

CURRICULUM VITAE FOR KAREN VIEROW

Contact Information.....	2
Education.....	2
Professional Experience.....	2
Teaching Experience.....	3
Consulting Experience.....	4
Professional Society Membership.....	4
Honors and Awards.....	5
Research.....	7
Research Grants and Contracts.....	7
Current Research Programs.....	11
Publications.....	14
Invited Colloquia and Keynote Lectures.....	28
Teaching.....	30
Courses Taught.....	30
Graduate Student Supervision.....	32
Educational Grants and Contracts.....	35
Technology Transfer/Industry Interactions.....	36
Contributions to Technology Transfer.....	36
Industry Interactions.....	36
Service.....	38
Service to Government and Professional Organizations.....	38
Faculty Governance and Service.....	43
Activities on Diversity and Climate.....	45
Professional Outreach Activities.....	47
Technical Outreach Activities.....	47
Diversity-Related Outreach Activities.....	48
Recruiting Outreach Activities.....	49

CURRICULUM VITAE

CONTACT INFORMATION:

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EDUCATION:

Ph.D., Quantum Engineering and System Sciences, University of Tokyo
M.S., Nuclear Engineering, University of CA, Berkeley
B.S., Nuclear Engineering, Purdue University

PROFESSIONAL EXPERIENCE:

- | | |
|----------------|--|
| 2006-present | Associate Professor (tenured effective Sept., 2009)
Department of Nuclear Engineering, Texas A&M University |
| 2001-2006 | Assistant Professor, School of Nuclear Engineering, Purdue University |
| 1993-2000 | Assistant Chief Engineer, Nuclear Power Engineering Corporation
(NUPEC) |
| 1990-1993 | Engineer, General Electric Nuclear Energy |
| 1988-1990 | Research Assistant, Dept. of Nuclear Engineering, University of CA,
Berkeley |
| 1987-1988 | Visiting Researcher, Hitachi Energy Research Laboratory |
| 2006-present | Associate Professor, Department of Nuclear Engineering, Texas A&M Univ. |
| Nature of Work | <ol style="list-style-type: none">1) Teaches nuclear engineering courses2) Performs research in two-phase flow and heat transfer<ul style="list-style-type: none">– Flooding in vertical tubes– System-level experimental evaluations of BWR safety systems– Analysis of current and advanced nuclear reactor designs under accident conditions– Reactor safety computer program development– Development of analysis methods for future nuclear reactor designs3) Provides academic advising to 10-15 undergraduate students/semester4) Chairs the department's Graduate Admissions Committee5) Serves on various departmental and college-level committees |
| 2001-2006 | Assistant Professor, School of Nuclear Engineering, Purdue University |
| Nature of Work | <ol style="list-style-type: none">1) Taught nuclear engineering courses2) Performed research in two-phase flow and heat transfer |

- Condensation experiments for horizontal heat exchangers
 - Heat transfer experiments on reflux condensation
 - Design and testing of horizontal heat exchangers for nuclear reactor Passive Containment Cooling Systems (PCCS)
 - Analysis of advanced nuclear reactors under accident conditions
 - Reactor safety computer program development
 - Development of analysis methods for Purdue’s integral system test facility of nuclear reactors, in collaboration with Dr. Mamoru Ishii
- 6) Provided academic advising to 60-80 undergraduate students/semester
 - 7) Served as co-chair of the Nuclear Engineering Undergraduate Committee
 - 8) Served as Nuclear Engineering representative to Committee on Faculty Relations (CFR)

- 1993-2000 Assistant Chief Engineer, Nuclear Power Engineering Corporation
- 1) Developed mechanistic steam explosion analysis program
 - 2) Parallelized steam explosion and fluid flow analysis programs
 - 3) Integrated IMPACT simulator modules for reactor containment analysis
- 1990-1993 Engineer, GE Nuclear Energy
- Nature of Work:
- 1) Modified TRACG computer program for SBWR reactor application
 - 2) Managed GE-Toshiba, GE-MIT and GE-UCB research programs
 - 3) Supervised engineers from Comision Federal de Electricidad (CFE, Mexico) and BATAN National Atomic Energy (Indonesia)
- 1988-1990 Research Assistant, Dept. of Nuclear Engineering, University of CA at Berkeley
- Nature of Work:
- 1) Conducted experimental research on condensation in vertical tubes
 - 2) Developed analysis methods for GE-design reactor safety systems
- 1987-1988 Visiting Researcher, Hitachi Energy Research Laboratory
- Nature of Work:
- 1) Performed flow analysis of pressure loss through the ABWR reactor core
 - 2) Analyzed ABWR reactor core stability characteristics

TEACHING EXPERIENCE:

- 2006-present Associate Professor, Department of Nuclear Engineering, Texas A&M Univ.
- 2001-2006 Assistant Professor, School of Nuclear Engineering, Purdue University
- 1999, 2000 Lecturer, University of Tokyo, Dept. of Quantum Engineering and System Sciences. Developed Graduate Course “Technical English for Nuclear Engineers”

CONSULTING EXPERIENCE:

- 2003-2004 U.S. Nuclear Regulatory Commission, ACR-700 Severe Accident PIRT Panel. Provided expertise on the ACR-700 Canadian reactor design submitted to the U.S. NRC for design certification.
- M. Corradini, R. Henry, S. Levy, D. Powers, **K. Vierow**, *Severe Accident Phenomena Identification and Ranking Tables, in Phenomena Identification and Ranking Technique (PIRT) Applied to the ACR-700 Design*, NUREG/CR-XXXX, May 2004. (unpublished)
- 2009-2012 U.S. Nuclear Regulatory Commission, Chair of State-of-the-Art Reactor Consequence Analyses (SOARCA) Project Peer Review Panel. Headed panel to advise the NRC-Sandia National Laboratories analysis team on new consequence analysis methodologies.
- K. Vierow**, K. Canavan, B. Clement, J. R. Gabor, R. E. Henry, R. B. Kowieski, D. E. Leaver, B. B. Mrowca, K. R. O’Kula, J. D. Stevenson, J. C. Yanch, Peer Review of the State-Of-The-Art Reactor Consequence Analysis (SOARCA) Project, Appendix B of R. Chang, J. Schaperow, T. Ghosh, J. Barr, C. Tinkler, M. Stutzke, State-Of-The-Art Reactor Consequence Analysis (SOARCA) Report, NUREG-1935, Washington, DC, Nov. 2012. <http://pbadupws.nrc.gov/docs/ML1233/ML12332A057.pdf>
- 2013-2014 U.S. Department of Energy, evaluated information to be requested from the Fukushima Dai-ichi Nuclear Power Plants during the defueling and decommissioning and cleanup efforts. Served on the DOE Reactor Safety Technologies Advisory Panel (RSTAP), May – July 2014: reviewed the proposed Reactor Safety Technologies Program activities; reviewed proposed R&D tasks; participated in periodic program review meetings to assess and discuss the R&D work plans and deliverables.
- T. U. Marston, R. Coward, J. March-Leuba, D. Petti, D. Powers, **K. Vierow**, R. Wachowak, The DOE-NE Reactor Safety Technologies Program, Reactor Safety Technologies Advisory Panel Report, submitted to DOE-NE program manager Damien Peko, July 2014.
- 2014-2015 U.S. Department of Energy, consultant to provide guidance on severe accident modeling with codes such as MAAP and MELCOR.

