Kevin T. Clarno, Ph.D.

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Summary:

- Leadership in scientific computing software for development of multi-physics applications
- Radiation transport and isotopic transmutation for diverse applications
- High-performance computing algorithms and data analysis for modeling radiation transport
- Nuclear reactor physics and nuclear fuel analysis, algorithm, and software development

Experience:

Oak Ridge National Laboratory — Oak Ridge, TN
Senior R&D Staff, Reactor and Nuclear Systems Division — 2010–Present
Parallel computing algorithm and data analysis applied to nuclear systems
Project lead/senior developer for multi-institutional, high-performance computing projects, including:
CASL (Consortium for Advanced Simulation of LWRs) and the AMP multi-physics

The University of Tennessee — Knoxville, TN
Assistant Professor – Joint Faculty, Nuclear Engineering Department — 2013–Present
Adjunct Assistant Professor, Nuclear Engineering Department — 2009–2013
Advising and teaching graduate and undergraduate courses in nuclear reactor physics

Oak Ridge National Laboratory — Oak Ridge, TN
R&D Staff, Nuclear Science and Technology Division — 2007–2010
Leader for a portfolio of laboratory-directed strategic research projects
High-performance computing software developer and nuclear reactor analyst, including:
NESTLE core simulator, Denovo for reactor analysis, and the NEWTRNX radiation transport

Oak Ridge National Laboratory — Oak Ridge, TN
Associate R&D Staff, Nuclear Science and Technology Division — 2004–2007
SCALE software developer and nuclear reactor analyst for NRC and DOE projects, including:
ES-BWR, ACR-700, and the Advanced High-Temperature Reactor

Bechtel Bettis Atomic Power Laboratory — Pittsburgh, PA
Naval Nuclear Propulsion Fellow, Mechanical, Electrical, Reactor Activity — 2002–2004
Software optimization and algorithm development

Education:

Georgia Southern University — Statesboro, GA
Master of Business Administration — Expected: May, 2015

Texas A&M University — College Station, TX
Doctor of Philosophy, Nuclear Engineering — August, 2004
Master of Science, Nuclear Engineering — August, 2001

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science, Nuclear Engineering — June, 1999

Principal Investigator Awards and Roles:

- Development of the AMP Nuclear Fuel Performance Code 2009–2013
  DOE/NE Office of Advanced Modeling and Simulation
  With many researchers at ORNL and Los Alamos National Laboratory
- "Understanding Used Nuclear Fuel Cladding Performance Characteristics During Very Long-Term Storage Through Coupled Experiments and Simulations" 2011–2013
  ORNL Laboratory-Directed Research and Development (LDRD)
  With M. A. Berrill, S. B. Gorti, R. T. Jubin, B. Philip, B. Radhakrishnan, Y. Yong
- "Denovo: The Next-Generation, High-Performance Computing Solver for Multiscale Nuclear Energy Transport" 2008–2010
  ORNL Laboratory-Directed Research and Development
  With K. J. Evans, T. M. Evans, M. L. Williams
- "Development of an Advanced Light Water Reactor Analysis Capability" 2008–2009
  ORNL Laboratory-Directed Research and Development
  With M. A. Jessee, G. I. Maldonado, E. L. Popov
- "Terascale Simulation Tools for Next-Generation Nuclear Energy Systems" 2005–2007
  ORNL Laboratory-Directed Research and Development
  With E. F. d'Azevedo, A. K. Khamayseh, V. F. de Almeida

Co-Investigator and Collaborator Awards and Roles:

- "Consortium for Advanced Simulation of LWRs (CASL)" 2010–2015
  DOE Energy Innovation Hub, Principal Investigator: D. Kothe
  With 20 institutions
- "Advanced Mesh-Enabled Monte Carlo Capability for Multi-Physics Reactor Analysis" 2008–2011
  DOE Nuclear Energy University Program, PI: P. Wilson (UW-Madison)
  With F. Brown, T. M. Evans, T. Tautges
- "Burner Reactor Integrated Performance and Safety Code (BRISC)" 2006–2009
  Sandia National Laboratory LDRD, Principal Investigator: R. Schmidt
  With N. Belcourt, R. Hooper, L. Humphries, A. Lorber, R. Pryor, B. Spotz
- "Development of a Global Advanced Nuclear Fuel Rod Model" 2006–2009
  ORNL LDRD, Principal Investigator: S. Simunovic
  With T. M. Besmann, I. C. Gauld, P. K. Nukala, L. J. Ott, R. E. Stoller, C. F. Weber

