Sirikul Indi Sriprisan

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PROFESSIONAL OVERVIEW

- Significant technical experience in computational analysis and simulation of particles transport, radiation shielding evaluation, risk assessment, and nuclear fuel cycle analysis
- Developed training courses in nuclear security and safeguards
- Conducted laboratories in radiation protection and nuclear security and safeguards
- Strong research interest in nuclear forensics and analysis techniques

TECHNICAL SKILLS

- **Radiation detection software:** Genie 2000
- **Radiation detector:** Geiger-Müeller, NaI(TI), HPGe, Ion Chamber
- **Monte Carlo modeling:** MCNP6.0/MCNPX, PHITS, HETC-HEDS, HZETRN
- **Deterministic modeling:** DORT, TORT, ATILLA, NUCFRG, UBERNSPEC
- **Nuclear engineering modeling:** SCALE packages (NEWT, TRITON, XSDRN, SAS, AMPX, ADVANTG), NJOY90, ORIGEN
- **Programming:** C, FORTRAN, Visual FORTRAN Complier
- **Engineering tools:** SolidWorks, MS Visio, Mathematica5.0, SigmaPlot, MATLAB

RESEARCH EXPERIENCE

Research Scientist *Nuclear Program, Chemical Engineering, UMass, Lowell, MA 09/2012 – Present*
Role: Team performance in developing nuclear security and safeguards training laboratory

- Designed and conducted experiments in neutron activation and non-destructive analyses
- Performed energy and efficiency calibration on NaI(Tl) and HPGe detectors using gamma spectroscopy software
- Utilized Genie 2000 software for acquiring and analyzing gamma spectroscopy spectra
- Performed radiation transport simulations and computational shielding analyses using various Monte Carlo codes
- Provided assistance in managing research resources including the computer cluster and laboratory
- Managed radiation counting laboratory

Research Associate *Nuclear Power Institute, TAMU, College Station, TX 01/2011 – 08/2012*
Role: Led research projects in space radiation protection design and risk assessment

- Developed computational shielding design for space radiation application using MCNPX and PHITS codes
- Analyzed and validate computed proton dose distributions with tissue-equivalent experimental measurements
- Reported recommendation guideline for space radiation strategic plan

Postdoctoral Research Fellow *Department of Radiation Oncology, MDACCO, Orlando, FL 05/2009 – 12/2010*
Role: Playing a key role in developing dosimetric evaluation technique for 3D gel dosimetry system using in proton therapy characterization

- Designed and implemented an experimental research on measurement of dose responses from different proton energies using the 3D gel dosimetry system
- Developed a computational model based on reconstruction algorithms built-in MATLAB to analyze digital data and generate 3D dose images
- Prepared project final reports, presentations, and technical papers

Postdoctoral Research *Department of Nuclear Engineering, UT, Knoxville, TN 08/2008 – 05/2009*
Role: Engaged in a collaborative research project in nuclear fragmentation cross section evaluation

- Improved an analytical nuclear fragmentation cross section code for high-energy particles
- Generated, tested, and debugged a FORTRAN computational nuclear interaction code
- Developed a benchmarking dose calculations for HETC-HEDS – a Monte Carlo nuclear transport computer program
- Collaborated with researchers at the space radiation group at NASA Langley Research Center

Graduate Research Associate *Department of Nuclear Engineering, UT, Knoxville, TN 01/2005 – 07/2008*
Role: Develop dosimetric evaluation technique for 3D gel dosimetry system using in evaluating proton therapy

- Modified and improved an analytical nuclear interaction model for nuclear transport codes based on a theoretical high energy collision
- Evaluated radiological risk and safety for space applications

Summer Intern *Nuclear Science and Technology Division, ORNL, Oak Ridge , TN 06/2004 – 12/2004*
Role: Develop dosimetric evaluation technique for 3D gel dosimetry system using in evaluating proton therapy

- Created and executed a process to evaluate a source strength of a brachytherapy seed using deterministic models (DORT/TORT and ATILLA) and other packages in the SCALE system
- Interpreted data and verified an accuracy by comparing with a Monte Carlo model such as MCNP
- Analyzed and validated nuclear fuel assembly test data for various nuclear power designs
- Generated reliable and accurate fuel assembly database using ORIGEN ARP, MCNP and some SCALE packages

TEACHING EXPERIENCE

Nuclear Program, Chemical Engineering Dept., UMass, Lowell, MA 09/2012 – Present

- Developed a protocol for nuclear safeguards and security training courses. Created detailed course road maps, plans, schedules and structures.
- Developed lecture material and hand-on experiments focused on nuclear security and safeguards, fuel cycle management, and radiation shielding analysis
- Assisted in experimental design and laboratory exercises for students
- Mentored students during summer research projects
- Advised several graduate students in their own independent research projects

