Travis W. Knight, Ph.D.

Department of Mechanical Engineering
Nuclear Engineering Program
University of South Carolina
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• RESEARCH INTERESTS

Advanced nuclear fuels and materials; Used fuel disposition; Reactor design; Space nuclear power and propulsion; Nuclear safeguards; Integration of nuclear power with production of synthetic fuels and ammonia; Energy policy; Environmental justice.

• PERSONAL RECORD

Citizenship: USA
Marital Status: Married (wife, Ann Marie Cimino-Knight, Ph.D.; three sons)

• EDUCATION

University of Florida

Ph.D. Nuclear Engineering Sciences — May 2000
U. S. Department of Defense, AASERT Fellow
Dissertation title: *Processing of Solid Solution, Mixed Uranium/Refractory Metal Carbides for Advanced Space Nuclear Power and Propulsion Systems*

M.S. Nuclear Engineering Sciences — December 1995
Department of Energy, Applied Health Physics Fellow
Thesis title: *Virtual Radiation Fields for ALARA Determination*
Research involved the development of a virtual dosimetry computer code utilizing Monte Carlo methods.

B.S. Nuclear Engineering — August 1994
Graduated with Honors

• EXPERIENCE

Department of Mechanical and Nuclear Engineering, University of South Carolina — August 2004 to present
————————300 Main Street; Columbia, SC 29208; 803\777-1465, www.sc.edu————————
Professor and Chair, Department of Mechanical Engineering — January 2021 to present
Professor and Nuclear Engineering Program Director: — January 2016 to present
Associate Professor and Nuclear Engineering Program Director: — Aug. 2011 to December 2015
Assistant Professor and Nuclear Engineering Program Director: — Aug. 2004 to August 2011

Department of Nuclear & Radiological Engineering and Innovative Nuclear Space Power & Propulsion Institute, University of Florida — May 1996 to August 2004
Adjunct Assistant Professor: — December 2000 to August 2004
Research Assistant: — May 1996 to February 2000

Oak Ridge National Laboratory — January 1996 to May 1996
DOE Fellow, Applied Health Physics Practicum:

Argonne National Laboratory-West — June 1994 to August 1994
Intern for Integral Fast Reactor Program:

Gulf States Utilities Company (River Bend Nuclear Station) — May 1992 to December 1993
Student Engineer (Co-op) for 3 semesters in Nuclear Licensing & Nuclear System Design Groups:

• AWARDS

Breakthrough Leadership in Research Award, University of South Carolina, January 2020; https://www.sc.edu/uofsc/posts/2020/05/breakthrough_leader_travis_knight.php#.XzavLuhKh3g

Research Achievement Award, College of Engineering, University of South Carolina, 2018

Joseph M. Biedenbach Distinguished Service Award, University of South Carolina, 2012

Fred C. Davison Distinguished Scientist Award given by Citizens for Nuclear Technology Awareness, 2011 (http://www.c-n-t-a.com/) https://cntaware.org/previous-dsa-winners/

DOE Innovations in Fuel Cycle Research Awards in 2010 and 2011 awarded to graduate students mentored: **2010** Lt. Col. Ken Allen, Ph.D. (3rd Place, $2,000)-awarded for work published on fast reactor transmutation; **2011** Mr. Carey "Mac" Read ($1500, universities under $600M) – for work published on modifications of CINDER90 a fuel depletion and transmutation computer code (http://www.fuelcycleinnovations.org/)

Significant Contribution Award by Material Science and Technology Division of the American Nuclear Society, 2001 (given for work on mixed carbide nuclear fuels)

Department of Defense Fellow, AASERT-BMDO, 1996 to 2000

James E. Swander Memorial Scholarship, Most Outstanding Graduate Student, University of Florida, Department of Nuclear Engineering Sciences, 1997 to 1998

Department of Energy Fellow, Applied Health Physics, 1994 to 1996

INPO/National Academy for Nuclear Training Scholar, 1993 to 1994

• EXTERNAL FUNDING

Summary:

- $20M+ in competitive research awards as PI or lead PI from USC
- $2M+ in competitive research awards as Co-PI;
- $6M+ in competitive research center funding as PI or Co-PI for establishment of two SmartState Centers of Economic Excellence (http://smartstatesc.org/)

- **PUBLICATIONS (Peer reviewed Journals and Proceedings)**

Peer Reviewed Journals (40 in print/press, 4 in progress)

*Abdurrahman Ozturk, Benjamin W. Spencer, and **Travis W. Knight**, Implementation of View Factor Model and Radiative Heat Transfer Model in MOOSE, draft in progress

*Matthew G. Shalloo, Anna L. d'Entremont, Roderick E. Fuentes, Robert L. Sindelar, **Travis W. Knight**, "Characterization and Drying of Oxyhydroxides for Dry Storage of Aluminum-Clad Spent Fuel", draft in progress

*Fakhrul Islam and Travis Knight, Conceptual Design and Neutronic Performance Analysis of a 1 MWth HTGR, draft in progress

*Aaron Horwood, Juan Vitali, Andrew Thueme, Ruddie Ibanez, Travis Knight, "Puerto Rico: A deadly case study on the need for a large-scale DoD expeditionary electrical power generation capability" *Joint Force Quarterly*, **in press**

*Robert J. Demuth, Robert Sindelar, Anna d'Entremont, Rebecca Smith, and **Travis W. Knight**, "Post-Drying Analysis of Aluminum (Oxy)hydroxide Films for Dry Storage of Aluminum-Clad Spent Nuclear Fuels", *Nuclear Technology*, **in press**

*Fakhrul Islam, Alexander W. Abboud, Nathaniel Cooper, Tanvir Farouk, Jamil Khan, **Travis Knight**, "Development of a CFD Model for Predicting Operating Conditions for Drying of Spent Nuclear Fuel", *Nuclear Science and Technology Open Research*, **in press**

*K. A. Gamble, B. W. Spencer, J. D. Hales, **T. W. Knight**, E. Roberts, "A Layered 2D Computational Framework: Theory and Applications to Nuclear Fuel Behavior", *Nuclear Engineering and Design*, August 2022, https://doi.org/10.1016/j.nucengdes.2022.111847

*S. Patnaik, D. A. Lopes, B.W. Spencer, T.M. Besmann, E. Roberts, **T.W. Knight**, "Evaluation of Ceria as a Surrogate Material for UO2 in Experiments on Fuel Cracking Driven by Resistive Heating", *Nuclear Engineering and Design*, 2021 https://doi.org/10.1016/j.nucengdes.2021.111482

*S. Patnaik, B.W. Spencer, T.M. Besmann, E. Roberts, **T.W. Knight**, "Separate Effects Tests for Studying Temperature-Gradient-Driven Cracking in UO2 Pellets", *Nuclear Science and Engineering*, 2021 https://doi.org/10.1080/00295639.2021.1932223

Sudipta Saha, Jamil Khan, **Travis Knight**, Tanvir Farouk, "A Global Model for Predicting Vacuum Drying of Used Nuclear Fuel Assemblies", *Nuclear Technology*, 2021, https://doi.org/10.1080/00295450.2021.1936863

*K. A. Gamble, **T. W. Knight**, E. Roberts, J. D. Hales, B. W. Spencer, "Mechanistic Verification of Empirical UO2 Fuel Fracture Models", *Journal of Nuclear Materials*, Volume 556, 1 December 2021, https://doi.org/10.1016/j.jnucmat.2021.153163

Ju-Yuan Yeh, Benjamin Spencer, Sobhan Patnaik, **Travis Knight**, Mary Lou Dunzik-Gougar, "Coupled Physics Simulation of Fracture in Nuclear Fuel Pellets Induced by Resistive Heating" *Journal of Nuclear Materials*, 2021 https://doi.org/10.1016/j.jnucmat.2021.153004

*J. A Yingling, K.A Gamble, Elwyn Roberts, R. Austin Freeman, and **Travis W. Knight**, Updated U3Si2 Thermal Creep Model and Sensitivity Analysis Of The U3Si2-Sic Accident Tolerant Fuel, *Journal of Nuclear Materials*, January 2021, https://doi.org/10.1016/j.jnucmat.2020.152586

*Patnaik, S., Lopes, D.A., Besmann, T.M., Spencer, B.W., **Knight, T.W**., Experimental System for Studying Temperature Gradient Driven Fracture of Oxide Nuclear Fuel Out of Reactor, *Review of Scientific Instruments*, 91, 035101 (2020); https://doi.org/10.1063/1.5119361

Malik Tahiyat, **Travis W. Knight**, and Tanvir Farouk, "Plasma optical emission spectroscopy for water vapor quantification and detection during vacuum drying process," *Review of Scientific Instruments*, 89, 116108 (2018); https://doi.org/10.1063/1.5047210

*Metzger, Kathryn E.; **T. W. Knight**, E. Roberts, X. Huang; "Determination of Mechanical Behavior of U_3Si_2 Nuclear Fuel by Microindentation Method", *Progress in Nuclear Energy*, 99, 2017, pages 147-154; https://doi.org/10.1016/j.pnucene.2017.05.007

*Lee, SeungMin, **T. W. Knight**, J. W. McMurray, and T. M. Besmann, Measurement of the oxygen partial pressure and thermodynamic modeling of the U–Nd–O system, *Journal of Nuclear Materials*, **473**, May 2016, pages 272-282; https://doi.org/10.1016/j.jnucmat.2016.02.024

*Lee, SeungMin, **T. W. Knight**, S. Voit, R. Barabash, The Lattice Parameter Behavior with Different Nd and O Concentration in the $(U_{1-y}Nd_y)O_{2\pm x}$ Solid Solution, *Nuclear Technology*, **193**, 2, Feb. 2016, Pages 287-296; https://doi.org/10.13182/NT14-136