PROFESSIONAL SOCIETY MEMBERSHIP:

- Member, American Nuclear Society (1986 – present)
- Member, Alpha Nu Sigma Honor Society (national honor society of the American Nuclear Society) (1987 – present)
- Member, American Society of Mechanical Engineers (1989 – present)
- Member, Atomic Energy Society of Japan (1995 – 2000)
- Member, Japanese Society of Multiphase Flow (1996 – 2000)

HONORS AND AWARDS:

International Honors and Awards

- “Young Scientist Breakthrough Award” for steam explosion analysis program development, Japanese Society of Multiphase Flow (1999)
- International travel award, Japan Ministry of Education, Culture, Sports, Science and Technology (represented by Prof. Oka of University of Tokyo and Prof. Ninokata of Tokyo Institute of Technology), for the International Conference on Advanced Nuclear Power Plants and Global Environment (ANP2003/GENES4), Kyoto, Japan (2003)
- **Keynote Lecture**, “Progress in and Challenges for U.S. Severe Accident Analysis Codes”, Sixth International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operations and Safety (NUTHOS-6), Nara, **Japan** (Oct. 2004)
- **Invited speaker**, “Severe Accident Investigations and Modeling – Recent Progress and Issues”, proc. of New Horizons in Nuclear Reactor Thermal Hydraulics Bhabha Atomic Research Centre (BARC), Mumbai, **India**, Jan 7-8, 2008.
- International travel award, National Science Foundation (represented by Dr. M. Kawaji of City College of New York), to participate in the 2012 Japan-U.S. seminar on Two-Phase Flow Dynamics, Tokyo, Japan (2012)
- Travel award, National Science Foundation (represented by Dr. M. Ishii of Purdue University), to participate in the 2015 Japan-U.S. seminar on Two-Phase Flow Dynamics, West Lafayette, IN (2015)

National Honors and Awards

- INPO Undergraduate Scholarship, School of Nuclear Engineering, Purdue University (1983-1987)
- Certificate of Appreciation for “Extensive Contributions to International Technical Understanding as Technical Program Director, Second International Conference on Nuclear Engineering (ICONE-2)”, ASME Nuclear Engineering Division, San Francisco, CA (1993)
- Best Paper in Session, R. Alley, E. Germain, K. Vierow, “MELCOR Effectiveness in Comparison with SDCAP/RELAP5 in Accident Modeling”, American Nuclear Society Student Conference, Pennsylvania State University, University Park, PA (2002)
- Best Presentation Award for Nuclear Operations and Safety Session, M. Cameron, K. Vierow, “Experiments for Reflux Condensation in PWR Steam Generator Tubes”, American Nuclear Society Student Conference, Univ. of WI-Madison, Madison, WI (2004)
- Feature on the cover of *Nuclear News*, the American Nuclear Society monthly magazine, “Karen Vierow: Severe Accident Code Analysis”, *Nuclear News* (Mar. 2005)
- 2005 International Travel Grant for travel to 11th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-11), Avignon France, awarded by the Purdue Research Foundation (2005)
- **Invited Participant**, DOE National Laboratory Workshop, “Advanced Simulations: A Critical Tool for Future Nuclear Fuel Cycles”, Lawrence Livermore National Laboratory, Livermore, CA (Dec. 14-16, 2005)
- TAMU College of Engineering nominee to the IDA (Institute for Defense Analysis) Defense Science Study Group (DSSG) program sponsored by DARPA (2007)

- Texas Engineering Experiment Station (TEES) Select Young Faculty Award (2007-2008)
- Dwight Look College of Engineering Faculty Fellow for 2008-2009 (2009)

University Awards

- Best Poster Award, B. Beeny, M. Leimon, K. Vierow, P. Tsvetkov, “Development and Validation of High Temperature Gas-Cooled Reactor Modeling Tools”, Energy Forum 2011, Energy Security and Sustainability, hosted by the Energy Engineering Institute, Texas A&M University, Feb. 1-2, 2011. (2011)

**RESEARCH GRANTS AND CONTRACTS RECEIVED AT TEXAS A&M UNIVERSITY
(external)**

<u>Source</u>	<u>Investigators</u>	<u>Dates</u>	<u>Vierow's Share (total award)</u>	<u>Project Title</u>
Sandia National Laboratories/DOE	K. Vierow (sole PI)	02/20/07- 09/15/07	\$60,000	Thermo-Chemical Generation of Hydrogen: Demonstration of MELCOR-H2 for Usage in the Simulation of Pebble Bed and Prismatic Very High Temperature Reactors
Dept. of Energy - Nuclear Engr. Research Initiative Program (NERI)	J. Ragusa K. Vierow (co-PI)	07/01/07- 06/30/10	\$160,000 (\$399,782)	Analysis of Advanced Fuel Assemblies and Core Designs for the Current and Next Generations of LWRs
Entergy	K. Vierow P. Tsvetkov	05/01/08- 11/30/09	\$25,000 (\$55,000) (gift)	Effects of Environmental Changes Due to Climate Fluctuations on Long-term Nuclear Power Plant Operations and New Plant Planning
National Science Foundation (NSF)/ Domestic Nuclear Defense Org.	K. Vierow (PI) L. Braby S. Aghara (PVAMU) R. Taleyarkhan (Purdue)	09/15/08- 08/31/09	\$60,000 (\$142,000)	Collaborative Research: ARI-MA: Tensioned Fluid Metastable State Special Nuclear Material Detector
Oregon State University (OSU) (prime sponsor: Nuclear Regulatory Comm.)	B. Woods (OSU) (PI) T. Palmer (OSU) Y. A. Hassan (PI) K. Vierow (co-PI) P. V. Tsvetkov T. Downar (UM)	09/05/08- 12/31/11	\$125,000	Basic Research on High Temperature Gas Reactor Thermal Hydraulics and Reactor Physics
Sandia National Laboratories/DOE	K. Vierow (sole PI)	01/01/09- 05/31/09	\$35,000	Development of Reactor Core Cooling System MELCOR Models, PR #1090497
Dept. of Energy - Nuclear Energy University Programs (NEUP) Infra-Structure Grant	K. Vierow (PI) F. Best Y. Hassan C. Kurwitz L. Shao P. Tsvetkov	09/01/10- 08/31/11	\$286,000	Infrastructure Enhancement via Optical, Thermal and Ultrasonic Imaging Equipment
U. S. Nuclear Regulatory Commission	K. Vierow (PI)	09/28/12- 09/27/14	\$224,881	Testing of RCIC Performance for Mark I BWRs under Prolonged Station Blackout Conditions

Source	Investigators	Dates	Vierow's Share (total award)	Project Title
Bechtel Marine Propulsion Corporation, Bettis Atomic Power Laboratory	K. Vierow (PI)	08/05/14-08/04/16	\$290,590	CCFL Testing and Model Development at Texas A&M Engineering Experiment Station
Dept. of Energy - Nuclear Energy University Programs (NEUP) Infra-Structure Grant	K. Vierow (PI) K. Ross (SNL)	10/01/14-09/30/17	\$483,984 (\$564,246)	Multi-Phase Model Development to Assess RCIC System Capabilities Under Severe Accident Conditions
Total			\$1,750,455	