Nuclear Power Institute, TAMU, College Station, TX 01/2011 – 08/2012

- (Co-instructor) Lectured nuclear fuel cycle management and Monte Carlo – MCNP training course

EDUCATION

University of Tennessee, Knoxville, TN 07/2008

- Ph.D. Nuclear Engineering
- Dissertation: "An improved knockout-ablation-coalescence model for prediction of secondary neutron and light-ion production in cosmic ray interactions"

Oregon State University, Corvallis, OR

- M.S. Bioengineering 06/2002
- B.S. Biological Engineering 12/1998

SPECIALIZED TRAINING

- Radiation safety training and facility specific training, UML 2013
- MCNP6.0 – Monte Carlo radiation transport model
- Modeling, Experimentation & Validation (MeV) – ANL Summer School, 2011
- HETC-HEDS development team – Monte Carlo radiation transport model
- MCNPX2.5 – Monte Carlo radiation transport model
- FLUKA – Monte Carlo radiation transport model
- Clinical dosimetry measurements in radiotherapy – AAPM Summer School, 2009
- Microsoft Certification Software Engineer (MCSE) – Windows 2000

PROFESSIONAL AFFILIATIONS

- World Institute for Nuclear Security (WINS)
- American Nuclear Society (ANS)
- Health Physics Society (HPS)
- U.S. Women in Nuclear (WIN)

PUBLICATIONS

Peer reviewed

- Singleterry Jr., R.C., Aghara, S.K., Sriprisan, S.I., 2015. MCNP Monte Carlo space radiation analysis: solar particle event source. NASA/TP-2015-XXXXXX. (final review revision)
- Aghara, S.K., **Sriprisan, S.I.**, et al., 2015. Shielding evaluation for solar particle events using MCNPX, PHITS and OLTARIS codes. Life Sci. Space Res., 4, 79-91.doi:10.1016/j.lssr.2014.12.003.
- **Sriprisan, S.I.**, Lopatiuk-Tirpak, et al., 2011. A spatial resolution study of a new optical tomography-based polymer gel dosimetry system. Technol. Cancer Res. Treat. 10, 591-599.
- Zeidan, O.A., **Sriprisan, S.I.**, et al., 2010. Dosimetric evaluation of a novel polymer gel dosimeter for proton therapy. Med. Phys. 37(5), 2145-2152.
- Adamczyk, A.M., Norman, R.B., **Sriprisan, S.I.**, et al. 2012. NUCFRG3: Light ion improvements to the nuclear fragmentation model. Nucl. Inst. Met. Phys Res A. 678, 21-23.

In preparation

- Odera, D.U., **Sriprisan, S.I.**, et al., 2015. Modeling and evaluation of fissile material utilization of the UMLRR using Monte Carlo MCNP6 code.
- **Sriprisan, S.I.**, Rojdev, K., et al. 2015. Evaluation of new multi-layer shielding configurations in October 1989 solar particle event.

In-house manuscript

- Sriprisan, S.I., Zeidan, O.A., Maryanski, M., 2009. 3-dimensional polymer gel dosimetry system: Quick guide to BANG3-Pro2 polymer Gel and OCTOPUS IQ scanner system. M. D. Anderson Cancer Center Orlando, Orlando Health, Orlando, FL.
- Sriprisan, S.I., Townsend, L.W., et al. 2007. HETC-HEDS: User quick guide version. University of Tennessee, Knoxville, TN.