Barabash, Rozaliya; Voit, Stewart; Aidhy, Dilpuneet; *Lee, Seung Min; **Knight, Travis**; Sprouster, David; Ecker, Lynne, "Cation and Vacancy Disorder in U1-YNdYO2.00-X Alloys", *Journal of Materials Research*, **30**, Issue 20, October 2015, pp 3026-3040; https://doi.org/10.1557/jmr.2015.261

*Lee, S., **T. W. Knight**, and E. Roberts, "Design and control of the oxygen partial pressure of UO_2 in TGA using the humidification system", *Nuclear Engineering and Design,* **292**, October 2015, Pages 39–45; https://doi.org/10.1016/j.nucengdes.2015.05.015

*Porter, I. E., **T. W. Knight**, and P. Raynaud, "Potential Impacts of Modeling Full Reactor Cores Using Combined Fuel Performance and Thermal Hydraulics Codes", *Nuclear Technology*, **190**, 2, May 2015, pp 174-182; https://doi.org/10.13182/NT14-100

*Meredith, A. D., **T. W. Knight**, R. Noe, "Modified Sodium Diuranate Process for the Recovery of Uranium from Uranium Hexafluoride Transport Cylinder Wash Solution", *Separation Science and Technology*, Volume 50, Issue 6, 2015, pp 920-925; https://doi.org/10.1080/01496395.2014.968259

*Inabinett, D., **T. W. Knight**, J. Gray, and T. Adams, "Study of XeF_2 fluorination potential against Rh_2O_3, RuO_2, ZrO_2, and U_3O_8 for use in reactive gas recycle of used nuclear fuel", *Progress in Nuclear Energy*, 76, September 2014, Pages 106–111; https://doi.org/10.1016/j.pnucene.2014.05.012

*Inabinett, D., **T. W. Knight**, J. Gray, and T. Adams, "Study of XeF_2 Fluorination Potential Against SrO, MoO_3, and Nb_2O_5 in TG/DTA for Use in Reactive Gas Recycle", *Progress in Nuclear Energy*, 68, September 2013, pp. 16-19; https://doi.org/10.1016/j.pnucene.2013.05.002

*Porter, I. E., **T. W. Knight**, M.C. Dulude, E. Roberts, and J. Hobbs, "Design and fabrication of an advanced TRISO fuel with ZrC coating", *Nuclear Engineering and Design*, 259, June 2013, pp.180–186; https://doi.org/10.1016/j.nucengdes.2013.03.004

*Read, Jr., C. M., **T. W. Knight**, K. S. Allen, "Development of a Multi-Tiered Recycling Strategy with a Sodium-Cooled Heterogeneous Innovative Burner Reactor," *Progress in Nuclear Energy,* 62, January 2013, pp. 72-78; https://doi.org/10.1016/j.pnucene.2012.09.008

*Allen, K.S.; **T. W. Knight**, C. M. Read Jr., "Design of an Equilibrium Core 1000 MWt Sodium-Cooled Heterogeneous Innovative Burner Reactor," *Nuclear Engineering and Design,* 242, January 2012, pp. 108–114; https://doi.org/10.1016/j.nucengdes.2011.10.024

*Tincher, D. and **T. W. Knight**, "Feasibility Study of Minor Actinide Transmutation in Light Water Reactors with Various Am/Cm Separation Efficiencies," *Nuclear Engineering and Design*, 241, 12, December 2011, pp. 5295-5307; https://doi.org/10.1016/j.nucengdes.2011.08.080

*Read, Jr., C. M., **T. W. Knight**, K. S. Allen, "Using a Modified CINDER90 Routine in MCNPX 2.6.0 for the Prediction of Helium Production in Minor Actinide Targets," *Nuclear Engineering and Design,* 241, 12, December 2011, pp. 5033-5038; https://doi.org/10.1016/j.nucengdes.2011.09.016

*Hawkins, B. and **T. W. Knight**, "Characterization of Radiation Fields and Dose Assessment from Fuels Manufacturing for Advanced Fuel Cycles", *Nuclear Engineering and Design*, 241, 9, September 2011, pp. 3736-3747; https://doi.org/10.1016/j.nucengdes.2011.06.048

*Allen, K. S. and **T. W. Knight**, S. E. Bays, Benchmark of Advanced Burner Test Reactor Using MCNPX and ERANOS 2.1, *Progress in Nuclear Energy*, 53, 6, August 2011, pp. 633-644; https://doi.org/10.1016/j.pnucene.2011.01.007

*Allen, K. S., **T. W. Knight**, and S. E. Bays, "Actinide Destruction and Power Peaking Analysis in a 1000 MWt Advanced Burner Reactor Using Moderated Heterogeneous Target Assemblies", *Progress in Nuclear Energy*, 53, 4, May 2011, pp. 375-394; https://doi.org/10.1016/j.pnucene.2011.01.010

*Vasudevamurthy, G., **T. W. Knight**, T. M. Adams**, and E. Roberts, "Production and Characterization of ZrC-UC Inert Matrix Composite Fuel for Gas Fast Reactors", *Nuclear Technology*, **173**, 2, February 2011, pp. 200-209; https://doi.org/10.13182/NT11-A11549

*Coleman, J. R. and **T. W. Knight**, "Evaluation of multiple, self-recycling of reprocessed uranium in LWR", *Nuclear Engineering and Design,* 240 (2010), pp. 1028-1032; https://doi.org/10.1016/j.nucengdes.2010.01.003

*Allen, K. S. and **T. W. Knight**, "Destruction Rate Analysis of Transuranic Targets in SFR Assemblies Using MCNPX and SCALE 6.0", *Progress in Nuclear Energy*, 52, 4, May 2010, pp. 387-394; https://doi.org/10.1016/j.pnucene.2009.09.001

*Foley, T. Q. and **T. W. Knight**, "Fuel Cycle Analysis of GFR Using Advanced Fuels", *Progress in Nuclear Energy*, 51 (2009), pp. 109-123; https://doi.org/10.1016/j.pnucene.2007.12.005

*Vasudevamurthy, G., **T. W. Knight**, "Production of High Density Uranium Carbide compacts for use in Composite Nuclear Fuels", *Nuclear Technology*, **163**, 2, August 2008, pp. 321-327; https://doi.org/10.13182/NT08-A3991

*Vasudevamurthy, G., **T. W. Knight**, E. Roberts, and T. Adams**, "Laboratory Production of Zirconium Carbide Compacts for Use in Composite Nuclear Fuels", *Journal of Nuclear Materials*, **347**, 1-2, 2008, pp. 241-247; https://doi.org/10.1016/j.jnucmat.2007.08.016

*Vasudevamurthy, G. and **T. W. Knight**, "Effect of system parameters on size distribution of 304 Stainless Steel particles produced by Electrical Discharge Mechanism", *Materials Letters*, **61**, 27, November 2007, pp. 4872-4874; https://doi.org/10.1016/j.matlet.2007.03.070

Khan, J. A., **T. W. Knight**, S. B. Pakala, W. Jiang, R. Fang, and J. S. Tulenko, "Enhanced Thermal Conductivity for LWR Fuel", *Nuclear Technology*, **169**, 1, January 2010, pp. 61-72; https://doi.org/10.13182/NT10-A9343

Anghaie, S., **T. W. Knight**, R. Norring, and B. M. Smith, "Optimum Utilization of Nuclear Fuel with Gas and Vapor Core Reactors", *Progress in Nuclear Energy*, Vol. 47, No. 1-4, pp. 74-90, 2005; https://doi.org/10.1016/j.pnucene.2005.05.006

Knight, T. W. and S. Anghaie, "Processing and Fabrication of Mixed Uranium/Refractory Metal Carbide Fuels with Liquid-Phase Sintering" *Journal of Nuclear Materials*, 306, November 2002, pp. 54-60; https://doi.org/10.1016/S0022-3115(02)01143-1

Knight, T. W., G. R. Dalton, and J. S. Tulenko, "Virtual Radiation Fields--A Virtual Environment Tool for Radiological Analysis and Simulation," *Nuclear Technology*, **117**, 2, February 1997, pp. 255-266; https://doi.org/10.13182/NT97-A35330

*Indicates graduate student supervised.

Peer Reviewed Proceedings (69 total)

2 ICAPP 2024 papers; add complete reference

*Jason Reynolds, Jhonathan Rosales, Martin Volz, Brian Taylor, Jamelle K.P. Williams, Arne Cröll, **Travis Knight**, Theodore Besmann, Juliano Schorne-Pinto, Ronald Booth, Matthew Phipps, Robert Demuth, Specific Heat Capacity Measurement of Bi-Carbide Fuels for Nuclear Thermal Propulsion, Nuclear and Emerging Technologies for Space (NETS 2024), Santa Fe, NM, MAY 6–10, 2024, **in press**

*Demuth, Robert, Shawn Stafford, Jorge Carvajal, Robert Hall, **Travis Knight**, "Evaluation of the Reliability of Wireless Internal Sensors for Dry Storage of Spent Nuclear Fuel", *Transactions of the American Nuclear Society* 2023 Annual Meeting, Indianapolis, IN, June 11-14, 2023

*Aaron Horwood, **Travis Knight**, "Opportunities for Advanced Mobile Reactors in Times of Disaster and War", *Transactions of the American Nuclear Society* 2022 Annual Meeting, Anaheim, CA, June 12-16, 2022

*Nathaniel Cooper, Tanvir Farouk, Jamil Khan, Yi Wang, Rebecca Smith, **Travis Knight**, "Development of a CFD Model for the Drying of Aluminum-clad Spent Fuel", *Transactions of the American Nuclear Society* 2020 Annual Meeting, Phoenix, AZ, June 7-11, 2020

Anna L. d'Entremont, Roderick E. Fuentes, *Matthew G. Shalloo, **Travis Knight**, Robert L. Sindelar, "Thermal dehydration of aluminum (oxy)hydroxides on fuel cladding material", *Waste Management (WM2020)*, March 8-12, 2020, Phoenix, AZ

Sudipta Saha, Amitav Tikadar, **Travis W. Knight**, Jamil A. Khan, Tanvir I. Farouk, "Can an analytical model be employed for simulating used fuel vacuum drying process?" *Transactions of the American Nuclear Society 2019 Winter Meeting*, Washington, DC, Nov. 17-21, 2019