**RESEARCH GRANTS AND CONTRACTS RECEIVED AT PURDUE UNIVERSITY
(external)**

<u>Source</u>	<u>Investigators</u>	<u>Dates</u>	<u>Vierow's Share (total award)</u>	<u>Project Title</u>
U.S. Nuclear Regulatory Comm.	K. Vierow (sole PI)	04/01/01- 12/31/02	\$144,930	MELCOR Assessment Against SCDAP/RELAP5
Tokyo Electric Power Company (Japanese industry)	K. Vierow (sole PI)	07/01/01- 06/30/03	\$139,260	Investigation of Horizontal Heat Exchanger Performance for Passive Containment Heat Removal
Institute of Nuclear Safety System (Japanese industry)	K. Vierow (sole PI)	09/01/01- 03/31/04	\$89,637	Investigation of Condensation Heat Transfer and Fluid Flow in PWR Steam Generator Tubes in the Presence of Noncondensable Gases
Dept. of Energy - Nuclear Engr. Edu. Res. Prog. (NEER)	K. Vierow (sole PI)	06/01/02- 05/31/05	\$244,824	Horizontal Heat Exchanger Design and Analysis for Passive Contain- ment Heat Removal Systems
Purdue Research Foundation Grant	K. Vierow (sole PI)	08/01/02- 07/31/04	\$26,400	Investigation of Condensation Heat Transfer and Fluid Flow in PWR Steam Generator Tubes in the Presence of Noncondensable Gases
U.S. Nuclear Regulatory Commission	M. Ishii (PI) S. T. Revankar K. Vierow	03/01/03- 02/28/08	\$20,000 (\$2,896,281)	PUMA Test Facility
U.S. Nuclear Regulatory Comm.	K. Vierow (sole PI)	07/25/03- 04/15/07	\$324,000	MELCOR Assessment and Application
Sandia National Laboratories/DOE	S. T. Revankar K. Vierow (co-PI)	12/13/04 - 09/23/06	\$120,000 (\$300,000)	Development of Design and Simulation Model for Large Scale Hydrogen Production using Nuclear Power
Dept. of Energy - Nuclear Engr. Edu. Res. Prog. (NEER)	K. Vierow (sole PI)	07/01/05- 06/30/08	\$244,056	Countercurrent Flow Limitation Experiments and Modeling for Improved Reactor Safety
Dept. of Energy - Nuclear Engr. Research Initiative Program (NERI)	K. Vierow (PI) T. Aldemir The Ohio State Univ. (co-PI)	03/13/06- 03/12/09	\$194,295 (\$388,591)	Uncertainty Quantification in the Reliability and Risk Assessment of Gen IV Reactors
	Total		\$1,547,402	

RESEARCH CONTRACTS TRANSFERRED TO TEXAS A&M UNIVERSITY

<u>Source</u>	<u>Investigators</u>	<u>Dates</u>	<u>Vierow's Share (total award)</u>	<u>Project Title</u>
Dept. of Energy - Nuclear Engr. Edu. Res. Prog. (NEER)	K. Vierow (sole PI)	07/01/05- 06/30/08	\$170,440*	Countercurrent Flow Limitation Experiments and Modeling for Improved Reactor Safety
Dept. of Energy - Nuclear Engr. Research Initiative Program (NERI)	K. Vierow (PI) T. Aldemir The Ohio State Univ. (co-PI)	03/13/06- 03/12/09	\$92,804* (\$388,591)	Uncertainty Quantification in the Reliability and Risk Assessment of Gen IV Reactors
Total			\$263,244*	

* These amounts are included in the original awards listed under Purdue contracts.

CURRENT RESEARCH PROGRAMS

I established the Laboratory for Nuclear Heat Transfer Systems with the initial goals of investigating condensation heat transfer mechanisms, developing new reactor designs and safety systems, and advancing the state-of-the-art in reactor safety analysis. A new funded research area, severe accident analysis, has come about that allows me to return to topics involving my PhD research.

I believe that developing a strong, externally funded program is an area to be emphasized, particularly because I have interests in experimental research. My average annual funding level was between \$200,000 and \$250,000 throughout my academic career. A description of the current research programs follows.

Testing of RCIC Performance for Mark I BWRs under Prolonged Station Blackout Conditions (2012 - 2015)

The later designs of Boiling Water Reactors (BWRs) with the Mark I containment employ a Reactor Core Isolation Cooling (RCIC) system to provide water to the reactor pressure vessel for decay heat removal under certain conditions. The events at the Fukushima Dai-ichi nuclear power plant resulted in operation of the Unit 2 and Unit 3 RCIC under prolonged station blackout conditions. Specifically, the units may have been operating with higher suppression pool temperatures and hydrogen contents than they were designed for. Temperature increase may affect the RCIC pump operation when suction is from the suppression pool. Hydrogen content may impair the RCIC system performance when the noncondensable concentration is high in the wetwell and/or becomes flammable. These changes may also lead to two-phase flow into the RCIC pump.

The objectives of this program are to:

- Experimentally investigate the functionality of the RCIC under elevated suppression pool temperature and hydrogen content, corresponding to hypothetical prolonged station blackout conditions.
- Based on the knowledge attained, propose new strategies for RCIC operation under prolonged station blackout
- Perform system analysis of BWR-4 Mark I reactors and containments under postulated, prolonged station blackout conditions to evaluate the effects of the proposed changes.

I intend to further the researcher by investigating thermal stratification in large water pools and develop computational models of the mixing for reactor safety applications. There will be strong links between this program and the DOE NE project described below.

Funding is from the **U.S. Nuclear Regulatory Commission**.

I am the sole PI on this project.

CCFL Testing and Model Development at Texas A&M University (2014 – 2016)

The project objective is to produce fundamental data on the flooding characteristics of air-water and steam-water flows in a well-defined, simple test section geometry for the flooding onset

point and beyond. The two sets of data will be directly comparable because, other than the fluid being used for the gas (air vs. steam), all aspects of the tests will be identical, including the method of gas flow introduction to the test section.

An existing test facility in my lab is being employed, which consists of a vertical straight pipe with a water inlet device that assures an annular liquid film. Other major components are my 150-kW steam supply, a large air compressor to be procured under this project, state-of-the-art instrumentation and a data acquisition system. The test facility will be modified to allow for air as the gas-phase fluid, with an air entrance section that is identical to the steam entrance section. A set of air-water tests will be conducted, followed by a set of steam-water tests with as small a water inlet subcooling as possible. Theoretically, the air-water data and steam-water data with saturated inlet water should yield identical results for the liquid and gas superficial velocities required to initiate flooding. This data will enable the first benchmarking of steam-water data to air-water data and will serve to better understand the more complicated subsequent testing with water subcooling, steam condensation, and variable property effects. We will also modify the test section to pursue flooding data at up to 45 psig and observe the pressure effect on flooding. The final deliverable of the project will be an analytical model that accounts for any differences in steam-water and air-water flooding data.

Funding is from the **Bechtel Marine Propulsion Corporation (Bettis Atomic Power Laboratory)**.

I am the sole PI on this project.

Multi-Phase Model Development to Assess RCIC System Capabilities under Severe Accident Conditions (2014 – 2017)

The objective of this proposed project is to provide analysis methods for evaluation of the Reactor Core Isolation Cooling (RCIC) System performance under severe accident conditions. This proposed project will directly address the objectives described in Technical Work Scope Identifier RC-7 by developing physics-based models of the RCIC System and incorporating them into a multi-phase code for validation.

The RCIC System is a safety-related system that provides makeup water for core cooling of some Boiling Water Reactors (BWRs) with a Mark I containment. The RCIC System consists of a steam-driven turbine that powers a pump for providing water to the reactor pressure vessel. The turbine takes steam off of a main steam line and exhausts to the Suppression Pool. Although the RCIC System was designed for isolation events, the Fukushima Dai-ichi accidents demonstrated that the system can play an important role under accident conditions in removing core decay heat. The RCIC System is believed to have successfully removed decay heat for almost 70 hours in Unit 2. This duration greatly exceeds the 4 to 8-hour operation that the RCIC System is given credit for in US BWRs.