PRESENTATIONS & ABSTRACTS

- **Sriprisan, S.I.**, Aghara, S.K., 2014. Multi-layer shielding analysis for an evaluation of SPE radiation. In: 2013 ANS Winter Meeting and Nuclear Technology Expo, November 9 – 13, 2014. Anaheim, CA.
- **Sriprisan, S.I.**, Aghara, S.K., Singleterry Jr., R.C., 2014. Evaluations of dose from solar particle events using Monte Carlo and deterministic transport codes. In: The 50th Annual Meeting of the Health Physics Society, July 13 – 17, 2014. Baltimore, MD.
- **Sriprisan, S.I.**, Aghara, S.K., et al. 2013. Analysis of Monte Carlo transport code – PHITS for solar particle events source. In: 2013 ANS Winter Meeting and Nuclear Technology Expo, November 10 – 14, 2013. Washington, DC.
- Atwell, W., Rojdev, K., Aghara, S.K**., Sriprisan, S.I.**, 2013. Mitigating the effect of the space radiation environment: a novel approach of using graded-Z materials. In: AIAA SPACE 2013 Conference and Exposition. September 2013. San Diego, CA. doi: 10.2514/MSPACE13.
- **Sriprisan, S.I.**, Aghara, S.K., 2012. Proton beam characterization using Monte Carlo technique. In: The 13th International Congress of the International Radiation Protection Association (IRPA), May 13 – 18, 2012. Glasgow, Scotland.
- Sundaresan, A., Aghara, S. K., **Sriprisan, S.I.**, et al., 2012. A study of space radiation effects on microgravity bone resorption. In: The 13th International Congress of the International Radiation Protection Association (IRPA), May 13 – 18, 2012. Glasgow, Scotland.
- **Sriprisan, S.I.**, Aghara, S.K., Singleterry Jr., R.C., 2012. Optimization of Shielding Design for Secondary Particle Radiations from SPEs. In: The 2012 Nuclear and Emerging Technologies for Space topical meeting, March 21 – 23, 2013. The Woodlands, TX.
- **Sriprisan, S.I.**, Aghara, S.K., Singleterry Jr., R.C., 2011. A study of secondary neutron and photon spectra for Solar Particle Events. In: 2011 ANS Winter Meeting and Nuclear Technology Expo, October 30 – November 3, 2011. Washington DC.
- **Sriprisan, S.I.**, Aghara, S.K., Hu, X., et al., 2011. A Monte Carlo simulation study on energy loss of proton particle in silicon microdosimeter. In: The 22nd Annual NASA Space Radiation Investigators' Workshop, September 18 – 21, 2011. League City, TX.
- Hu, X., Aghara, S.K., **Sriprisan, S.I.**, 2011. A Monte Carlo simulation study on energy loss of proton particle in silicon microdosimeter. In: The 22nd Annual NASA Space Radiation Investigators' Workshop, September 18 – 21, 2011. League City, TX.
- Townsend, L.W., ... , **Sriprisan, S.I.**, et al., 2011. Coalescence modeling of light ion production from cosmic ray interactions. In: The 22nd Annual NASA Space Radiation Investigators' Workshop, September 18 – 21, 2011. League City, TX.
- Adamczyk, A., Norman, R., **Sriprisan, S.I.**, et al., 2011. NUCFRG3: Light ion improvements to the nuclear fragmentation model. In: 2011 Fall Meeting of the APS Division of Nuclear Physics, October 26 – 29, 2011. East Lansing, MI.
- Adamczyk, A., Norman, R., **Sriprisan, S.I.**, et al., 2010. NUCFRG3: Update of the nuclear fragmentation model. In: 2010 ANS Winter Meeting and Technology Expo, November 7 – 11, 2010. Washington DC.
- Zeidan, O.A., Hsi, W.C., **Sriprisan, S.I.**, et al., 2010. Feasibility of quantitative PET/CT dosimetry for proton therapy using polymer gels. In: The 6th International Conference on 3D Radiation Dosimetry (IC3DDose), August 22 – 26, 2010. Hilton Head Island, SC.
- Zu, Z., Zeidan, O.A., **Sriprisan, S.I.**, 2010. Experimental investigation of dosimetric impact of intra-fraction target motion during proton uniform scanning treatment using polymer gel dosimeters and 4D phantom. In: The 52nd ASTRO Annual Meeting, October 31-November 4, 2010. Boston, MA.
- **Sriprisan, S.I.**, Maryanski, M., Zeidan, O.A., 2010. A study of imaging properties of a new optical tomography-based polymer gel 3D dosimetry system. In: The 52nd AAPM Annual Meeting, July 18 – 22, 2010. Philadelphia, PA.
- **Sriprisan, S.I.**, Norman, R.B., Townsend, L.W., 2008. Light ion production improvements in the NUCFRG2 semiempirical nuclear fragmentation model: Preliminary results. In: The 75th Annual Meeting of the Southeastern Section of APS, October 30–November 1 2008. Raleigh, NC.

- **Sriprisan, S.I.**, Townsend, L.W., et al., 2008. Improved knockout-ablation-coalescence model for secondary neutron and light ion production in nucleus-nucleus collisions. In: The 11th Annual International Conference on Radiation Shielding (ICRS), April 13-18, 2008. Pine Mountain, GA.
- **Sriprisan, S.I.**, Townsend, L.W., Cucinotta, F.A., 2007. Improved knockout-ablation-coalescence model for secondary neutron and light ion production. In: The 18th Annual NASA Space Radiation Investigators Workshop, July 13 – 15, 2007. Rohnert Park, CA.
- **Sriprisan, S.I.**, Townsend, L.W., Cucinotta, F.A., 2007. Improved model for secondary neutron production in nucleus nucleus collisions at intermediate energies. In: The 2007 International Conference on Nuclear Data for Science and Technology, April 22 – 27, 2007. Nice, France.
- **Sriprisan, S.I.**, Townsend, L.W., 2006. Fragment element production cross sections: comparisons between abrasion ablation codes and recent measured data. In: The 14th Biennial Topical Meeting of the Radiation Protection and Shielding Division of ANS, April 2 – 6, 2006. Carlsbad, NM.

ACTIVITIES & INTERESTS

- Women Play For Time Orlando
- Orlando International Dragon Boat Competition
- Competing in Portland and Seattle marathon
- Hiking and kayaking
- Astrophysics