Amitav Tikadar, Sudipta Saha, **Travis W. Knight,** Tanvir I. Farouk, Jamil A. Khan, "CFD Framework for Used Fuel Vacuum Drying Application", *Transactions of the American Nuclear Society 2019 Winter Meeting*, Washington, DC, Nov. 17-21, 2019

*Jonathan E. Perry, Jamil Khan, Tanvir Farouk, James S. Tulenko, Arthur Niemoller, **Travis W. Knight**, "Used Fuel Drying by Vacuum and Forced Gas Circulation for Dry Cask Storage", *Proceedings of Global 2019*, September 22-26, 2019, Seattle, WA

Benjamin W. Spencer, Nicolas E. Woolstenhume, Leigh A. Emerson, Ju-Yuan Yeh, Devin D. Imholte, Connie M. Hill, Daniel B. Chapman, Colby B. Jensen, Mary Lou Dunzik-Gougar, **Travis W. Knight**, Theodore M. Besmann, *Sobhan Patnaik, Sean M. McDeavitt, Luis Ortega, Delia Perez-Nunez, Heng Ban, "Separate-Effects Validation Experiments for Models of Fracture in Ceramic Nuclear Fuel", *Proceedings of Global 2019*, September 22-26, 2019, Seattle, WA

*Ozturk, A., J. Gardner, K. Brinkman, L. Shuller-Nickles, and **T. W. Knight**, Multiscale modeling of an advanced ceramic waste form using MOOSE*, Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2018),* Charlotte, USA, April 8-11, 2018, p 628-634

Howden, S. H., B. Lin, P. Lam, **T. W. Knight**, L. Yu, Health monitoring on medium scale structures using acoustic emission methods*, Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2018),* Charlotte, USA, April 8-11, 2018, p 706-713

*Freeman, R. A., T. Martin, E. Roberts, and **T.W. Knight**, Analysis of Thermal Creep for Uranium Silicide Fuel Using BISON, *Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2018),* Charlotte, USA, April 8-11, 2018, p 605-611

*Shalloo, M., **T. Knight**, J. Khan, T. Farouk, J. Tulenko, "Vacuum Drying Experiments using a Mock Used Fuel Assembly", Waste Management Symposium (W*M2018),* Phoenix, AZ, March 18 – 22, 2018

Tahiyat, M., **Knight, T.,** Farouk, T., "Plasma Optical Emission Spectroscopy for Water Vapor Quantification in Used Fuel Drying Applications", *Transactions Of the American Nuclear Society 2017 Winter Meeting*, Washington, DC, Oct. 29-Nov. 2, 2017, Pages 315-318

*Shalloo, M., **T. Knight**, J. Khan, T. Farouk, J. Tulenko, "Vacuum Drying Experiments using a Mock Used Fuel Assembly", *Transactions Of the American Nuclear Society 2017 Winter Meeting*, Washington, DC, Oct. 29-Nov. 2, 2017, p 108-110

Tahiyat, M., **Knight, T.,** Farouk, T., "Plasma Optical Emission Spectroscopy for Water Vapor Quantification and Detection" *International High-Level Radioactive Waste Management Conference*, April 9 - 13, 2017, Charlotte, NC

Knight, T. W., Jamil Khan, Tanvir Farouk, James Tulenko, " Experimental Determination of Used Fuel Vacuum Drying Using a Mock Fuel Assembly" *International High-Level Radioactive Waste Management Conference*, April 9 - 13, 2017, Charlotte, NC

Lissenden, C. J., A.T. Motta, Sean Brennan, Karl Reichard, I. Jovanovic, **T. Knight**, J. Popovics, "Development of Robotic Multisensor Inspection System for Used Nuclear Fuel Canisters", *Transactions Of the American Nuclear Society 2016 Annual Meeting*, New Orleans, LA, June 12-16, 2016

Xiaoyi, Sun; Lin, Bin; Bao, Jingjing; Giurgiutiu, Victor; **Knight, Travis**; Lam, Poh-Sang; Yu, Lingyu; "Developing a structural health monitoring system for nuclear dry cask storage canister", *Proceedings of SPIE - The International Society for Optical Engineering*, v 9439, 2015

R. Barabash, S. Voit, *S. Lee, **T. W. Knight**, "Atomic/Vacancy Intermixing and Clustering in U(1-y)Nd(y)O(2.00-x) Alloys", *TMS 2015 144th Annual Meeting & Exhibition*, March 15-19, 2015 • Orlando, FL, USA

*Metzger, K. E., **T.W. Knight**, and R.L. Williamson, Model Of U3Si2 Fuel System Using Bison Fuel Code, Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2014), Charlotte, USA, April 6-9, 2014

*Porter, I. E. and **T. W. Knight**, Fuel Performance Assessment When Modeling Gamma Heating During Steady-State And Transient Scenarios, Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2014), Charlotte, USA, April 6-9, 2014

Lin, B., M. Gresil, V. Giurgiutiu, **T. Knight**, A.E. Mendez-Torres, L. Yu, Nuclear Environmental effects on piezoelectric wafer active sensors based acousto-ultrasonic sensing system, Proceedings of International Conference on Advances in Nuclear Power Plants (ICAPP 2014), Charlotte, USA, April 6-9, 2014

*Inabinett, D., G. Cerefice, **T. Knight**, T. Adams, and J. Gray, Alternate Fluorination Approaches for Reactive Gas Recycle of Used Nuclear Fuel", *Transactions Of the American Nuclear Society 2012 Winter Meeting*, San Diego, CA, Nov. 11-Nov. 15, 2012

*Barbaras, S. and **T. W. Knight**, "TRU Transmutation and Criticality Calculation Sensitivity to Heterogeneous Lattice Effects", *Waste Management Symposia*, Phoenix, AZ, Feb. 26 - March 1, 2012

*Barbaras, S. and **T. W. Knight**, "Americium Transmutation Feasibility When Used As Burnable Absorbers", *Waste Management Symposia*, Phoenix, AZ, Feb. 26 - March 1, 2012

Méndez Torres, Adrián E., Dennis Vinson, **T. W. Knight**, "Assessment of Time dependence Isotopic Characteristics of Spent WG-MOX", *Transactions Of the American Nuclear Society 2011 Winter Meeting*, Washington, DC, Oct. 30-Nov. 3, 2011

*Allen, K. S. and **T. W. Knight**, "Predictive Model of the Destruction of Transuranic Targets in a Sodium-Cooled Fast Reactor using MCNPX", *Advanced Nuclear Fuel Management IV*, Hilton Head, SC, April 2009

T. W. Knight, "Innovations in Distance Learning at University of South Carolina Nuclear Engineering Program" *Conference on Nuclear Training and Education (CONTE09)*, Jacksonville, FL, February 2009

*Vasudevamurthy, G., **T. W. Knight**, E. Roberts, and T. Adams**, "Production of ZrC matrix for use in Gas Fast Reactor composite fuels", Proceedings of Global 2007 Advanced Nuclear Fuel Cycles and Systems, September 9-13, 2007

*Lobach, S. Y., **T. W. Knight**, N. Jacob, and E. Athon, Advanced TRISO Fuels with Zirconium Carbide for High Temperature Reactors", Proceedings of Global 2007 Advanced Nuclear Fuel Cycles and Systems, September 9-13, 2007

*Lovett, H. A., **T. W. Knight**, M. A. Garland, and S. Mirzadeh, "Evaluation of Tellurium-125 Metastable Production Pathways", *Transactions Of the American Nuclear Society 2007 Annual Meeting*, Boston, MA, June 24-28, 2007

*Curtis, T.D. and **T. W. Knight**, Uranium Requirement for a Hydrogen Economy, *Transactions Of the American Nuclear Society 2005 Winter Meeting*, November 13-17, 2005

*Eargle, J., M. Gorensek**, and **T. W. Knight**, Optimization of the Thermal Efficiency of a Hybrid Sulfur Thermochemical Hydrogen Process, *Transactions Of The American Nuclear Society 2005 Winter Meeting*, November 13-17, 2005

Khan, J., S. Pakala, **T. W. Knight**, J. Tulenko, "Enhanced Thermal Conductivity for LWR Fuel", *Transactions Of the American Nuclear Society 2005 Winter Meeting*, Washington, DC November 13-17, 2005

Knight, T. W., M. Garland, and A. Bayoumi, "The Nuclear Sun Shines Bright on South Carolina", *Proceedings of the American Society for Engineering Education (ASEE) Annual Meeting*, Portland, Oregon, June 2005

Knight, T. W., S. Anghaie, T. C. Carter, "Development of a Robust Tri-Carbide Fueled Reactor for Multi-Megawatt Space Power and Propulsion Applications", *Transactions Of The American Nuclear Society 2004 Winter Meeting*, Washington, DC November 13-17, 2004

Carter, T. C., **T. W. Knight**, S. Anghaie, "Development of Mixed Carbide Fuels in Support of the AFCI Program", *Transactions of the American Nuclear Society Winter Meeting*, Washington, DC, November 2004

Norring, R., S. Anghaie, B. M. Smith, **T. W. Knight**, "Actinide Production in Gas Core Reactors" *Proceedings of the 2004 International Congress on Advances Nuclear Power Plants (ICAPP '04)*, Pittsburgh, PA, June 13-17, 2004

Knight, T. W. and S. Anghaie, "Estimation of Specific Mass for Multi-megawatt NEP Systems Based on Vapor Core Reactors with MHD Power Conversion," *Proceedings of the 21st Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 2004

Carter, T. C., **T. W. Knight**, S. Anghaie, "Feasibility of Mixed Carbide Fuels For Use In Transmutation Systems", *Proceedings of the Sixth International Meeting on Nuclear Applications of Accelerator Technology (AccApp'03)*, 2003, p 124-127