Honors and Awards:

Oak Ridge National Laboratory (ORNL) Significant Event Awards	2010, 2011
ORNL Engineering Technology by a Team Award	2010
ORNL Early Career Engineering Achievement Award	2008
Nuclear Science and Technology Division (of ORNL) Technical Excellence Awards	2005, 2006
Naval Nuclear Propulsion Fellow (now known as the Rickover Fellowship)	2002–2004
Institute of Nuclear Power Operations (INPO) Fellow	2000–2001
National Academy for Nuclear Training (NANT) Scholar	2000–2001
Texas A&M University Regents Fellow	1999–2000
Academic All-American Football Award (New England Region)	1997
All-Conference Football (New England Football Conference)	1997–1998

Overview

Kevin T. Clarno has been employed at Oak Ridge National Laboratory (ORNL) since 2004, and is also an Assistant Professor at the University of Tennessee-Knoxville, as a Joint Faculty in the Nuclear Engineering Department. Dr. Clarno is leading the development of the multi-physics integration of the nuclear reactor core simulator for the Consortium for Advanced Simulation of LWRs [Light-Water Reactors] and a lead developer in the modernization of the SCALE nuclear analysis code suite. Dr. Clarno previously was the Principal Investigator for a multi-institutional team developing the AMP Nuclear Fuel Performance code, which includes a flexible scientific computing foundation for high-performance computing architectures, for the DOE Office of Nuclear Energy. Dr. Clarno has served as the Principal Investigator for several major ORNL Laboratory-Directed Research and Development (LDRD) and DOE projects, including the development of high-performance computing radiation (Boltzmann) transport codes for nuclear reactor simulation and the integration of the NESTLE core simulator with the SCALE nuclear analysis code system. Dr. Clarno maintains a focus on mentoring the next generation of researchers; he has advised 20 students and post-degree researchers. He has served on six M.S. or Ph.D. committees at three universities and has co-instructed several courses at the University of Tennessee. Dr. Clarno is actively involved in both nuclear fuel and reactor analysis and the development and improvement in ORNL nuclear analysis software. He has been actively involved in the software development of exploratory coupled-physics solvers, as well as production software in SCALE. He has made contributions in the development and implementation of linear and non-linear methods of accelerating 1-, 2-, and 3-D radiation transport solvers, including CENTRM, NEWT, NEWTRNX, and Denovo. Dr. Clarno has published more than 70 manuscripts in journals, conference proceedings, and technical reports, spanning diverse areas of nuclear science and engineering including cross section processing, isotopic depletion, fuel performance, reactor analysis, thermal-hydraulics, used fuel disposition, and thermo-chemistry.

Society and Service Activities:

Assistant Technical Program Chair for the MCD 2015 Topical Meeting, Knoxville, TN	2012–2015
Member, ORNL Nuclear Science & Technology Interaction Program (NSTIP)	2004–2013
ANS Mathematics and Computations Division (MCD) Executive Committee Member	2008–2011
Technical Program Co-Chair for the MCD 2011 Topical Meeting, Rio de Janeiro, Brazil	2009–2011
ANS Reactor Physics Division (RPD) Program Committee Member	2005–2008
Co-founder, Young Professionals at ORNL; now Early Career Professionals	2004–2006
Member, Diversity Improvement Team, EES Directorate of ORNL	2004–2005

Expertise with Nuclear Software:

AMP	3D thermo-chemical-mechanics for parallel nuclear fuel performance
BRISC	Sandia National Laboratory's developmental severe-accident simulator
CASMO	Fuel assembly burnup program
Denovo	3D structured mesh transport for massively parallel nuclear reactor simulation
FRAPCON	Nuclear fuel performance code
MCNP	Monte Carlo Boltzmann transport code
NESTLE	Nuclear reactor core simulator
NEWTRNX	3D unstructured mesh transport for massively parallel nuclear reactor simulation
SCALE	Oak Ridge National Laboratory Nuclear Analysis Code Suite
VERA-CS	3D nuclear reactor core simulator developed by CASL

