Benchmarked theoretical models with experimental measurements using linacs
- Developed high-speed data acquisition systems for active interrogation applications

Tsinghua University, Beijing, China

September 2001 - September 2003

Research Assistant

- Developed a testing platform for the MRPC detectors manufactured at Tsinghua University for the STAR collaboration at BNL
- Participated in the development of a real-time radiography system for the Tsinghua Nuctech cargo container scanning system

**REFEREED JOURNAL PUBLICATIONS**

- Zhengzhi Lui, Can Liao, **Haori Yang** and Jason Hayward, Detection of missing assemblies and estimation of the scattering densities in a VSC-24 dry storage cask with cosmic ray muon based computed tomography, *Journal of Nuclear Materials Management*, 2017
- Xianfei Wen, **Haori Yang**, Simulation of delayed  $\gamma$ -ray emission following photofission reactions induced by pulsed bremsstrahlung X-rays using MCNPX and experimental validation, *Nucl. Instr. Meth. Phys. Res. A*, vol 840, pp 102-106, 2016.
- Xianfei Wen, **Haori Yang**, Photofission product yields of  $^{238}\text{U}$  and  $^{239}\text{Pu}$  with 22-MeV bremsstrahlung, *Nucl. Instr. Meth. Phys. Res. A*, vol 821, pp 34-39, 2016.
- Xianfei Wen, Dante Nakazawa, Mat Kastner, Jason Pavlick, **Haori Yang**, Evaluation of a modified HPGe preamplifier for high-rate spectroscopy measurements in a pulsed photonuclear environment, *Nucl. Tech.*, vol 194, pp 117-125, 2015.
- Xianfei Wen, **Haori Yang**, Study on a digital pulse processing algorithm based on template-matching for high-throughput spectroscopy, *Nucl. Instr. Meth. Phys. Res. A*, vol 784, pp 269-273, 2015.
- Xiao, Wuyun, Abi T. Farsoni, **Haori Yang**, and David M. Hamby. "Model-based pulse deconvolution method for NaI (Tl) detectors." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 769 (2015): 5-8.
- Xiao, Wuyun, Abi T. Farsoni, **Haori Yang**, and David H. Hamby. "A new pulse model for NaI (Tl) detection systems." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 763 (2014): 170-173.
- Xianfei Wen, John Kavouras, Dante Nakazawa, **Haori Yang**, Simulation and measurement of delayed  $\gamma$ -rays after photon-induced fission, *Nucl. Instr. Meth. Phys. Res. A*, vol 729, pp 781-787, 2013.
- Can Liao and **Haori Yang**, Pulse shape discrimination using EJ-299-33 plastic scintillator coupled with a Silicon Photomultiplier array, *Nucl. Instr. Meth. Phys. Res. A*, vol 789, July 2015, Pages 150-157.

- Can Liao and **Haori Yang**, n/γ Pulse shape discrimination comparison of EJ301 and EJ339A liquid scintillation detectors, *Annals of Nuclear Energy*, vol 69, July 2014, Pages 57-61.
- Can Liao and **Haori Yang**, Neutron Energy Spectrum Correction Based on Capture Time in a Boron-Loaded Liquid Scintillation Detector, *J Nucl. Ene. Sci. Power Generat. Technol.* 2:3, 2013.
- Ji-Min Han, Na Wu, Brian Wang, Chen Wang, Miao Xu, Xiaomei Yang, **Haori Yang** and Ling Zang, Gamma radiation induced self-assembly of fluorescent molecules into nanofiber: a stimuli-responsive sensing, *J. Mater. Chem. C*, 2015, 3, 4345-4351
- Ji-Min Han, Miao Xu, Brian Wang, Na Wu, Xiaomei Yang, **Haori Yang**, Bill J. Salter and Ling Zang, Low Dose Detection of Gamma Radiation via Solvent Assisted Fluorescence Quenching, *J. Am. Chem. Soc.*, 136 (2014) 5090-5096.
- Siegel, G.P.; Prestgard, M.C.; **Yang, H.**; Tiwari, A., Spin Current Response in Bi-YIG/Pt Thin Film Heterostructures Induced by Gamma Radiation, in *Electron Device Letters, IEEE*, vol.36, no.8, pp.853-855, Aug. 2015
- **Yang, Haori**, Nabil Mena, Frazier. Bronson, Matt Kastner, Ram Venkataraman, and Wilhelm Mueller. "Evaluation of a LiI (Eu) neutron detector with coincident double photodiode readout." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 652, no. 1 (2011): 364-369.
- **Yang, Haori**, David Wehe, and David Bartels. "Spectroscopy of high rate events during active interrogation." *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 598, no. 3 (2009): 779-787.
- Wehe, David, **Haori Yang**, and Martin Jones. "Observation of <sup>238</sup>U photofission products." *Nuclear Science, IEEE Transactions on* 53, no. 3 (2006): 1430-1434.