Knight, T. W. and S. Anghaie, "Low Weight and Compact Space Power with Vapor Core Reactors" *Proceedings of the 2003 International Congress on Advances Nuclear Power Plants (ICAPP '03)*, Córdoba, Spain, May 4-7, 2003

Knight, T. W., S. Anghaie, and R. Gouw, "Square Lattice Honeycomb Fuel Reactor Design for Space Power and Propulsion" *Proceedings of the 2003 International Congress On Advances Nuclear Power Plants (ICAPP '03)*, Córdoba, Spain, May 4-7, 2003

Anghaie, S., B. M. Smith, and **T. W. Knight**, "Safe and Sustainable Nuclear Power Generation with Gas Core Reactor Systems", *Proceedings of 11th Conference on Emerging Nuclear Energy Systems*, 2002, pp. 52-60

Knight, T. W., Blair Smith, and S. Anghaie, "Specific Mass Estimates for A Vapor Core Reactor With MHD", *Proceedings of the International Congress On Advanced Nuclear Power Plants (ICAPP)*, Hollywood, Florida June 9-13, 2002

Knight, T. W. and S. Anghaie, "Shield Design for A Space Based Vapor Core Reactor", *Proceedings of the International Congress on Advanced Nuclear Power Plants (ICAPP)*, Hollywood, Florida June 9-13, 2002

Knight, T. W. and S. Anghaie, "Mixed Uranium/Refractory Metal Carbide Fuels for High Performance Nuclear Reactors", *Proceedings of the International Congress On Advanced Nuclear Power Plants (ICAPP)*, Hollywood, Florida June 9-13, 2002

Smith, B. M., S. Anghaie, and **T. W. Knight**, "Gas Core Reactor–MHD Power System with Cascading Power Cycle", *Proceedings of the International Congress On Advanced Nuclear Power Plants (ICAPP)*, Hollywood, Florida June 9-13, 2002

Knight, T. W. and S. Anghaie, "Development of a Robust Tri-Carbide Fueled Reactor for Multi-megawatt Space Power and Propulsion Applications", *Transactions Of The American Nuclear Society 2002 Annual Meeting*, Hollywood, Florida June 9-13, 2002

Smith, B., **T. W. Knight**, S. Anghaie, "Multi-megawatt NEP with Vapor Core Reactor MHD," *Proceedings of the 19th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 3-6, 2002

Anghaie, S., and **T. W. Knight**, "Status of Advanced Carbide Fuels: Past, Present, and Future," *Proceedings of the 19th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 3-6, 2002

Knight, T. W. and S. Anghaie, "Advanced Carbide Fuels for Space Nuclear Thermal Propulsion," *Proceedings of the 37th AIAA/ASME/SAE/ASEE Joint Propulsion Conference*, Salt Lake City, UT, July 2001

Knight, T. W. and S. Anghaie, "Tri-Carbide Nuclear Fuel Processing and Characterization for Space Nuclear Applications," *Transactions of the American Nuclear Society Annual Meeting*, Milwaukee, Wisconsin June 17-21, 2001

Knight, T. W. and S. Anghaie, "Innovative Semispherical Pb-Hf-Cu Shield for a Fissioning Plasma Core Reactor," *Transactions Of The American Nuclear Society Annual Meeting*, Milwaukee, Wisconsin June 17-21, 2001

Knight, T. W., D. Kaoumi, and S. Anghaie, "Rhenium Compatibility with Uranium Dioxide at Elevated Temperatures," *Proceedings of the 18th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 11-15, 2001

Knight, T. W. and S. Anghaie, "Development and Characterization of Solid Solution Tri-Carbides," *Proceedings of the 18th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 11-15, 2001

Anghaie, S., **T. W. Knight**, B. M. Smith, and M. Houts, "Multimegawatt Nuclear Electric Propulsion with Gaseous and Vapor Core Reactors with MHD," *Proceedings of the 18th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 11-15, 2001

Smith, Blair M., **T. W. Knight**, and S. Anghaie, "Overview of Nuclear MHD Power Conversion for Multi-Megawatt Electric Propulsion," *Proceedings of the 18th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 11-15, 2001

Anghaie, S., **T. W. Knight**, R. Gouw, and E. Furman, "Square Lattice Honey Comb Tri-Carbide Fuels for 50 to 250KN Variable Thrust NTP Design," *Proc. of the 18th Symp. on Space Nuclear Power and Propulsion*, Albuquerque, NM, Feb. 11-15, 2001

Knight, T. W. and S. Anghaie, "Mixed Uranium-Refractory Carbide Fuels for Ultrahigh Yield Reactors," *Proc. of the 8th International Conference on Nuclear Engineering (ICONE-8)*, Baltimore, April 2-6, 2000

Knight, T. W. and S. Anghaie, "Processing Of Mixed Uranium/Refractory Metal Carbide Fuels For High Temperature Space Nuclear Reactors," *Proceedings of the 17th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Jan. 30-Feb. 3, 2000

Knight, T. W. and S. Anghaie, "Ternary Carbide Uranium Fuels For Advanced Reactor Design Applications," *Proc. of the 7th International Conference on Nuclear Engineering (ICONE-7)*, Tokyo, Japan, April 19-23, 1999.

Knight, T. W. and S. Anghaie, "(U, Zr, Nb)C Pseudo-Ternary Carbide Fuel For High Temperature Space Nuclear Reactors," ed. B. Mishra, *EPD Congress 1999 TMS Annual Meeting*, San Diego, CA, Feb. 28-March 4, 1999.

Knight, T. W. and S. Anghaie, "Processing Of Pseudo-Ternary Carbide Fuels For High Temperature Space Nuclear Reactors," *Proceedings of the 16th Symposium on Space Nuclear Power and Propulsion*, Albuquerque, NM, Jan. 31-Feb. 4, 1999

Wang, S. and Chen, G. and **Knight, T**., (1998). "GATOR: An automatic multiple target tracking system", *Proceedings of SPIE - The International Society for Optical Engineering*, vol. 3365, pp. 216-223, 1998

Knight, T. W., G. R. Dalton, and J. S. Tulenko, "Virtual Radiation Fields for ALARA Determination," *Trans. Amer. Nucl. Soc.*, **72**, 105, 1995

*Indicates graduate student supervised. 28 additional papers in earlier years not listed.

• INVITED SEMINARS, POSTERS, PANELS, PRESENTATIONS, BRIEFINGS

"New Nuclear-Something old, something new, something borrowed, something green", Rotary Club, The Palmetto Club, Columbia, SC 4Oct2023

Panel Member, Southeast Nuclear Industry Advisory Council Meeting, hosted by E4 Carolinas, title of my talk, "Advanced Nuclear Power for Decarbonization of Transportation, Shipping, and Defense using Batteries and 'Green' Liquid Fuels (Ammonia) Produced from Nuclear Electricity and Heat", 28 July 2022

ANS Savannah River Section; ANS SR University College Night (virtual meeting); Oct. 2020, Oct. 2021

"USC Nuclear Engineering Program and Research on Defense Related Aluminum Clad Spent Nuclear Fuel Storage and Disposition", Governor's Nuclear Advisory Council, Columbia, SC, 17 October 2019 (presentation)

"Status of Nuclear Engineering Education and Research in South Carolina and the U.S.", Women in Nuclear Meeting, Columbia, SC, 16 October 2019 (presentation)

"Used Fuel Disposition Research Program-Drying and Storage", CNTA "Up and Atom" Forum, Aiken, SC, 12 June 2019 (presentation)

"Advanced Nuclear Fuels and Used Fuel Disposition", Meeting of Leadership Energy Carolinas, organized by E4 Carolinas, 26 March 2019

Matthew Shalloo (USC), Roderick Fuentes (SRNL), Anna d'Entremont (SRNL), Robert Sindelar (SRNL), Travis W. Knight, "Characterization and Drying of Oxyhydroxides for Dry Storage of Aluminum-Clad Spent Fuel", ANS Winter Meeting 2018, Orlando, Florida, November 11, 2018 - November 15, 2018 (Poster)

"An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage", EPRI, Extended Storage Collaboration Program (ESCP) Workshop, Charlotte, NC, November 6-8, 2018 (Nov. 8, 2018), Presentation

Roderick E. Fuentes, Anna L. d'Entremont, Christopher Verst, Charles Crawford, Luke C. Olson, Brenda L. García-Díaz, Travis Knight (USC), Matthew Shalloo (USC), Kathryn Metzger (Westinghouse) and Robert L. Sindelar. Oxyhydroxides on Aluminum Spent Nuclear Fuel: Formation Studies and Removal Practices to Prevent Radiolytic Gas Production. Savannah River National Lab Laboratory, Directed Research and Development Year-End Review & Poster Session, Aiken, SC (2018), Poster

"An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage", Spent Fuel, and Waste Science and Technology (SFWST) Annual Working Group Meeting, University of Las Vegas, Las Vegas, Nevada, United States Department of Energy, Office of Nuclear Energy, May 22-24, 2018

"Impact of Thermal Creep of U_3Si_2 on Pellet Clad Interactions (technical talk)" and "Graduate Studies in Nuclear Engineering (recruitment talk)", South Carolina State University (SCSU), April 24, 2018

"Advanced Nuclear Fuels and Used Fuel Disposition", Meeting of Leadership Energy Carolinas, organized by E4 Carolinas, 14 March 2018

"An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage", EPRI ESCP Workshop, Charlotte, NC, 14 November 2017

"Heat Transfer and Radiation Dose Assessment of Dry Cask Storage of Used Nuclear Fuel", South Carolina State University (SCSU), April 18, 2017

"Creep Testing of U_3Si_2 and Development of a Creep Model for BISON Fuel Performance Code", Advanced Fuels Campaign (AFC) Integration Meeting, Oak Ridge National Laboratory (ORNL), March 28-20, 2017

Nuclear Power: Sustainability and External Costs; University of South Carolina - Next Energy Class (Prof. J. R. Regalbuto); 21 March 2017