University Activities:

University of Tennessee Teaching:

Co-Instructor of NE-571 (Reactor Theory & Design) with Dr. G. I. Maldonado		2009–2010
Substitute Instructor of NE-470 (Nuclear Reactor Theory I) with Dr. J. C. Gehin		2006–2008

Serving on Ph.D. Committees for:

James Banfield	University of Tennessee-Knoxville, Dept. of Nucl. Eng.	2013
Steven Hamilton	Emory University, Dept. of Mathematics	2011
Jack Galloway	University of Tennessee-Knoxville, Dept. of Nucl. Eng.	2010
Hermilo Hernandez-Noyola	University of Tennessee-Knoxville, Dept. of Nucl. Eng.	2010

Serving on M.S. Committees for:

A. Phillippe	University of Tennessee-Knoxville, Dept. of Nucl. Eng.	2012
S.P. Hamilton	Georgia Institute of Technology, Dept. of Mech. Eng.	2007

Provided funding for graduate research at the several universities 2006–2013

Mentoring Activities:

Advisor or Project Lead for Post-Doctoral/Masters Researchers:

Gokhan Yesilyurt	Advisor	2009–2010
Pallab Barai	Project Lead	2009–2012
Srikanth Allu	Project Lead	2009–2011
Rahul Sampath	Project Lead	2009–2011
Jung Ho Lee	Project Lead	2009–2010

Summer internship mentor for graduate and undergraduate students:

Aaron Phillippe	(University of Tennessee, M.S. candidate)	2011–2012
James Banfield	(University of Tennessee, M.S. candidate)	2010–2013
Johnathan Chavers	(University of Tennessee, M.S. candidate)	2009–2010
Stephanie McKee	(Massachusetts Institute of Technology, M.S. candidate)	2009
Joshua Hykes	(North Carolina State University, Ph.D. candidate)	2009
Jack Galloway	(University of Tennessee, M.S. candidate)	2008–2009
Hermilo Hernandez-Noyola	(University of Tennessee, M.S. candidate)	2008–2009
Thomas Greifenkamp	(University of Cincinnati, M.S. candidate)	2008
Yaqi Wang	(Texas A&M University, Ph.D. candidate)	2008
Seth Johnson	(Texas A&M & Michigan, senior and post-Bachelors)	2007–2008
Robert Joseph III	(University of Tennessee, M.S. candidate)	2007
Brandon Distler	(University of Missouri-Rolla, M.S. candidate)	2007
Steven Hamilton	(Georgia Institute of Technology, M.S. candidate)	2006–2007
Zhaopeng Zhong	(Purdue University, Ph.D. candidate)	2006
Teresa Bailey	(Texas A&M University, Ph.D. candidate)	2005

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Refereed Journal Articles:

A. Phillippe, K. T. Clarno, et al., "A Validation Study of Pin Heat Transfer for MOX Fuel Based on the IFA-597 Experiments," *Nucl. Sci. Eng.* Accepted and in production for target issue: **177**(3) (2014).

A. Phillippe, K. T. Clarno, et al., "A Validation Study of Pin Heat Transfer for UO_2 Fuel Based on the IFA-432 Experiments," *Nucl. Sci. Eng.* Accepted and in production for target issue: **177**(3) (2014).

M. Piro, J. Banfield, K. T. Clarno, et al., "Coupled thermochemical, isotopic evolution and heat transfer simulations in highly irradiated UO_2 nuclear fuel," *J. Nucl. Matl.* **441**, 240-251, 2013.

K. T. Clarno et al., "The AMP (Advanced MultiPhysics) Nuclear Fuel Performance Code," *Nucl. Eng. Design* **, 108**-(1), 108-120, November 2012.

G. Yesilyurt, K. T. Clarno, T. M. Evans, G. G. Davidson, and P. B. Fox, "C5 Benchmark Problem with Discrete Ordinate Radiation Transport Code Denovo," *Nucl. Sci. Eng.* **176**(2), 274-283, November 2011.

T. M. Evans, K. T. Clarno, and J. E. Morel, "A Transport Acceleration Scheme for Multigroup Discrete Ordinates with Upscattering," *Nucl. Sci. Eng.* **165**(3), 292-304 (2010).