The greatest modeling needs for the RCIC System are with respect to the thermodynamics of the system performance under multi-phase flow conditions. This project will develop physics-based models of the RCIC System and implement and validate the models in a multi-phase reactor safety code.

The proposed path is to perform experimentally-backed CFD modeling; to select codes for the Design Basis Accident and Severe Accident aspect with due consideration to code limitations; to model the Design Basis Accident portion and the Severe Accident portion noting limitations and workarounds; and to recreate the Fukushima Dai-ichi Unit 2 accident.

Funding is from the **US Department of Energy, Nuclear Energy University Program (NEUP)**.

I am the lead PI and my collaborator on this project is Mr. Kyle Ross of Sandia National Laboratories.

PUBLICATIONS:

(ANS = American Nuclear Society, ASME = American Society of Mechanical Engineers)
Students are denoted with an *.

A. Theses

PhD Dissertation, Integrated Steam Explosion Analysis with the VESUVIUS Code,
University of Tokyo, 1999.

M.S. Thesis, Behavior of Steam-Air Systems Condensing in Cocurrent Vertical Downflow,
University of California at Berkeley, 1990.

B. Archival Journal Publications

1. **K. Vierow**, M. Naitoh, K. Nagano, K. Araki, “Development of the VESUVIUS Code for Steam Explosion Analysis Part 1: Molten Jet Breakup Modeling”, *Journal of the Japanese Society of Multiphase Flow*, Vol. 12, No. 3, pp. 242-248, 1998.
2. **K. Vierow**, M. Naitoh, K. Nagano, K. Araki, “Development of the VESUVIUS Code for Steam Explosion Analysis Part 2: Verification of Jet Breakup Modeling”, *Journal of the Japanese Society of Multiphase Flow*, Vol. 12, No. 4, pp. 358-364, 1998.
3. **K. Vierow**, K. Araki, “Deterministic Trigger Model for the VESUVIUS Steam Explosion Code”, *Journal of Nuclear Science and Technology*, Vol. 36, No. 2, pp. 213-215, 1999.
4. T. Morii, **K. Vierow**, “The SOAR Method for Automatically Optimizing SIMPLE Relaxation Factors”, *Numerical Heat Transfer, Part B: Fundamentals*, Vol. 38, pp. 309-332, 2000.
5. M. Kimura, M. Takei, A. Saima, **K. Vierow**, Y. Saito, K. Horii, “Fluctuating Component of Condensation Jet Image Using Wavelets”, *The Journal of Flow Visualization and Image Processing*, Vol. 8, Issue 2-3, pp. 149-164, 2001.
6. **K. Vierow**, Y. Liao*, J. Johnson*, M. Kenton, R. Gauntt, “Severe Accident Analysis of a PWR Station Blackout with the MELCOR, MAAP4 and SCDAP/RELAP5 Codes”, *Nuclear Engineering and Design*, Vol. 234, Issue 1-3, pp. 129-145, 2004.
7. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Analysis of Reflux Condensation Heat Transfer of Steam-Air Mixtures in a Vertical Tube”, *Journal of Nuclear Science and Technology*, Vol. 42, No. 1, pp. 50-57, 2005.
8. Y. Liao*, **K. Vierow**, “MELCOR Modeling of Creep Rupture in Steam Generator Tubes”, *Nuclear Technology*, Vol. 152, No. 3, pp. 302-313, 2005.
9. T. Wu*, **K. Vierow**, “A Local Heat Flux Measurement Technique for Inclined Heat Exchanger Tubes”, *Experimental Heat Transfer*, Vol. 19, No. 1, pp. 1-14, 2006.
10. T. Wu*, **K. Vierow**, “Experimental Study of Steam Horizontal In-Tube in the Condensation in the Presence of a Noncondensable Gas”, *International Journal of Heat and Mass Transfer*, Vol. 49, pp. 2491-2501, 2006.
11. T. Nagae, M. Murase, T. Chikusa, **K. Vierow**, T. Wu*, “Reflux Condensation Heat Transfer of Steam-Air Mixture under Turbulent Flow Conditions in a Vertical Tube”, *Journal of Nuclear Science and Technology*, Vol. 44, No. 2, pp. 171-182, 2007.
12. Y. Liao*, **K. Vierow**, “A Generalized Diffusion Layer Model for Condensation of Vapor with Non-condensable Gases”, *Transactions of the ASME, Journal of Heat Transfer*, Vol. 129, pp. 988-994, 2007.

13. Y. Liao*, **K. Vierow**, A. Dehbi, S. Guentay, “Transition from Natural Convection for Steam-Gas Flow Condensing along a Vertical Plate”, *International Journal of Heat and Mass Transfer*, Vol. 52, pp. 366-375, 2009.
14. S. B. Rodriguez, R. O. Gauntt, R. Cole, F. Gelbard, K. McFadden, T. Drennen, B. Martin, D. Louie, L. Archuleta, Md. El-Genk, J.-M. Tournier, F. Espinoza, S. T. Revankar, **K. Vierow**, “Transient Analysis of Sulfur-Iodine Cycle Experiments and Very High Temperature Reactor Simulations Using MELCOR-H2”, *Nuclear Technology*, Vol. 166, No. 1, pp. 76-85, 2009.
15. Y. Liao*, **K. Vierow**, “Variable Property Effects on Vapor Condensation with a Noncondensable Gas”, *Nuclear Technology*, Vol. 167, pp. 13-19, 2009.
16. N. Brown, S. Oh, S. T. Revankar, **K. Vierow**, S. Rodriguez, R. Cole Jr., R. O. Gauntt, “Simulation of Sulfur Iodine Thermochemical Hydrogen Production Plant Coupled To High Temperature Heat Source”, *Nuclear Technology*, Vol. 167, pp. 95-106, 2009.
17. Y. Liao*, S. Guentay, **K. Vierow**, “Local Nonsimilarity Method for the Two-Phase Boundary Layer in Mixed Convection Laminar Film Condensation”, *Heat and Mass Transfer*, Vol. 46, No. 4, pp. 447-455, 2010.
18. Deendarlianto, A. Ousaka, Indarto, A. Kariyasaki, D. Lucas, **K. Vierow**, C. Vallee, K. Hogan*, “The effects of surface tension on flooding in counter-current two-phase flow in an inclined tube”, *Experimental Thermal and Fluid Science*, Vol. 34, Issue 7, pp. 813-826, 2010.
19. K. Hogan*, Y. Liao*, B. Beeny*, **K. Vierow**, R. Cole, Jr., L. Humphries, R. Gauntt, “Implementation of a Generalized Diffusion Layer Model for Condensation into MELCOR”, *Nuclear Engineering and Design*, Vol. 240, pp. 3202-3208, 2010.
20. I. Choutapalli,* **K. Vierow**, “Wall Pressure Measurements of Flooding in Vertical Countercurrent Annular Air-Water Flow”, *Nuclear Engineering and Design*, Vol. 240, pp. 3221-3230, 2010.
21. I. Choutapalli,* **K. Vierow**, “Effect of air inlet geometry on flooding in a large diameter vertical tube”, *Nuclear Engineering and Design*, Vol. 240, pp. 3667-3681, 2010.
22. S. N. Ritchey*, M. Solom*, O. Draznin*, I. Choutapalli*, **K. Vierow**, “Flooding Experiments with Steam and Water in a Large Diameter Vertical Tube”, *Nuclear Technology*, Vol. 175, pp. 529-537, 2011.
23. Deendarlianto, Thomas Höhne, Dirk Lucas, **K. Vierow**, “Gas–liquid countercurrent two-phase flow in a PWR hot leg: A comprehensive research review”, *Nuclear Engineering and Design*, Vol. 243, pp. 214-233, 2012.
24. Pollman, A.*, **K. Vierow**, M. di Marzo, “Analysis of Rapid-condensation Transient Using TRACE”, *Nuclear Engineering and Design*, Vol. 250, pp. 512-519, 2012.
25. W. Cullum*, J. Reid*, **K. Vierow**, “Water Inlet Subcooling Effects On Flooding With Steam And Water In A Large Diameter Vertical Tube”, *Nuclear Engineering and Design*, Vol. 273, pp. 110-118, 2014.
26. **K. Vierow**, K. Hogan*, K. Metzroth, T. Aldemir, “Application of Dynamic Probabilistic Risk Assessment Techniques for Uncertainty Quantification in Generation IV Reactors”, *Progress in Nuclear Energy*, Vol. 77, pp. 320-328, 2014.