"Nuclear Engineering Education and Research at USC", State of Nuclear in South Carolina, Briefing of the South Carolina State Legislators organized by CNTA, 26 January 2017

"Vacuum Drying of Spent Nuclear Fuel for Dry Cask Storage", Savannah River Section, American Nuclear Society, Aiken, SC, 9 January 2017

"An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage", EPRI Workshop, Charlotte, NC, 30 November 2016

Collaborative Cyber Competency Center (4C) Workshop, Session III - Cyber-Physical Systems, Energy (panel speaker and participant), University of South Carolina, September 27, 2016

"High Performance Computing for Nuclear Fuels and Reactor Physics Simulation and Modeling", Symposium on Research Computing Infrastructure (RCI), University of South Carolina, 15 April 2016

"Education for the New Nuclear Industry", also panel discussion for: "Creating the New Nuclear Industry", Meeting of Leadership Energy Carolinas, organized by E4 Carolinas, 17 March 2016

"Drying and Storage of Used Nuclear Fuel", Nuclear Waste Technical Review Board (NWTRB), High Burnup Fuel Review Meeting, Knoxville, TN, 17 February 2016

"An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage", EPRI Workshop, Charlotte, NC, 1 December 2015

"Multiscale Modeling of Radionuclide Diffusion in an Advanced All-Ceramic Waste Form", Clemson University, 31 July 2015

An Experimental Determination and Modeling of Used Fuel Drying by Vacuum and Gas Circulation for Dry Cask Storage, EPRI Workshop, Charlotte, NC, 4 December 2014

Adventures in Engineering and Computing Summer Camp, two presentations/demonstrations: 1) Careers in Nuclear and Radiological Engineering and 2) Radiation Science, Effects, and Detection, University of South Carolina, 15 July 2014

Nuclear Education and Research to Support the Next Generation of Nuclear Professionals, Governor's Nuclear Advisory Council, Columbia, SC, 10 April 2014

Education and the Nuclear Industry (panel), "Celebrate Our Community's Nuclear Industry" A Half-Day Forum Presented By Citizens for Nuclear Technology Awareness (CNTA) The Etherredge Center, University of South Carolina-Aiken, 24 October 2013 (http://www.c-n-t-a.com/)

Emerging Careers Expo, Panel "What's Trending Now", Midlands Education and Business Alliance (MEBA), 26 September 2013 (meeting of South Carolina educators, panel with business and government leaders) (http://mebasc.com/)

The Academic Engine: A moderated panel discussion with energy program directors on how they drive workforce development, innovation and entrepreneurship, *Energy Inc. Conference*, Charlotte Business Journal, Charlotte, NC, 9 May 9 2013 (http://www.bizjournals.com/charlotte/)

Developing a Unified SMR Program in South Carolina (panel), 3rd Annual Small Modular Reactor Conference, Columbia South Carolina, April 16-17, 2013

Nuclear Power: Sustainability and External Costs; University of South Carolina - Next Energy Class (Prof. J. R. Regalbuto); 21 Feb. 2013

Technology, Television, and Surveillance, Edison Lecture Series, University of South Carolina, October 18-19, 2012 (outreach seminar series for high school students)

Next Generation Nuclear Reactors and Sustainable Energy Production, Physics Department, University of South Carolina, 11 Oct. 2012

High Temperature Reactor Research at University of South Carolina, Next Generation Nuclear Plant (NGNP) Alliance Meeting, Savannah River National Laboratory, 18 Sept. 2012 (http://www.ngnpalliance.org/)

Powering the Nuclear Renaissance (Panel), Power Hour Series, NuHub and Columbia Business Journal, 6 Sept. 2012 (Panel with Dr. David Moody, SRS; Steve Byrne, SCANA; Jim Braun, AVANTech)

Everything You Should Know About Nuclear Energy, University of South Carolina, Engineering Week (E-week), 20 February 2012

Advanced Nuclear Fuels for High-Temperature Reactors and Transmutation of Used Fuel, Clemson University, 18 November 2011

Balancing Teaching and Research in the Tenure and Promotion Process, Power Lunch Series, University of South Carolina, 22 Sept. 2011

Sustainable Nuclear Power: Perspectives on Risk and External Costs, Green Quad, University of South Carolina, Columbia, SC, 14 April 2011

Nuclear Power Yesterday, Today, and Tomorrow: A Dialogue on Sustainability and Energy Perspectives, Science Café, Columbia, SC, 12 April 2011

Sustainable Nuclear Power: Perspectives on Risk and External Costs, Environmental Ethics Lecture, University of South Carolina, Columbia, SC 4 April 2011

Sustainable Nuclear Power: Perspectives on Risk and External Costs, Lexington County Teacher in Service, Columbia, SC, 2 March 2011

Nuclear Fuel Cycle Front End Issues, Leadership Carolina 2011, Carolina Nuclear Cluster, Columbia, SC, 24 February 2011 (http://www.newcarolina.org/clusters/nuclear.aspx)

Nuclear Power Sustainability, Lunch and Learn Series, Engineering Week (Eweek), 22 February 2011

Nuclear Engineering Research and Education Programs at USC, SCUREF Board of Trustees, Aiken, SC 18 February 2011

Nuclear Engineering Research and Education Programs at USC, American Association of Blacks in Energy, Columbia, SC 8 September 2010 (http://www.aabe.org/)

Composite and Coated Particle Fuels for Advanced Reactors, Westinghouse Fuel Fabrication Facility, Columbia, SC, 27 May 2010

Leadership Carolina 2010, Carolina Nuclear Cluster, Presentation on the Nuclear Fuel Cycle and USC Nuclear Engineering Education and Research Programs, 18 February 2010

USC Research Capabilities for Space Nuclear Power Research and Development, NASA-Marshall Space Flight Center, Huntsville, AL, 10 February 2010

USC Nuclear Engineering Education and Research, Women in Nuclear Conference, Columbia, SC, 4 February 2010

New and Emerging Nuclear Engineering Programs, Panel at the American Nuclear Society Meeting, Atlanta, GA, 17 June 2009

Leadership Carolina 2009, Carolina Nuclear Cluster, Presentation on the Nuclear Fuel Cycle and USC Nuclear Engineering Program, 19 February 2009

Securing Our Future: The Nuclear Alternative, Panel: 21st Century Technology and the Nuclear Energy Industry (invited panel member), Medical University of South Carolina, Charleston, SC, August 2008

Advanced Gas-cooled Reactor Fuels, *University of Florida*, October 15, 2007

USC Nuclear Engineering Research and Collaboration and SUNRISE, *ANS Local Section Aiken, SC*, April 22, 2008

Advanced Nuclear Fuels for GenIII+ and GenIV Applications, *Joint ASM International/ANS Savannah River Section Meeting*, Aiken, SC, January 26, 2006

Composite Nuclear Fuels for Advanced Nuclear Reactors and Fuel Cycles, *University of Florida*, January 19, 2006

Nuclear Hydrogen Production, Distribution, and Storage, *FuelCellSouth Southeastern Fuel Cell & Technology Conference*, May 11, 2005

Advanced Nuclear Fuels and Reactors for Alternative Fuel Cycles and Future Energy Economies, *American Nuclear Society - Columbia, SC Section*, March 24, 2005

Advanced Nuclear Fuels and Reactors for Nuclear Hydrogen Production, *Savannah River National Laboratory*, March 17, 2005

Advanced Nuclear Fuels and Reactors for Alternative Fuel Cycles and Energy Economies, *Society of Manufacturing Engineers Greater Columbia Chapter*, February 1, 2005

NASA's Long-Term Plans for Nuclear Power and Space Exploration, *Spring Meeting, Florida Chapter Health Physics Society*, St. Augustine, Florida, April 17-18, 2003

Status of Advanced Carbide Fuels: Past, Present, and Future, *School of Nuclear Engineering, Purdue University*, December 3, 2002

Knight, T. W., B. Smith, S. Anghaie, M. Houts, "Vapor Core Reactor with MHD Power Generator for Multi-Megawatt NEP Applications", *NASA JPL-MSFC Advanced Space Propulsion Workshop*, Pasadena CA, June 4-6, 2002

Advanced Fuel Design for High Performance Nuclear Thermal Propulsion, *Department of Nuclear & Radiological Engineering, University of Florida*, September 13, 2001

Advanced Fuel Design and Processing Techniques for High Performance Nuclear Thermal Propulsion, *College of Engineering, University of Wisconsin, Madison*, May 1, 2001

Computational Radiotherapy Treatment Planning Using MCNP, *Oak Ridge National Laboratory (ORNL)*, April 25, 1996

- **PATENTS**

Water Vapor Quantification Methodology During Drying of Spent Nuclear Fuel
Publication of US20200135350A1, 2020-04-30; Status: Pending
Inventors: Tanvir Farouk, Malik Tahiyat, Travis W. Knight
https://patents.google.com/patent/US20200135350A1/
Abstract: Methods and devices for detecting and quantifying water vapor concentration in spent nuclear fuel rods undergoing drying processes for safe storage purposes.

Title: Experimental Set Up for Studying Temperature Gradient Driven Cracking
Publication of US20220198649A1, 2022-06-23; Status: Pending
Inventor: Travis Knight, Sobhan Patnaik, Theodore Besmann, Elwyn Roberts
https://patents.google.com/patent/US20220198649A1/
Abstract: Described herein are systems and methods for imaging the top surface of a fuel pellet to observe the formation of radial cracks employing resistive heating to volumetrically heat the fuel pellet, but instead of passing the current axially through the pellet, electrodes were placed on the sides of a single pellet to pass the current transversely across the pellet allowing for an unobstructed view of the top surface of the pellet.