T. M. Evans, A. S. Stafford, and K. T. Clarno, "Denovo–A New Three-Dimensional Parallel Discrete Ordinates Code in SCALE," *Nucl. Technol.* **171**(2), 171-200 (2010).

D. F. Williams and K. T. Clarno, "Evaluation of Salt Coolants for Reactor Applications," *Nucl. Technol.* **163**(3), 330-343 (2008).

Z. Zhong, K. T. Clarno, T. J. Downar, and M. D. DeHart, "Implementation of a Two-Level Coarse Mesh Finite Difference Acceleration of an Arbitrary Geometry Two-Dimensional Discrete-Ordinates Transport Method," *Nucl. Sci. Eng.* **158**(3), 289-298 (2008).

K. T. Clarno and M. L. Adams, "Capturing the Effects of Unlike Neighbors in Single-Assembly Calculations," *Nucl. Sci. Eng.* **149**(2), 182-196 (2005).

K. T. Clarno and Y. A. Hassan, "Development of a RELAP5-3D Multi-dimensional Model of a VVER-1000 NPP for Analysis of a LB LOCA," *Nucl. Technol.* **141**(2), 142-156 (2003).

Dissertations and Theses:

K. T. Clarno, "An Advanced Nuclear Reactor Analysis Methodology for Heterogeneous Cores," Texas A&M University, Department of Nuclear Engineering, Ph.D. Dissertation (M. L. Adams, advisor), August 2004.

K. T. Clarno, "Development of a RELAP5-3D Three-dimensional Model of a VVER-1000 Nuclear Power Plant for Analysis of a Large-Break Loss-of-Coolant Accident," Texas A&M University, Department of Nuclear Engineering, M.S. Thesis (Y. A. Hassan, advisor), August 2001.

K. T. Clarno, "Composition Optimization of Thorium-Uranium Pressurized Water Reactor Cores," Massachusetts Institute of Technology, Department of Nuclear Engineering, S. B. Thesis (M. J. Driscoll, advisor), June 1999.

Technical Reports:

S. Palmtag, et al, *Demonstration of Neutronics Coupled to Thermal-Hydraulics for a Full-Core Problem using VERA*, CASL-U-2013-0196-000, December 2013.

B. Rearden, K.T. Clarno, et al, *Report on Used Nuclear Fuel Characterization Enhancements in SCALE*, ORNL/LTR-2013/425, October 2013.

S. Palmtag, et al, *Coupled Single Assembly Solution with VERA (Problem 6)*, CASL-U-2013-0150-000, July 2013.

S. Hayes and K.T. Clarno, *Fuels IPSC Software Quality Assurance Plan V1.2.2*, LLNL-TM-493620, Nuclear Energy Advanced Modeling and Simulation (NEAMS) Program, September 22, 2011.

A. M. Phillippe, L. J. Ott, K. T. Clarno, and J. E. Banfield, *Analysis of the IFA-432, IFA-597, and IFA-597 MOX Fuel Performance Experiments by FRAPCON-3,4*, ORNL/TM-2012/195, Oak Ridge National Laboratory, Oak Ridge, Tenn., August 2012.

K. T. Clarno and R. L. Howard, Problem *Specification for FY12 Modeling of Used Nuclear Fuel during Extended Storage*, ORNL/TM-2012/80, Oak Ridge National Laboratory, Oak Ridge, Tenn., February 2012.

K. Clarno et al., *Integrated Radiation Transport and Nuclear Fuel Performance for Assembly-Level Simulations*, ORNL/TM-2012/33, Oak Ridge National Laboratory, Oak Ridge, Tenn., January 2012.

B. Philip, K. T. Clarno, and W. K. Cochran, *Software Design Document for the AMP Nuclear Fuel Performance Code*, ORNL/TM-2010/34, Oak Ridge National Laboratory, Oak Ridge, Tenn., March 2010.

R. C. Schmidt, K. Belcourt, K. T. Clarno et al., *Foundational Development of an Advanced Nuclear Reactor Integrated Safety Code*, SAND2010-0878, Sandia National Laboratories, Albuquerque, New Mexico, 2010.