C. Submitted Archival Journal Publications

1. None.

D. Books and Book Chapters

1. **K. Vierow**, “Evaluation of Condensation Heat Transfer in a Vertical Tube Heat Exchanger”, Handbook of Heat Transfer Calculations, Myer Kutz, (Ed.), McGraw-Hill, New York, Chapter 31, 2005.
2. **K. Vierow**, “Enhancement of Nuclear Power Plant Safety by Condensation-driven passive heat removal systems”, *Thermal Engineering in Power Systems*, Ed. R. S. Amano, B. Sunden, WIT Press, Chpt. 5, pp. 141-170, 2008 ****invited contribution****

E. Editorships

1. Guest editor, *Nuclear Technology*, special edition for papers from NURETH-12 conference, July 2009.

F. Refereed Conference or Symposium Proceedings

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3. **K. Vierow**, H. E. Townsend, J. R. Fitch, J. G. M. Andersen, Md. Alamgir, V. E. Schrock, “BWR Passive Containment Cooling System by Condensation-Driven Natural Circulation”, *Proc. of The First ASME/JSME Joint International Conference on Nuclear Engineering - 1 (ICONE-1)*, Tokyo, Japan, pp. 289 - 294, Nov., 1991.
4. **K. Vierow**, V. E. Schrock, “Condensation in a Natural Circulation Loop with Noncondensable Gas Present: Part I - Heat Transfer”, *Proc. of Japan - U.S. Seminar on Two-Phase Flow Dynamics*, Berkeley, CA, (14 pp.) Jul., 1992.
5. **K. Vierow**, V. E. Schrock, “Condensation in a Natural Circulation Loop with Noncondensable Gas Present: Part II - Flow Instability”, *Proc. of Japan - U.S. Seminar on Two-Phase Flow Dynamics*, Berkeley, CA, (7 pp.) Jul., 1992.
6. **K. Vierow**, J. R. Fitch, F. E. Cooke, “Analysis of SBWR Passive Containment Cooling Following a LOCA”, *Proc. of International Conference on Design and Safety of Advanced Nuclear Power Plants* (Atomic Energy Society of Japan), Tokyo, Japan, pp. 31.2-1 - 31.2-7, Oct., 1992.
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- Engineering Sciences (CAMES)*, proc. of conference sponsored by the Polish Academy of Sciences, Vol. 1, No. 3/4, pp. 205 - 226 , 1994.
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 10. **K. Vierow**, M. Akiyama, S. Ohta, H. Ban, A. Hoizumi, M. Naitoh, Y. Shinohara, K. Takumi, “The IMPACT Super Simulator - Basic Framework”, *Proc. of 1995 Simulation Multiconference* (Society for Computer Simulation), Phoenix, AZ, pp. 169 - 174, Apr., 1995.
 11. **K. Vierow**, M. Naitoh, K. Nagano, K. Araki, “Parallelization of the VESUVIUS Module for Analysis of an Ex-Vessel Steam Explosion on an IBM SP2”, *Proc. of The Third Workshop on Super Simulators for Nuclear Power Plants (SS'95)* (Univ. of Tokyo), Tokyo, Japan, pp. 75 - 85, Dec., 1995.
 12. **K. Vierow**, K. Nagano, K. Araki, “Development of the VESUVIUS Model and Analysis of the Premixing Phase of an Ex-vessel Steam Explosion”, *Proc. of The Fourth International Conference on Nuclear Engineering - 4 (ICONE-4)*, New Orleans, LA, Vol. 1, Part A, pp. 333 - 341, Mar., 1996.
 13. **K. Vierow**, M. Naitoh, K. Nagano, K. Araki, “Development of the Steam Explosion Analysis Module VESUVIUS - (1) Modeling of the Premixing Phase”, *Proc. of The Fifteenth Symposium on Multiphase Flow* (Japanese Society of Multiphase Flow), Fukui, Japan, pp. 181 - 184, Jul., 1996. (in Japanese)
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22. M. Kimura, M. Takei, **K. Vierow**, Y. Saito, K. Horii, A. Saima, "Wavelet Analysis of Cold Jets Image Issuing into High Humidity Environment", *Proc. of The 3rd Pacific Symposium on Flow Visualization and Image Processing*, Maui, HI, paper F3317, (9 pp.) Mar., 2001.
23. M. Kimura, M. Takei, A. Saima, **K. Vierow**, Y. Saito, K. Horii, "Relationship between Temperature Distribution and 2D Image of Condensation Jets Using Discrete Wavelets Multiresolution", *Proc. of ASME Fluids Engineering Division Summer Meeting, Forum on Wavelet Applications in Fluid Mechanics*, paper FEDSM2002-31114, (10 pp.) July 2002.
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26. J. Johnson Colbert*, **K. Vierow**, "Verification of the MELCOR Code against SCDAP/RELAP5 for Severe Accident Analysis", *Proc. of International Conference on Advanced Nuclear Power Plants and Global Environment, ANP2003/GENES4*, Kyoto, Japan, paper 1139 (6 pp.), Sept. 2003.
27. **K. Vierow**, T. Nagae, T. Wu*, "Experimental Investigation of Reflux Condensation Heat Transfer in PWR Steam Generator Tubes in the Presence of Noncondensable Gases", *Proc. of 10th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-10)*, Seoul, Korea, paper C00305, (17 pp.) Oct. 2003.
28. T. Wu*, H. Tokuma, **K. Vierow**, "Experimental Investigation of Steam Condensation in a Horizontal Tube in the Presence of Noncondensable Gas", *Proc. of International Congress on Advanced Nuclear Power Plants (ICAPP'04)*, (embedded in 2004 ANS annual meeting), Pittsburgh, PA, paper 4137, pp. 1453-1462, June, 2004.
29. **K. Vierow**, Y. Liao*, "Progress in and Challenges for U.S. Severe Accident Analysis Codes", *proc. of Sixth International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operations and Safety (NUTHOS-6)*, Nara, Japan, paper KN-05, (16 pp.) Oct. 4-8, 2004.
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32. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Modeling of Reflux Condensation Heat Transfer In The Presence Of a Noncondensable Gas”, *Proc. of 11th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-11)*, Avignon, France, (9 pp.) Oct. 2005.
33. Y. Liao*, **K. Vierow**, “Application of a Generalized Diffusion Layer Theory to Predict Experiment Data on Condensation of Vapor-air Mixtures”, *Proc. of International Conference for Advanced Nuclear Power Plants (ICAPP-06)*, Reno, NV, (8 pp.) June 2006.
34. S. T. Revankar, **K. Vierow**, A. Ward*, A. Wichman*, K. Wangerin*, J. Foster,* “Coupled High Temperature Gas Reactor and Sulfur Iodide Process for Hydrogen Generation”, *Proc. of ASEE Annual Conference*, Chicago, IL, June 2006.
35. Y. Liao*, **K. Vierow**, “Optimum Channel Inclination for Gas Venting under Countercurrent Flow Limitations”, *Proc. of The Fourteenth International Conference on Nuclear Engineering - 14 (ICONE-14)*, Miami, FL, paper ICONE14-89665 (7 pp.), Jul. 17-20, 2006.
36. S. B. Rodríguez Jr., D. Louie, R. O. Gauntt, R. Cole Jr., K. McFadden, F. Gelbard, T. Drennen, B. Martin, L. Archuleta, S. T. Revankar, **K. Vierow**, M. El-Genk, and J. M. Tournier, “Melcor-H2 Benchmarking of the SNL Sulfuric Acid Decomposition Experiments”, *Proc. of AIChE 2007 Spring National Meeting*, Houston, TX, Apr. 22-26, 2007.
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39. N. Brown, S. T. Revankar, **K. Vierow**, S. Rodriguez, R. Cole Jr., R. O. Gauntt, “Thermochemical Hydrogen Plant Coupled to High Temperature Gas Cooled Reactor”, *Proc. of 12th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-12)*, Pittsburgh, PA, (17 pp.) Oct., 2007.
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46. S. N. Williams*, M. Solom*, O. Draznin*, I. Choutapalli, **K. Vierow**, “Flooding Experiments with Steam and Water in a Large Diameter Vertical Tube”, *Proc. of 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-13)*, Kanazawa City, Ishikawa Prefecture, Japan, paper N13P1094, Oct., 2009.
47. O. Draznin, S. N. Ritchey*, K. Vierow, “Experimental Study of Water Subcooling Effect on Steam-Water Flooding in a Large-Diameter Vertical Tube”, *Proc. of International Congress on Advanced Nuclear Power Plants (ICAPP'10)*, San Diego, CA, paper 10306, June 2010.
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G. Refereed Conference Summaries or Abstracts