- **DOCTORAL STUDENTS**

Summary: Graduated 10, In progress 5

Name	Date	Title
Gokul Vasudevamurthy	12/07	Fabrication of Advanced Ceramic-Ceramic Composite Nuclear Fuels Using Combustion Synthesis
		Placement: 1) ORNL, 2) VCU (tenure-track), 3) General Atomics; 4) ORNL, 5) US NRC
Kenneth S. Allen	5/11	Used Nuclear Fuel Actinide Management In A Sodium-Cooled Heterogeneous Innovative Burner Reactor
		Placement: United States Military Academy West Point; currently Professor and Program Director
D. Shannon Sentell	8/13	Application of Computational Fluid Dynamics Methods to Improve Thermal Hydraulic Code Analysis
		Placement: International Securities Studies Fellow, The Fletcher School ~ Tufts University (post-doc); United States Military Academy West Point, Academy Professor and Director (retired Army 2016); currently COO Stealth Power in Austin Texas
Robert Lukes*	8/13	Predicting the Crack Response for a Pipe with a Complex Crack
		Placement: 1) Nuclear Regulatory Commission; 2) DOE
Ian E. Porter	12/14	System Analysis with Improved Thermo-Mechanical Fuel Rod Models for Modeling Current and Advanced LWR Materials in Accident Scenarios
		Placement: Nuclear Regulatory Commission; GE
Seung Min Lee	5/15	Thermogravimetric Experiments and Thermochemical Modeling Of The U-Nd-O System
		Placement: 1) PNNL, 2) TerraPower
Kathryn E. Metzger	8/16	Analysis of Pellet Cladding Interaction and Creep of U3Si2 Fuel for Use in Light Water Reactors
		Placement: 1) SRNL, 2) Westinghouse
Sobhan Patnaik	5/21	Separate Effects Tests for Studying Thermal Gradient Driven Cracking in UO2 Pellets Undergoing Resistive Heating
		Placement: 1) KTH Royal Institute of Technology, Sweden; 2) INL
Kyle A. Gamble*	5/22	Mechanistic Multiphysics Modeling of Cladding Rupture in Nuclear Fuel Rods
		Placement: continued Idaho National Laboratory
A. S. M. Fakhrul Islam	8/23	Conceptual Design and Preliminary Safety Analysis of A Proposed Nuclear Microreactor for Mobile Application
		Placement: Ultrasafe Nuclear Corporation
Tammy Wise* at LLNL		In progress
Matthew G. Shalloo** at LLNL		In progress
Jason Reynolds** at NASA MSFC		In progress

Aaron Horwood		In progress
Russell Chazell* at U.S. NRC		In progress
Richard L. Hiatt Jr.* at U. S. Army		In progress

*Indicates distance education students. **indicates ABD and now working in the profession

- **MASTERS STUDENTS**

Summary: Graduated 37, In progress 5

Name	Date	Title
Patrick J. Heher	5/06	Analysis of An Advanced Gas-cooled Fast Reactor Core Design
		Placement: U. S. NRC
Jason A. Eargle	8/06	Development and Analysis of A Conceptual Design for A Thermally Efficient Hybrid Sulfur Hydrogen Production Process
		Placement: U. S. NRC
Henry A. Lovett	12/06	Evaluation of Cross Sections for Tellurium-125 Metastable Production
		Placement: U.S. Navy
Trevor Q. Foley	5/08	Analysis of Synergistic Light-water and Gas-cooled Fast Reactor Fuel Cycles
		Placement: SRNL
Jody R. Coleman	5/08	High Burnup Fuel With Reprocessed Uranium: Reactor Design And Fuel Cycle Impacts
		Placement: 1. SRNL, 2. Intel, 3. Raytheon
Tammy L. Wise*	8/08	Turbulent Flow Heat Removal Studies of a Gas-cooled Fast Reactor
		Placement: 1. Norfolk Naval Shipyard, 2. U.S. DOE-SRS
John N. Dewes*	8/08	Adaptation of United States Department of Energy nuclear safety policies to a mobile plutonium process facility
		Placement: 1. SRNL, 2. INL
Sean A. Barbaras	5/09	Transuranic Incineration and Transmutation Sensitivity to Heterogeneous Lattice Effects
		Placement: U.S. Army
Thomas D. Curtis*	12/09	Nuclear fuel requirements for the American economy - a model
		Placement: Duke
Jerome J. Geathers	12/09	Characterization of uranium carbide microspheres in an inert matrix zirconium carbide matrix for gas fast reactors
		Placement: SCANA
Dennis F. Gehr II	12/09	The effect of coating parameters on advanced TRISO particles with zirconium carbide
		Placement: 1. SCANA, 2. Westinghouse
Jonathan L. Degange	12/09	Analysis of U-Zr-C-O quaternary system for applications in advanced ZrC coated TRISO particles
		Placement: U. S. NRC
Benjamin J. Hawkins*	8/10	Characterization of Radiation Fields and Dose Assessment from Fuels Manufacturing for Advanced Fuel Cycles
		Placement: Southern Nuclear
Michael C. Dulude	12/10	Coating Parameters Of Zirconium Carbide On Advanced TRISO Fuels
		Placement: 1. GE, 2. Siemens
Daniell J. Tincher	12/10	Feasibility Study of Minor Actinide Transmutation in Light Water Reactors with Varying Am/Cm Separation Efficiencies
		Placement: 1. Huntington Ingalls Industries (Newport News), 2. GE
Ian Porter	5/11	The Deposition Characteristics Of ZrC On UO_2 Kernels Produced For

		Advanced TRISO Fuels In Gen-IV Reactors
		Placement: 1. U. S. NRC, 2. GE
SeungMin Lee	8/11	Thermodynamic and Thermochemical Investigation of Advanced TRISO Coated Particle Fuels
		Placement: PNNL
Carey “Mac” Read	12/11	Fuel Cycle Modeling Improvements and Multi-Tiered Recycling with a Sodium-Cooled Heterogeneous Innovative Burner Reactor
		Placement: U. S. NRC
Charles Sironen*	5/12	Neutronic Characteristics Of Using Zirconium Diboride And Gadolinium In A Westinghouse 17x17 Fuel Assembly
		Placement: 1. SCANA, 2. Bechtel
Dillon T. Inabinett	8/13	The Study of Alternate, Solid-Phase Fluorinating Agents for Use in Reactive Gas Recycle of Used Nuclear Fuel
		Placement: 1. B&W; 2. Southern Nuclear
Luke Hallman	8/13	Advanced Fuels Modeling: Evaluating the Steady-State Performance of Carbide Fuel in Helium-Cooled Reactors Using FRAPCON 3.4
		Placement: 1. SRNL, 2. Westinghouse
Bo-Shiuan Li	8/13	Pellet-Cladding Mechanical Interactions of Ceramic Cladding Fuels under Light-water Reactor Conditions
		Placement: University of Oxford (PhD, Post-Doc)
Kathryn Metzger	8/13	Fabrication and Characterization of Surrogate Fuel Particles using the Spark Erosion Method
		Placement: 1. SRNL, 2. Westinghouse
Austin D. Meredith	12/13	Modified Sodium Diuranate Process for the Recovery of Uranium from Uranium Hexafluoride Transport Cylinder Wash Solution
		Placement: 1. SRNS, 2. LANL
Spencer Carroll	12/14	Implementation and Evaluation of Fuel Creep Using Advanced Light-Water Reactor Materials in FRAPCON3.5
		Placement: Entergy
Aaren Rice	8/15	Intercode Advanced Fuels and Cladding Comparison Using BISON, FRAPCON, and FEMAXI Fuel Performance Codes
		Placement: SRNS
Charles Ryan Priest	8/16	Dosimetry, Activation, and Robotic Instrumentation Damage Modeling of the Holtec HI-STORM 100 Spent Nuclear Fuel System
		Placement: University of Tennessee (PhD program)
Jonathon Gardner	12/16	Modeling Radionuclide Diffusion in Advanced Ceramic Waste Forms using MOOSE a Multiscale, Multiphysics Platform
		Placement: 1. U. S. EPA, 2. CISCO
Ray Austin Freeman	5/18	Analysis of Pellet-Cladding Mechanical Interaction on U_3Si_2 Fuel with A Multi-Layer SiC Cladding Using BISON
		Placement: SPAWAR/NAVWAR
Clifford Hamilton Parr* (Engineering Management)	5/18	Assessing the Risk of Proliferation to the Nuclear Fuel Cycle: A Review
		Placement: NNSA
Abdurrahman Ozturk	8/19	Implementation of View Factor Model and Radiative Heat Transfer

		Model in MOOSE
		Placement: Texas A&M University (PhD program)
Jacob Yingling	12/19	Bison Simulation-Based Identification of Important Design Criteria for U_3Si_2 Fuels with Composite-Monolithic Duplex SiC Cladding
		Placement: UofSC (PhD Program)
Matthew Shalloo	12/19	Characterization and Drying of Oxyhydroxides on Aluminum Clad Spent Fuel
		Placement: 1. SRNL/NNSA Fellowship, 2. LLNL
Nathaniel Cooper	12/20	Development of a CFD Model for the Drying of Aluminum-clad Spent Nuclear Fuel
		Placement: 1. Navatek, 2. SRNL
Zeyu Chen	12/20	Computational Modeling of Radiation Damage in A Multi-Phase Ceramic Waste Form Using MOOSE
		Placement: 1. UofSC (PhD Program); 2. Shanghai Nuclear Engineering Research and Design Institute
Jonathan E. Perry	5/21	Experimental Evaluation of Drying Spent Nuclear Fuel for Dry Cask Storage Through Vacuum and Forced Helium Dehydration
		Placement: Oak Ridge National Laboratory (ORNL)
Aaron Fernandez	5/22	System Analysis of A Proposed 1 MWth Nuclear Gas Cooled Microreactor
		Placement: continued U. S. Army
Adam Stephan*	5/24	In progress
Robert Demuth	5/24	In progress
Matthew Phipps	5/24	In progress

* Indicates distance education students.