K. T. Clarno and J. P. Renier, *Test Problem #3: 2009 Three-Dimensional Boiling Water Reactor Simulations*, ORNL/TM-2009/250, Oak Ridge National Laboratory, Oak Ridge, Tenn., October 2009.

T. M. Evans and K.T. Clarno, *C++ Coding Standards for the AMP Project*, ORNL/TM-2009/240, Oak Ridge National Laboratory, Oak Ridge, Tenn., October 2009.

K. T. Clarno, J. A. Turner, and G. A. Hansen, *Roadmap to an Engineering-Scale Nuclear Fuel Performance and Safety Code*, ORNL/TM-2009/233, Oak Ridge National Laboratory, Oak Ridge, Tenn., September 2009.

R. T. Primm III, K. T. Clarno, et al., *Design Study for a Low-Enriched Uranium Core for the High Flux Isotope Reactor, Annual Report for the FY 2006*, ORNL/TM-2006/136, Oak Ridge National Laboratory, Oak Ridge, Tenn., October 2006.

D. F. Williams, L. M. Toth, and K. T. Clarno, *Assessment of Candidate Molten Salt Coolants for the Advanced High Temperature Reactor (AHTR)*, ORNL/TM-2006/12, Oak Ridge National Laboratory, Oak Ridge, Tenn., March 2006.

D. T. Ingersoll, K. T. Clarno, C. W. Forsberg, J. C. Gehin, R. W. Christensen, C. B. Davis, G. L. Hawkes, J. W. Sterbentz, T. K. Kim, T. A. Taiwo, and W. S. Yang, *Status of Physics and Safety Analyses for the Liquid-Salt- Cooled Very High-Temperature Reactor (LS-VHTR)*, ORNL/TM-2005/218, Oak Ridge National Laboratory, Oak Ridge, Tenn., December 2005.

D. T. Ingersoll, K. T. Clarno et al., *Trade Studies for the Liquid-Salt-Cooled Very High-Temperature Reactor: Fiscal Year 2006 Progress Report*, ORNL/TM-2006/140, Oak Ridge National Laboratory, Oak Ridge, Tenn., February 2007.

K. T. Clarno, "TXYPL – TXY with General Anisotropic Scattering," Bechtel Bettis Atomic Power Laboratory Internal Letter, B-MER(ACRE)-59 and Attachment, July 2003.

Refereed Conference Proceedings:

S. Hamilton, K.T. Clarno, et al, "Multiphysics Simulations for LWR Analyses," *International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2013),* Sun Valley, ID, May 2013.

Y. Yong, et al, "Observation and Mechanism of Hydride In Zircaloy-4 and Local Hydride Re-orientation Induced by High Pressure at High Temperature," *International High-Level Radioactive Waste Management, Albuquerque,* NM, May 2013.

B. Radhakrishnan, S. Gorti, Y. Yong, K. Clarno, "Phase Field Simulations of Hydride Reorientation in Zircaloys," *International High-Level Radioactive Waste Management, Albuquerque,* NM, May 2013.

S. Hamilton, K. Clarno, B. Philip, M. Berrill, R. Sampath, and S. Allu, "Integrated Radiation Transport and Nuclear Fuel Performance for Assembly-Level Simulations," *PHYSOR 2012--Advances in Reactor Physics--Linking Research, Industry, and Education,* Knoxville, Tenn., April 15-20, 2012, on CD-ROM, American Nuclear Society, LaGrange, Park, IL (2012).

G. Yesilyurt, K. T. Clarno, I. C. Gauld, and J. D. Galloway, "Modular ORIGEN-S for Multi-Physics Code Systems," *Proceedings of the Mathematics and Computations Division of the American Nuclear Society Topical Meeting (M&C-2011),* May 2011.

K. T. Clarno, "Parallel (Sn) Transport Algorithm in NEWTRNX," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2008),* September 2008.

S. A. Vilkomir, W. T. Swain, J. H. Poore, and K. T. Clarno, "Modeling Input Space for Testing Scientific Computational Software: A Case Study," *Proceedings of the International Conference on Computational Science (ICCS-2008),* June 2008.