1. J. Johnson Colbert*, **K. Vierow** “Comparison of MELCOR and SCDAP/RELAP5 Codes for Station Blackout Analysis”, *Proc. of ANS 2003 Winter Meeting*, New Orleans, pp. 398-399, Nov. 2003.
2. T. Wu*, **K. Vierow**, “Fundamental Condensation Heat Transfer Studies for Horizontal PCCS Heat Exchanger”, *Proc. of 2005 ANS Annual Meeting*, San Diego, CA, Jun. 2005.
3. S. Rodríguez, Jr., R. O. Gauntt, S. T. Revankar, **K. Vierow**, “Development of Design and Simulation Model and Safety Study of Large-Scale Hydrogen Production Using Nuclear Power”, *Proc. of AIChE 2005 Annual Meeting*, Cincinnati, OH, Oct. 30-Nov. 4, 2005.
4. Y. J. Song*, **K. Vierow**, “Horizontal Heat Exchanger Scaling for Passive Containment Heat Removal System Experiments”, *Proc. of the ANS 2005 Winter Meeting*, Washington, DC, Nov. 2005.
5. S. Rodríguez, R. O. Gauntt, S. Revankar, **K. Vierow**, “MELCOR Modification for Large-Scale Hydrogen Production Using Nuclear Thermochemical Cycles”, *Proc. of the ANS 2005 Winter Meeting*, Washington, DC, Nov. 2005.

6. K. J. Hogan*, **K. Vierow**, S. T. Revankar, R. K. Cole, Jr., R. O. Gauntt, S. Rodriguez, “Assessment of PBMR Analysis Using the MELCOR Code”, *Proc. of the ANS 2006 Annual Meeting*, Reno, NV, June, 2006.
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14. K. J. Hogan*, Y. Liao*, **K. Vierow**, R.K. Cole, Jr., R.O. Gauntt, “Implementation of a New Diffusion Layer Model for Condensation with Non-condensable Gases Into MELCOR”, *Proc. of 2007 ANS Winter Meeting*, Washington DC, Nov. 2007.
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18. A. Bingham*, B. Bradley, Y. Zhang, J. Ragusa, S. Chirayath, **K. Vierow**, “Analysis of Advanced Fuel Assemblies for the LWRs”, *Proc. of 2009 ANS Annual Meeting*, Atlanta, GA, June 2009.

19. J. Corson*, **K. Vierow**, “Representing the 400 MW PBMR using GCR Models in MELCOR 2.1”, *Transactions of 2009 ANS Winter Meeting*, Washington, DC, pp. 888-889, Nov. 2009.
20. K. Metzroth, T. Aldemir, K. Hogan*, **K. Vierow**, “Sensitivity Analysis Using the Method of Taguchi Orthogonal Arrays”, *Transactions of 2009 ANS Winter Meeting*, Washington, DC, pp. 510-512, Nov. 2009.
21. J. Ortensi, M.A. Pope, G. Strydom, R.S. Sen, M.D. DeHart, H.D. Gougar, C. Ellis, A. Baxter, V. Seker, T.J. Downar, **K. Vierow**, K. Ivanov, “Prismatic Core Coupled Transient Benchmark”, *Transactions of 2011 ANS Annual Meeting*, Hollywood, FL, June 2011.
22. A. S. Dercher*, **K. Vierow**, “Development of Modeling Techniques For a Gen IV Gas Fast Reactor”, *Transactions of 2011 ANS Winter Meeting*, Washington, DC, Nov. 2011.
23. R. Vaghetto*, B. A. Beeny*, Y. A. Hassan, **K. Vierow**, “Analysis of Long-Term Cooling of a LOCA by Coupling RELAP5-3D and MELCOR”, *Transactions of 2012 ANS Annual Meeting*, Chicago, IL, June 24-28, 2012, paper 6121.
24. R. Vaghetto*, B. A. Beeny*, Y. A. Hassan, **K. Vierow**, “Analysis of Long-Term Cooling of a LOCA by Coupling RELAP5-3D and MELCOR”, *Transactions of 2012 ANS Winter Meeting*, San Diego, CA, Nov. 2012.
25. R. Vaghetto*, B. A. Beeny*, Y. A. Hassan, **K. Vierow**, “Sensitivity Analysis of a Typical Large, Dry Containment Response during a Loss of Coolant Accident using RELAP5-3D and MELCOR”, *Transactions of 2013 ANS Annual Meeting*, Atlanta, GA, June 16-20, 2013.
26. A. Al Rashdan*, P. Tsvetkov, **K. Vierow**, “Considerations of Water Injection Timing and Volume in Accident Scenarios Relevant to the Fukushima-Daiichi Nuclear Power Plant”, *Transactions of 2014 ANS Winter Meeting*, Anaheim, CA, November 9-13, 2014.