Interns and Undergraduate Committees Chaired (more than 15)

Name	Date	Title
Caroline Howard		
Dara Haj-Hariri		
Andrew (Drew) Hanson		
Daniel Sides		
Robert Demuth		
Carmen Dosev		
Shannon Henry		
Liam Peck		
Matthew Payne		
Luke Dull		
Coleman Terrapin		
Thomas I. Martin		
Jonathan Perry		
Michael Tampas		
Abigail Freemyer		

Vincent O. Bretez	6/09	Core design and fuel management analyses of PWR using hybrid ZrB_2 and gadolinia burnable poisons
		Placement: ALCADIA Entreprises (Lyon, France); Airbus

- **TEACHING EXPERIENCE**

University of South Carolina

Number	Title	Term
EMCH552	Introduction to Nuclear Engineering	F:04
EMCH755	Advanced Nuclear Engineering (Reactor Analysis)	S:23[1],20[2],13,12,11,10,09,08,07,06, F04
EMCH553	Nuclear Fuel Cycles	S:24[13],23[46],22[29],21[20],20[19],19[18],18[23],17[36], 16[32],S15,14,13,12,11,10,09,08,07,05, Sm10
EMCH756/556	Safety Analysis in Energy Systems	S:24[8] F:22[16],21[10],20[],19[15],18[22]17[25],16[21], 15,14, Sm:13,12,11, F:07,05
EMCH757/557	Radiation Shielding	F:23[10],22[11],21[18],20[],19[11],18[13],17[15],16[20], 15,14,13,12,11,10,09,08,06
EMCH550/561	Introduction to Nuclear Safeguards	Sm:23[],22[25],21[23],20[31],19[36],18[22],17[21], 16[20],15[11],14 [8], F:13[19]
EMCH759	Waste Management	S:21[3]
EMCH791	Special Topics: Materials Thermodynamics	S:08
	Special Topics: Computational Approaches for Nuclear Analysis	Sm:16
EMCH764	Independent Study	F:23,19,10,11, S:13,12

*Except for EMCH552, the courses were developed for the first time at USC.

** F=Fall, S=Spring, Sm=Summer, []Brackets indicate number of students enrolled.

University of Florida

Number	Title	Term
ENU4605	Radiation Interactions and Sources I	F:01
ENU4606	Radiation Interactions and Sources II	S:01,02

- **PROFESSIONAL & CIVIC ACTIVITIES**

Professional Leadership Activities and Service

State of South Carolina, Governor's Nuclear Advisory Council, January 2020 to **present**
https://admin.sc.gov/NAC

Board Member, Institute for Nuclear Power Operations (INPO) National Nuclear Accrediting Board (Aug. 2022 to Aug. 2026). http://www.inpo.info/

Member, Nuclear Energy Institute (NEI) Workforce Working Group, July 2022 to **present**

Chairman, American Nuclear Society (ANS) Student Design Competition, 2011- **present** (http://www.ans.org/honors/awards/award-studesign/)

Executive Committee Member, *Scholarship Policy & Coordination Committee, American Nuclear Society*, 2012-**present**; https://www.ans.org/about/committees/spcc/

Executive Committee Member, *Education and Training Division, American Nuclear Society* 2009 to 2014, 2016-2024 (Treasurer 2009 to 2010, 2019-2020; Secretary 2010 to 2011, 2020-2021; Second Vice Chair 2011-2012, First Vice Chair 2012-2013, 2021-2022, **Chair** 2013-2014, 2022-2023). http://etwdd.ans.org/

Executive Committee Member, *Material Science and Technology Division, American Nuclear Society* 2002 to 2009, 2015-2018 (**Chair** 2007 to 2008; Vice Chair 2006 to 2007; Secretary/Treasurer 2005 to 2006; Communications Chairman 2003 to 2015). http://mstd.ans.org/

Executive Committee Member, Carolinas' Nuclear Cluster (joint with North Carolina and part of New Carolina, SC Council on Competitiveness), 2008 to 2013;
Also member of Research and Development subcommittee 2008 to 2013; **Chair** 2010 to 2013 (http://e4carolinas.org/)

Board Member, *Southeast Universities Nuclear Reactors Institute for Science and Education (SUNRISE)*, a consortium of universities in the southeast to promote nuclear energy research and education, *2007 to **present***; **Secretary** 2007-2010. Steering Committee Member of the preceding organization from 2004 to 2007.

Committee Member, NuHub (collaborative group of public, private, higher education and workforce development stakeholders working to maximize economic and job creation opportunities for the nuclear industry in the Midstate region of South Carolina), 2010 to 2016 (http://nuhubsc.com/)

Member, USC Representative to Nuclear Engineering Department Heads Organization, (NEDHO), 2004-**present** (http://www.umich.edu/~nuclear/NEDHO/)

Committee Member, Distinguished Scientist Committee, Citizens for Nuclear Technology Awareness (CNTA), 2012-**present** (http://www.c-n-t-a.com/)

Advisory Committee Member, *Midlands Technical College- Mechanical Engineering Technology Program*, Columbia, SC, 2011 to

Advisor, *University of South Carolina, Student Section of the American Nuclear Society*, 2005 to **present**. Facebook, LinkedIn.

Advisory Committee Member, *Aiken Technical College- Radiologic Control Program*, 2008 to 2010

Executive Committee Member, *Local Columbia Section, American Nuclear Society*, 2006 to 2009

Executive Committee Member, *Nuclear and Radiological Engineering Division, American Society of Engineering Education*, 2005 to 2008

Member, Strategic Plan Development, Citizens for Nuclear Technology Awareness, 2007

Member, Strategic Planning Team, American Nuclear Society, 2006- 2008

Committee Member, Manuel Lujan Jr. Award Committee, *Space Technology and Applications International Forum (STAIF)*, 2003 to 2006

Journal Reviews (41 articles in last 10 years), updated 6/02/16

Reviewer, *Nuclear Technology*, a Journal of the American Nuclear Society, 2006 to present (12)

Reviewer, *Nuclear Engineering and Design*, Elsevier, 2007 to present (6)

Reviewer, *Progress in Nuclear Energy*, Elsevier, 2008 to present (4)

Reviewer, *Journal of Sol-gel Science and Technology*, Elsevier, 2010 to present (3)

Reviewer, *Journal of Alloys and Compounds*, Elsevier, 2010 to present (2)

Reviewer, *Journal of Nuclear Materials*, Elsevier, 2009 to present (1)

Reviewer, *Particuology*, Elsevier, 2013 to present (1)

Reviewer, *Journal of The Electrochemical Society*, 2013 to present (1)

Reviewer, *Nukleonika*, 2014 to present (1)

Reviewer, *International Journal of Nuclear Energy Science and Engineering*, 2015 to present (1)

University Committees/Service (currently: department=2, college=1, university=1)

Committee Member, University of South Carolina, Radiation Safety Committee, 2008 to present

Committee Member, Mechanical Engineering Graduate Studies Committee, 2004 to present

Chair, Nuclear Engineering Steering Committee, 2004 to present

Committee Member, Biedenbach Award Committee, College of Engineering and Computing, 2013 to present

Committee Member, University of South Carolina, Faculty Advisory Committee on Research Cyberinfrastructure (RCI), 2014-2015

Mentor, Carolina/McNair Scholars: Andrew Re (2015), Luke Dull (2016), (2017), Michael Gallagher (2018)

ASPIRE II Proposal Review Committee, Research Office, University of South Carolina, April 2012

W. M. Keck Foundation Proposal Review Committee, Research Office, University of South Carolina, Feb. 2012

Advisor for student George Helman a member of USC Student Congressional Advisory Board and SAGE, advisement on reprocessing, recycling, and nuclear policy to support a white paper, 2011-2012

Committee Member, *University of South Carolina General Education Committee on Scientific Literacy and Technological Skills*, 2007 to 2008

Review Panels/Scientific Assessment Panels

Reviewer, DOE-SBIR, January 2010, April 2011, March 2013, October 2013, 2018 (x2), 2019 (x2), 2020, 2021, 2022, 2023, 2024

Panel Member/Reviewer, Nuclear Regulatory Commission – Scholarship and Fellowship Programs, December 2012, March 2016, March 2019, need update

Panel Member/Reviewer, DOE-Nuclear Energy University Programs, General Scientific Infrastructure, March 2015, March 2016, Feb. 2019, January 2020, January 2023

Panel Member/Reviewer, DOE-Nuclear Energy University Programs, Integrated Research Projects Panel Review, ???, March 2023

Program Review, Inverse Radiation Transport Modeling, Los Alamos National Laboratory, April 2018

Panel Member/Reviewer, DOE-Nuclear Energy University Programs R&D: FY2011: April 2011; FY2012: Nov. 2011, March 2012; FY2013: March 2013; FY2014: January 2014, May 2014; FY2015: November 2014, March 2015; FY2016: November 2015, April 2016; FY2017: November 2016; need update

Reviewer, DOE-EPSCoR, Building State/ Lab Partnerships, March 2016

Panel Member/Reviewer, ORAU - Nazarbayev University Research Review, October 2014, August 2021, September 2022

Panel Member/Reviewer, Nuclear Regulatory Commission – Faculty Development Programs, May 2014, January 2023

Panel Member/Reviewer, DOE-Nuclear Energy University Programs, Scholarships, June 2013

Panel Member/Reviewer, The Simulations, Algorithms, and Modeling (SAM) Program (10 Proposals), National Nuclear Security Administration (NNSA), June 2010

Reviewer, DOE-Advanced Test Reactor National Science User Facility (Dec. 2008 [3 proposals], May 2010 [3 proposals])

Professional Witness/Participant, SC Public Service Commission, Testify on environmental aspects of nuclear power related to new nuclear plants in SC, December 3, 2008

Panel Member/Reviewer, National Science Foundation (NSF), Industry & University Cooperative Research Program (I/UCRC), June 2008

Reviewer, Department of Energy – UNERI, Oct. 2005

Member, *NASA Bimodal Nuclear Thermal Propulsion Technology Assessment Group*, Huntsville, AL, March 2002

Workshops/Forums

Participant, Certificate Awarded, Radiation Fundamentals, Preparedness, and Training online course, sponsored by the Department of Energy's Office of Nuclear Incident Policy and Cooperation and the FBI's Weapons of Mass Destruction Directorate, 18 February 2021