B. Ganapol, K. T. Clarno, and S. P. Hamilton, "An Embedded Semi-Analytical Benchmark with Iterative Interpolation for Neutron Transport Methods Verification," *Proceedings of the Joint Supercomputing in Nuclear Applications and Mathematics and Computations Division of the American Nuclear Society Topical Meeting (SNA/M&C-2007),* April 2007.

M. L. Williams, J. C. Gehin, and K.T. Clarno, "Sensitivity Analysis of Reactivity Responses Using One-Dimensional Discrete Ordinates and Three-Dimensional Monte Carlo Methods," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2006),* September 2006.

Z. Zhong, T. J. Downar, M. D. DeHart, and K. T. Clarno, "Coarse Mesh Finite Difference Acceleration in the Two-Dimensional Discrete Ordinates Transport Calculation," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2006),* September 2006.

K. T. Clarno and J. C. Gehin, "Physics Analysis of the LS-VHTR: Salt Coolant and Fuel Block Design," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2006),* September 2006.

K. T. Clarno, V. F. de Almeida, E. D'Azevedo, C. R. E. de Oliveira, and S. P. Hamilton, "GNES-R: Global Nuclear Energy Simulator for Reactors, Task 1: High-Fidelity Neutron Transport," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2006),* September 2006.

C. W. Forsberg and K. T. Clarno "The Advanced High-Temperature Reactor (AHTR): Flux Distribution and Dosimetry," *Proceedings of the International Symposium on Reactor Dosimetry (ISRD-2005),* May 2005.

D. F. Williams and K. T. Clarno, "Salt Selection for the LS-VHTR," *Proceedings of the International Congress on Advances in Nuclear Power Plants (ICAPP 2006),* June 2006.

K. T. Clarno and M. L. Adams, "Capturing the Effects of Unlike Neighbors in Single-Assembly Calculations," *Proceedings of the Mathematics and Computations Division of the American Nuclear Society Topical Meeting (M&C-2003),* April 2003.

K. T. Clarno and M.L. Adams, "Improved Boundary Conditions for Assembly-Level Transport Codes," *Proceedings of Reactor Physics Division of the American Nuclear Society Topical Meeting (PHYSOR-2002),* September 2002.

Conference Summaries:

K. Clarno, M. Berrill, S. Hamilton, R. Pawlowski, J. Turner, "Advanced Coupling Explorations for Parallel Coupled Neutronic and Thermal-Hydraulic Simulation," *SIAM Conference on Parallel Processing*, Portland, OR, February 2014.

R. Pawlowski, et al, "Code Integration Strategies for Large-Scale Reactor Simulation," *SIAM Conference on Parallel Processing*, Portland, OR, February 2014.

M. Piro, J. Banfield, K. Clarno, "Simulation of Thermochemistry and Isotopic Evolution of Irradiated Nuclear Fuel," *Trans. Am. Nucl. Soc.*, June 2013.

B. Philip, K. T. Clarno, R. S. Sampath, M. A. Berrill, S. Allu, G. Dilts, and P. Barai, "The Advanced Multi-Physics (AMP) Package with an Application to Fuel Assemblies in Nuclear Reactors," 2012 SIAM Annual Meeting, Minneapolis, MN, July 9-13, 2012.

J. E. Banfield, K. T. Clarno, S. P. Hamilton, G. I. Maldonado, B. Philip, and M. L. Baird, "Benchmarking of Software and Methods for Use in Transient Multidimensional Fuel Performance with Spatial Reactor Kinetics," ICAPP '12, Chicago, IL, June 24-28, 2012.

K. T. Clarno, S. P. Hamilton, B. Philip, R. Sampath, S. Allu, M. A. Berrill, P. Barai, and J. E. Banfield, "Integrated Radiation Transport and Thermo-Mechanics Simulation of a PWR Assembly," *Trans. Am. Nucl. Soc*. **106**, 2012.

B. Philip, R. S. Sampath, S. P. Hamilton, M. A. Berrill, S. Allu, and K. T. Clarno, "Computational Approach to Nuclear Fuel Assembly Simulation," *Trans. Am. Nucl. Soc*. **106**, 2012.

M. H. Piro, J. E. Banfield, S. Simunovic, T. M. Besmann, and K. T. Clarno, "Computational Thermodynamics in the Advanced Multi-Physics Code," *Trans. Am. Nucl. Soc*. **106**, 1384-1386, 2012.