## **OTHER PEER-REVIEWED PUBLICATIONS**

- Can Liao, **Haori Yang**, Zhengzhi Liu, Jason Hayward, A Scintillation-Fiber Based Cosmic-Ray Muon Tomography System for Imaging Dry Storage Cask, American Nuclear Society Transactions, 2016
- Can Liao and **Haori Yang**, Design of a Cosmic-ray Muon Radiography System for Dry Storage Cask Imaging, 2014 IEEE Nuclear Science Symposium & Medical Imaging Conference Record, Seattle, WA USE, 8-15 November 2014.
- Can Liao and **Haori Yang**, 'Neutron Spectrometry with a Boron-Loaded Liquid Scintillator,' 2012 IEEE Nuclear Science Symposium, Medical Imaging Conference Record, Anaheim, CA, 29 October-15 November 2012.
- **Haori Yang**, Daren R. Norman, Dante R. Nakazawa, 'Pulsed Photofission Delayed Gamma Ray Detection for Nuclear Material Identification,' 2012 IEEE Nuclear Science Symposium Conference Record
- Can Liao, Xianfei Wen, **Haori Yang**, 'Neutron Energy Spectrum Correction Based On Capture Time,' 2012 AIChE Annual Meeting Conference Proceedings
- N. Gary, S. Teng, A. Tiwari, **H. Yang**, 'Room-temperature Solid-state Radiation Detectors Based on Spintronics,' 2012 IEEE Nuclear Science Symposium Conference Record

- Andrew Voyles, **Haori Yang**, Tatjana Jevremovic, ‘GEANT4 Simulation of Irradiation Facilities and Neutron Sources At University of Utah TRIGA for Nuclear Forensics and Detection,’ 2011 AIChE Annual Conference Proceeding
- Jeffery Taylor, **Haori Yang**, Xuesong Zhou, Tatjana Jevremovic, ‘GEANT4 Model for Nuclear Forensic Analysis of Nuclear Detonation in Urban Environments,’ 2011 AIChE Annual Conference Proceeding
- Ian Schwerdt, Joseph Levinthal, Chris Dances, Dong-OK Choe, **Haori Yang** and Tatjana Jevremovic, ‘Developing Experimental and Computational Nuclear Forensics Signals of Fast Neutron Irradiation Facility at TRIGA Reactor,’ 2011 AIChE Annual Conference Proceeding
- Todd Sherman, **Haori Yang**, Dong-OK Choe, and Tatjana Jevremovic, ‘Monte Carlo Simulation of Tritium Generation Signals in the Utah TRIGA Reactor for Nuclear Forensics,’ 2011 AIChE Annual Conference Proceeding
- D. Nakazawa, M. Field, B. Gillespie, R. Mowry, S. Philips, A. Radomski, **H. Yang**, A New Segmented Gamma Scanner System, 2011 Waste Management Symposia
- **H. Yang**, X. Yang, S. Xiao, N. Satvat, and T. Jevremovic, Detection of hidden material using nuclear resonance fluorescence technique: simulation and measurements, IEEE Nuclear Science Symposium Conference Record, 2010.
- N. Mena, D. Nakazawa, **H. Yang**, S. Smith, D. Petroka, M. Villani, An Integrated Waste Assay System Using Tomography and Segmented Gamma Scanning For Nuclear Power Plant Applications, 2010 Waste Management Symposia
- **Yang, Haori**, and David Wehe. "Detection of concealed special nuclear material using nuclear resonance fluorescence technique." In *Nuclear Science Symposium Conference Record (NSS/MIC)*, 2009 IEEE, pp. 898-903. IEEE, 2009.
- Wehe, David, and **Haori Yang**. "Digital spectroscopy systems for high rate events in active interrogation applications." In *Nuclear Science Symposium Conference Record*, 2007. NSS'07. IEEE, vol. 3, pp. 1757-1761. IEEE, 2007.

## **TECHNICAL SKILLS**

- Monte Carlo simulation using MCNP6 and GEANT4
- Nuclear electronics
- Radiation detection and measurement techniques
- Active interrogation techniques

## **SYNERGISTIC ACTIVITIES**

- IEEE member
- American Nuclear Society member
- Faculty advisor for American Nuclear Society student chapter
- Section judge at the 2011, 2012 American Nuclear Society Student Conference
- Technical chair at the 2nd National Conference in Advancing Tools and Solutions for Nuclear Material Detection
- Member of the OSTR Reactor Operation Committee