Organizer/Moderator, Nuclear Matters, Dialog and Panel with Secretary Spencer Abraham, 5 November 2015, http://www.nuclearmatters.com

Fellow, SEC Academic Leadership Development Program (ALDP), professional development program, a yearlong series of workshops and training aimed at developing effective leadership skills, 2015-2016

Fellow, Pipeline for Academic Leadership (PAL) professional development program, a yearlong series of workshops and training aimed at developing effective leadership skills, 2014-2015

Invited Participant, BISON Workshop: Implicit, parallel, fully-coupled nuclear fuel performance analysis, Idaho National Laboratory (INL) and Westinghouse, Columbia, SC, February 11-12, 2014

Invited Participant, Collaboration for Advanced Research on Accident Tolerant Fuel (CARAT) organized by Westinghouse, Charlotte, NC, September 20, 2013 ("kick off" meeting for collaboration with industry, national labs, and academia related to accident tolerant fuels)

Organizer/Moderator, Workshop Used Fuel Interim Storage, workshop with SCUREF, NEI, CNTA, SRNL and SE Universities, Charlotte, NC May 23, 2013

Invited Participant, SC SmartState Council of Chairs Fourth Annual Forum, Columbia, SC May 14-15, 2013 (representing as PI the Center on Nuclear Science Strategies)

Organizer/Moderator, "Breaking Down Silos: Discovering Niche Opportunities for Research and Scholarship at USC" Organizer of breakout session on nuclear materials (selected participants from USC, industry, national laboratories), Columbia Metropolitan Convention Center, 28 March 2013

Organizer/Moderator, Panel on Energy and Energy Policy, University of South Carolina, Feb. 21, 2013 (organized panel as part of Engineering Week including Executives and Scientists from SCANA, Westinghouse, SRNL, and USC)

Invited Participant, BISON Workshop: Implicit, parallel, fully-coupled nuclear fuel performance analysis, Idaho National Laboratory (INL), December 12-13, 2012

Invited Participant, SC SmartState, Realizing a Knowledge-Based Economy: Bridging Academia, Government, and Industry, Charleston, SC, December 4-6, 2011 (also presented poster)

Invited Participant, Fast Reactor Curriculum Workshop, Argonne National Laboratory, August 30-31, 2010

Invited Participant, Nuclear Security Education Workshop, University of Tennessee, July 19-23, 2010

Participant, Workshop on Active and Cooperative Learning by Richard M. Felder and Rebecca Brent, Columbia, SC, April 24, 2009

Invited Participant, Southern Growth Policies Board and the South Carolina Technology Alliance - A South Carolina State Policy Dialogue, The Future of Southern Energy, Columbia, SC, 25 February 2009

Participant, Nuclear Regulatory Commission meeting, Winnsboro, SC, Speak on environmental aspects of nuclear power related to new nuclear plants in SC, Jan. 27, 2009

Invited Participant, Nonproliferation Workshop, Oak Ridge National Laboratory, December 15-18, 2008

Invited Participant, Tour of French Nuclear Facilities, sponsored by French Nuclear Society (SFEN), July 2008

Moderator, Forum on the Place of Nuclear Power in Our Energy Future, USC-CEC and USC-Aiken, April 30, 2008

Invited Participant, ATR National Scientific User Facility Workshop, Idaho National Laboratory, September 13-14, 2007

Invited Participant, SCALE Institute, Oak Ridge National Laboratory, August 6-10, 2007

Invited Participant, DOE University Planning Workshop, Chicago, IL, Oct. 24-25, 2006

Invited Participant, Department of Energy, Nuclear Energy Research Initiative (NERI) Workshop, Working Group 2, April 23-24, 1998

Delegate, 1998 Nuclear Engineering Student Delegation to Washington, DC, hosted by Nuclear Energy Institute (NEI), Washington, DC (http://www.nesd.org/)

Technical Conference Organization

U.S. Steering Committee, *International Congress on Advances in Nuclear Power Plants (ICAPP),* 2013 to **present** (http://icapp.ans.org/)
2024 Las Vegas, NV, June 16-19, 2024, General Chair
2018 Charlotte, NC, April 8-11, 2018, Technical Program Chair
2016 San Francisco, April 17-20, 2016, Program Committee Member
2014 Charlotte, NC, April 6-9, 2014, Technical Program Chair
U. S. Track Leader, 2003, 2007-2013

Program Committee, TopFuel / LWR Fuel Performance Meeting, Sendai, Japan, September 14-17, 2014 (http://web.apollon.nta.co.jp/WRFPM2014/index.html)

Technical Program Committee, International Topical Meeting on Probabilistic Safety Assessment and Analysis, Columbia, SC, September 22-26, 2013 (also student coordinator and poster judge)

Technical Program Committee and Session Chair, LWR Fuel Performance Meeting/Top Fuel 2013, Charlotte, NC, September 15-19, 2013

Reviewer, ASME Small Modular Reactor Symposium 2011, Washington DC, Sept 28-30, 2011

Session Organizer & Chair, Materials Science General Session, *American Nuclear Society Annual Meeting*, Atlanta, GA, November 2009

Technical Program Committee and Student Coordinator, Advances in Nuclear Fuel Management (ANFM) IV, Hilton Head, SC, April 2009

Planning Committee Member, Medical University of South Carolina, *Securing our Future – The Nuclear Alternative Conference*, Charleston, SC, August 2008

Session Organizer & Chair, Materials Science Session, *American Nuclear Society Winter Meeting*, Albuquerque, NM, November 2006

Assistant Technical Program Chair, *American Nuclear Society Annual Meeting*, San Diego, CA, June 2005

Steering Committee Member and Track Leader, *Space Nuclear Conference 2005, Embedded Topical Meeting at the 2005 ANS Annual Meeting*, San Diego, CA, June 2005

Session Organizer & Chair, Nuclear Fuel Materials Session, *American Nuclear Society-Annual Meeting, Washington, DC.* June 2002

Assistant Program/Publication Chairman, *8th International Conference on Nuclear Engineering (ICONE)*, Baltimore, Maryland, April 2000

Assistant Program/Publication Chairman, *33rd Intersociety Energy Conversion Engineering Conference*, Colorado Springs, Colorado, August 1998

Media Interviews and Letters to the Editor (partial list)

Letters to the Editor (more than 20 published in the last 10 years)

SCETV, Interview on Fusion Research Programs and Development, 31 January 2023

Cheddar News, https://cheddar.com/, Interview about the rebound of nuclear power, 29 September 2022

Chosun TV (Korean), Documentary Era of New Energy, February 2022

Innovation on Main Podcast, University of South Carolina, December 2019

https://www.sc.edu/study/colleges_schools/engineering_and_computing/newsroom/iompodcast/index.php

Greenville News, June 2021

Greenville News, September 2019

StarNews, Wilmington, NC, April 2018 (badly quoted, mixed-up concepts shared)

WLTX, Columbia, SC, interview on leaking valve at V. C. Summer, July16, 2014

WACH FOX, Columbia, SC, interview on Mixed Oxide Fuel and the Mixed Oxide Fuel Fabrication Facility at the Savannah River National Laboratory, 3/5/14 (Interviewer: Tony Tally)

Charlotte Talks with Mike Collins, WFAE Charlotte, NC, March 15, 2013 (hour long interview along with Chris Mowry, President and CEO of B&W and Jim Warren of NCWARN)

WCBD News 2 Charleston, SC, Reporter Cleve Bryan, Interview on Nuclear Safety and violations at SC plants, 4/26/2011

Salon.com https://www.salon.com/2011/03/18/japan_nuclear_plant_fukushima_burial_experts/

Adventure Radio with Claire Beverly (Savannah, GA; Charleston, SC), 3/17/2011, 2/23/2012

Carl Thornton Jr. Radio (Aiken/Augusta), 4/20/2011

Television interviews on Fukushima Accident week of March 14, 2011; WACH, WOLO, WIS, WLTX

Newspaper interviews on Fukushima Accident week of March 14, 2011; The State, Spartanburg Herald, Associated Press (AP)

Society Membership

Alpha Nu Sigma, *Nuclear Engineering Honor Society* (http://www.ans.org/const/ansnhs/)

Tau Beta Pi, *Engineering Honor Society* (http://www.tbp.org/)

American Nuclear Society, 1992 to present (www.ans.org)

American Society of Engineering Education 2004-2009

TMS, The Minerals, Metals, and Materials Society 1998-2009

Citizens for Nuclear Technology Awareness (CNTA) – grassroots, pro-nuclear organization (http://www.c-n-t-a.com/)

Clean and Safe Energy (CASE) Coalition (http://casenergy.org/)

Community Leadership Activities and Involvement

Spring Valley Baptist Church, Columbia, SC, member 2004 to present (http://www.springvalleybaptist.com/)
Deacon (3 year terms: 2012 – 2014, 2016 – 2018, 2021-2023; Vice Chairman 2022; Chairman 2023); Stewardship Committee (3 year terms: 2016-2018, 2020-2022); Usher (2008-present); Sunday School Teacher for Adults [co-teach] (2011-2016); Sunday School Teacher for Youth (Aug. 2016 to **present**); Leader for Royal Ambassadors [boys grades 1 to 5] (2009-2020); Parking help for large events (2010-present, Captain 2011-2019)

American Red Cross Blood Donor, more than five gallons donated, updated April 2022

Judge, National Christian Forensics and Communications Association (NCFCA), Region VII, Columbia, International University, Columbia, SC, 3/21/12

Coach, Upward Soccer, Willow Lake Baptist Church, Blythewood, SC, Fall 2011

Tower Road Baptist Church, Gainesville, Florida, member 2000 to 2004
Deacon (2003 – 2004), Nominating Committee, Benevolence Committee, Bylaws Committee, Pastor Search Committee, AWANA Leader

Board Member, City of Gainesville Tree Advisory Board, 1997 to 1998