M. H. Piro, S. Simunovic, T. M. Besmann, and K. T. Clarno, "Coupling Thermodynamic Computations with Multi-Physics Nuclear Fuel Codes," Computer Coupling of Phase Diagrams and Thermochemistry (CALPHAD), Berkeley, CA, June 3-8, 2012.

S. Hamilton, K. Clarno, B. Philip, R. Sampath, M. Berrill, S. Allu, M. Baird, and J. Banfield, "Coupled Radiation Transport and Thermomechanics Using the AMP and Denovo Codes," Twelfth Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 25-30, 2012.

B. Philip, K. Clarno, R. Sampath, M. Berrill, S. Allu, and G. Dilts, "The Advanced Multi-Physics (AMP Package), Twelfth Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 25-30, 2012.

B. Philip, K. Clarno, R. Sampath, M. Berrill, and S. Allu, "A Jacobian Free Newton Krylov Method with Multilevel Block Preconditioning for Multi-Domain Quasistatic Thermomechanics," Twelfth Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 25-30, 2012.

J. E. Banfield et al., "Quasi-Static Validation of the AMP Nuclear Fuel Performance Code," *Trans. Am. Nucl. Soc.* **104**, June 2011.

P. Barai et al., "Strain-Based Continuum Damage Models for Nuclear Fuels," *Trans. Am. Nucl. Soc*. **104**, June 2011.

S. Allu et al., "Initial Validation of the AMP Nuclear Fuel Performance Code," *Trans. Am. Nucl. Soc*. **103**, November 2010.

G. G. Davidson et al., "Massively Parallel Solutions to the K-Eigenvalue Problem," *Trans. Am. Nucl. Soc*. **103**, November 2010.

J. D. Galloway et al., "Generalized Isotopic Tracking Capabilities Within the 3-D BWR Nodal Simulator NESTLE," *Trans. Am. Nucl. Soc*. **103**, November 2010.

G. I. Maldonado et al., "Integration of the NESTLE Core Simulator within SCALE," *Trans. Am. Nucl. Soc*. **100**, June 2009.

Y. Wang et al., "Progress in the Integration of the 2D DG-FEM Sn Transport Solver Xuthus into SCALE," *Trans. Am. Nucl. Soc*. **99**, November 2008.

T. Greifenkamp, K. T. Clarno, and J. C. Gehin, "Effect of Fuel Temperature Profile on Eigenvalue Calculations," *Proceedings of the 2008 American Nuclear Society Student Conference*, February 2008.

K. T. Clarno, "Implementation of Generalized Coarse-Mesh Rebalance in NEWTRNX for Acceleration of Parallel Block Jacobi Transport," *Trans. Am. Nucl. Soc.* **97**, November 2007.

S. R. Johnson and K. T. Clarno, "Implementation of Transport Synthetic Acceleration in NEWTRNX," *Trans. Am. Nucl. Soc.* **97**, November 2007.

S. P. Hamilton, C. R. E. de Oliveira and K.T. Clarno, "Implementation of Time-Dependent Transport in NEWTRNX," *Trans. Am. Nucl. Soc*. **97**, November 2007.

S. R. Johnson and K. T. Clarno, "Comparison of SCALE and MCNP Results for Computational Pebble Bed Benchmarks," *Trans. Am. Nucl. Soc.* **96**, June 2007.

K. T. Clarno, C. W. Forsberg, and J. C. Gehin, "Physics Analysis of Coolant Voiding in the Advanced High Temperature Reactor," *Trans. Am. Nucl. Soc*. **93**, November 2005.

K. T. Clarno et al, "Code-To-Code Benchmark of Coolant Void Reactivity (CVR) in the ACR-700 Reactor," *Trans. Am. Nucl. Soc*. **93**, November 2005.

K. T. Clarno and M.L. Adams, "Recent Improvements in Boundary Conditions for Single-Assembly Calculations," *Trans. Am. Nucl. Soc*. **89**, November 2003.

K. T. Clarno and Y.A. Hassan, "Development of a RELAP5-3D Three-dimensional Model of a VVER-1000 Nuclear Power Plant for Analysis of a Large-Break Loss-of-Coolant Accident," *Trans. Am. Nucl. Soc*. **85**, November 2001.