H. Non-refereed Conference or Symposium Proceedings

1. **K. Vierow**, M. Naitoh, K. Nagano, K. Araki, “Development of the Super Simulator "IMPACT" (III) - (4) VESUVIUS Module Development for Steam Explosion Analysis”, *Proc. of the 1996 Fall Conference of the Atomic Energy Society of Japan*, Sendai, Japan, p. 419, Sept., 1996. (in Japanese)
2. **K. Vierow**, K. Araki, “Development of the Super Simulator IMPACT (V) - (7) Propagation Phase Analysis with the VESUVIUS Steam Explosion Module”, *Proc. of the 1998 Fall Conference of the Atomic Energy Society of Japan*, Fukui, Japan, p. 486, Sept., 1998. (in Japanese)
3. **K. Vierow**, K. Araki, “Development of the Super Simulator IMPACT (V) - (8) Integration of the VESUVIUS Steam Explosion Analysis Module”, *Proc. of the 1998 Fall Conference of the Atomic Energy Society of Japan*, Fukui, Japan, p. 487, Sept., 1998. (in Japanese)
4. **K. Vierow**, K. Araki, “Integral Steam Explosion Calculations with the Steam Explosion Analysis Code VESUVIUS”, *Proc. of The Eighteenth Symposium on Multiphase Flow* (Japanese Society of Multiphase Flow), Osaka, Japan, pp. 143 - 144, Jul., 1999. (in Japanese)

5. **K. Vierow**, K. Nagano, “Hydrogen Mixing Analysis in the Nuclear Power Plant Containment Vessel with the Two-Fluid HYMIX Module”, *Proc. of The Japanese Society of Multiphase Flow Annual Meeting 2000*, Sendai, Japan, pp. 125 - 126, Jul., 2000. (in Japanese)
6. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Reflux Condensation Heat Transfer of Steam-Air Mixture in a Vertical Tube under Laminar Gas-Liquid Countercurrent Flow Conditions”, *Proc. of Fall Meeting of the Atomic Energy Society of Japan*, Shizuoka, Japan, paper F50, p. 403, Sept. 24-26, 2003. (in Japanese)
7. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Evaluation Method of Condensation Heat Transfer of Steam-Air Mixture in a Vertical Tube”, *Proc. of the Annual Meeting of the Japan Society for Multiphase Flow*, Okayama, Japan, Paper B317, (2 pp.) Aug. 2004. (in Japanese)
8. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Reflux Condensation Heat Transfer of Steam and Noncondensable Gas Mixture under Gas-Liquid Countercurrent Flow (1) Correlation of Condensation Heat Transfer Coefficients in a Vertical Tube”, *Proc. of Fall Meeting of the Atomic Energy Society of Japan*, Kobe, Japan, p. 307, Sept. 13-15, 2005. (in Japanese)

I. Other Submitted Publications

None

J. Government, University, or Industrial Reports (non-refereed)

1. **K. Vierow**, O. Yokomizo, Effect of Additional Core Support Plate Stiffeners on Steady-State Core Pressure Drop, Energy Research Laboratory, Hitachi, Ltd., Research Rpt. 2870, Feb. 8, 1988.
2. **K. Vierow**, V. E. Schrock, Behavior of Steam-Air Systems Condensing in Cocurrent Vertical Downflow, UCB/EPRI/GE, 1990.
3. **K. Vierow**, V. E. Schrock, Condensation Heat Transfer in Natural Circulation with Noncondensable Gas, Dept. of Nuclear Engineering, Univ. of CA at Berkeley, May 1990.
4. J. R. Fitch, **K. Vierow**, U. Saxena, SBWR Containment Methods for Pressure Calculation, GE Nuclear Energy, Rpt. No. DRO-00012, 1992.
5. **K. Vierow**, GIRAFFE Passive Heat Removal Testing Program, GE Nuclear Energy, Rpt. No. NEDC-32215P, Jun. 1993.
6. **K. Vierow**, S. Yokobori, GIRAFFE Passive Heat Removal Testing Program, Nuclear Engineering Laboratory, Toshiba, Ltd., Rpt. No. TOGE239-T05, Jun. 1993.
7. **K. Vierow** et al., GIRAFFE Testing Program to Support SBWR PCCS Design, GE Nuclear Energy, Design Record File No. DRO-00002, Dec. 1993.
8. J. G. M. Andersen, Md. Alamgir, J. S. Bowman, Y. K. Cheung, J. Haces, S. Khorana, L. A. Klebanov, W. Marquino, M. Robergeau, D. A. Salmon, J. C. Shaug, B. S. Shiralkar, F. D. Shum, **K. Vierow**, A. L. Wirth, TRACG Qualification, prepared by GE Nuclear Energy, NEDE-32177P, Rev. 1, Class 3, San Jose, CA, June 1993.
9. **K. Vierow**, J. Johnson*, R. Alley*, A. Garmoe*, E. Germain*, A. Slaga*, J. Mikkelsen*, Task Order No. 12 “MELCOR Assessment against SCDAP/RELAP5,

- Contract Research Final Report submitted to U.S. Nuclear Regulatory Commission, Jan. 2003.
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 11. **K. Vierow**, T. Wu*, M. Cameron*, A. Donato*, Y. J. Song*, Investigation of Condensation Heat Transfer and Fluid Flow in PWR Steam Generator Tubes in the Presence of Noncondensable Gases, Contract Research Final Report submitted to Institute of Nuclear Safety System, Inc., Mar. 2004.
 12. M. Ishii, X. Sun, S. T. Revankar, **K. Vierow**, Y. Xu, S. Kim, B. Ozar, S. Vasavada, H. H. Yoon, S. Paranjape, S. Kuran, L. Cheng, R. Situ, S. W. Choi, W. Wang, Scaling and Scientific Design Study for GE ESBWR Relative to PUMA Facility, PU/NE-03-07, prepared for the U.S. Nuclear Regulatory Commission, Mar. 2004.
 13. M. Ishii, S. T. Revankar, **K. Vierow**, S. W. Choi, J. Yang, H. J. Yoon, W. Wang, PCCS Separate Effects Tests in the PUMA Facility (Quick Look Report), PU/NE 04/03, prepared for the U.S. Nuclear Regulatory Commission, Apr. 2004.
 14. M. Ishii, S. T. Revankar, **K. Vierow**, S. W. Choi, J. Yang, H. J. Yoon, J. Han, QA of the Current PUMA Design, PU/NE 04/XX, prepared for the U.S. Nuclear Regulatory Commission, Apr. 2004.
 15. M. Ishii, S. T. Revankar, **K. Vierow**, H. J. Yoon, X. Sun, L. Cheng, S. W. Choi, J. H. Lim, J. Yang, W. Wu, A Data Report on PUMA Large Break LOCA Main Steam Line Break Test Data for Partial Simulation of ESBWR, PU/NE 04/ XX, prepared for the U.S. Nuclear Regulatory Commission, Jul. 2004.
 16. M. Ishii, X. Sun, S. T. Revankar, **K. Vierow**, Y. Xu, S. J. Kim, H. J. Yoon, L. Cheng, B. Ozar, S. Vasavanda, S. Paranjape, S. Kuran, R. Situ, S. W. Choi, J. Lim, T. Norman, K. S. Woo, J. Yang, W. Wang, J. Han, Second Scaling and Scientific Design Study for GE ESBWR Relative to PUMA Facility with Volumetric Ratio of 1/475, PU/NE 04/04, prepared for the U.S. Nuclear Regulatory Commission, Jul. 2004.
 17. T. Nagae, M. Murase, T. Wu*, **K. Vierow**, “Reflux Condensation Heat Transfer of Steam-Air Mixtures under Gas-Liquid Countercurrent Flow”, *INSS Journal*, Oct. 2004.
 18. M. Ishii, S. T. Revankar, **K. Vierow**, H. J. Yoon, L. Cheng, K. S. Woo, W. Wang, PUMA Medium Break LOCA Gravity Drain Line Break Test Data for Partial Simulation of ESBWR, PU/NE-04-XX, prepared for the U.S. Nuclear Regulatory Commission, Dec. 2004.
 19. M. Ishii, S. T. Revankar, **K. Vierow**, H. J. Yoon, S.W. Choi, J. Yang, W. Wang, PUMA Medium Break LOCA GDCS Drain Line Break Test with One ICS and One PCCS Disabled for Partial Simulation of ESBWR, PU/NE-04-XX, prepared for the U.S. Nuclear Regulatory Commission, Dec. 2004.
 20. M. Ishii, S. T. Revankar, **K. Vierow**, H. J. Yoon, S. W. Choi, J. Yang, W. Wang, A Data Report on PUMA Small Break LOCA Bottom Drain Line Break Test with All ICS Disabled for Partial Simulation of ESBWR, PU/NE 04/XX, prepared for the U.S. Nuclear Regulatory Commission, Dec. 2004.
 21. M. Ishii, S. T. Revankar, **K. Vierow**, H. J. Yoon, L. Cheng, K. S. Woo, J. Han, PUMA Large Break LOCA Main Steam Line Break Test with ICS Disabled for

- Partial Simulation of ESBWR, PU/NE 05/XX, prepared for the U.S. Nuclear Regulatory Commission, Jan. 2005.
22. M. Ishii, S. T. Revankar, **K. Vierow**, L. Cheng, K. S. Woo, J. Lim, J. Han, Separate Effects Test - Suppression Pool Condensation and Mixing – Quick Look Report, PU/NE 05/XX, prepared for the U.S. Nuclear Regulatory Commission, Jan. 2005.
 23. M. Ishii, S. T. Revankar, **K. Vierow**, J. Lim, H. J. Yoon, H. S. Park, L. Cheng, TRACE Assessment against PUMA SBWR Main Steam Line Break Test Data, PU/NE-05-XX, prepared for the U.S. Nuclear Regulatory Commission, July 2005.
 24. M. Ishii, S. T. Revankar, **K. Vierow**, K. S. Woo, L. Cheng, J. Lim, H. J. Yoon, H. S. Park, J. T. Han, Noncondensable Gas Effect on Thermal Stratification in the Suppression Pool, PU/NE 05-07, prepared for the U.S. Nuclear Regulatory Commission, Aug. 2005.
 25. **K. Vierow**, T. Wu*, Y. J. Song*, H. Alkaabi*, M. Cameron*, T. Drzewiecki*, J. Hardy*, B. Mount*, B. Nadir*, K. Prater*, Horizontal Heat Exchanger Design And Analysis For Passive Containment Heat Removal Systems, PU/NE 05-10, contract research final report submitted to U.S. Department of Energy, Aug. 2005.
 26. S. T. Revankar, **K. Vierow**, S. M. Oh, K. Hogan*, H. Alkaabi*, Development of Design and Simulation Model and Safety Study of Large-Scale Hydrogen Production Using Nuclear Power, Annual Technical Report, Dec. 13, 2004 through Sept. 23, 2005, PU/NE 05-13, submitted to Sandia National Laboratories/U.S. Department of Energy, Sept. 28, 2005.
 27. T. L. Norman, H. S. Park, S. T. Revankar, M. Ishii, **K. Vierow**, J. M. Kelly, Steam-Air Mixture Condensation in a Subcooled Water Pool – Facility Design and Scoping Tests, PU/NE-05-19, prepared for the U.S. Nuclear Regulatory Commission, Dec. 2005.
 28. T. L. Norman, H. S. Park, S. T. Revankar, M. Ishii, **K. Vierow**, J. M. Kelly, Steam-Air Mixture Condensation in a Subcooled Water Pool – Data Report, PU/NE-05-20, prepared for the U.S. Nuclear Regulatory Commission, Dec. 2005.
 29. M. Ishii, S. W. Choi, J. Yang, **K. Vierow**, S. T. Revankar, W. Wang, J. Han, PCCS Separate Effects Tests in the PUMA Facility (Letter Report), PU/NE-05-17, prepared for the U.S. Nuclear Regulatory Commission, May 2006.
 30. **K. Vierow**, Y. Liao*, J. T. Han, MELCOR Assessment against a PUMA Main Steam Line Break Integral Test, PU/NE 06-07, prepared for the U.S. Nuclear Regulatory Commission, July, 2006.
 31. S. T. Revankar, **K. Vierow**, S. M. Oh, N. Brown, K. Hogan*, H. Alkaabi*, Development of Design and Simulation Model and Safety Study of Large-Scale Hydrogen Production Using Nuclear Power - Annual Technical Report, Oct. 1, 2005 through Sept. 15, 2006, PU/NE 06-14, submitted to Sandia National Laboratories/U.S. Department of Energy, Sept. 15, 2006.
 32. **K. Vierow**, Y. Liao*, J. T. Han, MELCOR Assessment against a PUMA Bottom Drain Line Break Integral Test, PU/NE 06-08, prepared for the U.S. Nuclear Regulatory Commission, Feb. 2007.
 33. **K. Vierow**, Y. Liao*, J. T. Han, MELCOR Assessment against a PUMA GDSCS Line Break Integral Test, prepared for the U.S. Nuclear Regulatory Commission, April. 2007.
 34. **K. Vierow**, H. Alkaabi*, K. Hogan*, N. Zhen*, Thermo-Chemical Generation of Hydrogen: Demonstration of MELCOR-H2 For Usage in the Simulation of Pebble

- Bed and Prismatic Very High Temperature Reactors, Final Technical Report, Feb. 20, 2007 through Sept. 1, 2007, submitted to Sandia National Laboratories/U.S. Department of Energy, Sept. 10, 2007.
35. S. B. Rodriguez, R. O. Gauntt, R. Cole, K. McFadden, F. Gelbard, T. Drennen, L. Malczynski, B. Martin, D. L. Y. Louie, L. Archuleta, Md. El-Genk, J.-M. Tournier, F. Espinoza, **K. Vierow**, K. Hogan*, S. T. Revankar, and S. Oh*, Development of Design and Simulation Model and Safety Study of Large-Scale Hydrogen Production Using Nuclear Power, SAND2007-6218, Sandia National Laboratories, Albuquerque, NM, 2007.
 36. **K. Vierow**, I. Choutapalli, K. Hogan*, Y. Liao*, M. Solmos*, S. N. Williams*, Countercurrent Flow Limitation Experiments and Modeling for Improved Reactor Safety, contract research final report, July 1, 2005 through June 30, 2008, submitted to U.S. Department of Energy, Sept. 2008.
 37. **K. Vierow**, F. Best, J. Ford, Y. Hassan, S. McDevitt, J. Ragusa, W. D. Reece, L. Shao, P. Tsvetkov, Z. Bailey*, Safety Curriculum Development to Facilitate Nuclear Energy in the 21st Century, Final Technical Report, October 1, 2007 through September 30, 2008, submitted to U.S. Nuclear Regulatory Commission, Sept. 2008.
 38. **K. Vierow**, T. Aldemir, B. Beeny*, K. Hogan*, K. Metzroth, Uncertainty Quantification in the Reliability and Risk Assessment of Generation IV Reactors - Final Scientific/Technical Report, March 13, 2006 through June 12, 2009", submitted to the U. S. Department of Nuclear Energy, Sept. 10, 2009.
 39. **Vierow, K.**, L. A. Braby, S. Aghara, M. Solom*, Collaborative Research: ARI-MA: Tensioned Fluid Metastable State Special Nuclear Material Detector – Final report for Period of Sept. 2008-Aug. 2009, submitted to the National Science Foundation/Domestic Nuclear Detection Organization, Sept. 2009.
 40. B. G. Woods, T. Palmer, T. Downar, Y. Hassan, **K. Vierow**, P. Tsvetkov, Basic Research on High Temperature Gas Reactor Thermal Hydraulics and Reactor Physics – Progress Report for October 2009-March 2010, submitted to the Nuclear Regulatory Commission, May 2010.
 41. B. G. Woods, T. Palmer, T. Downar, Y. Hassan, **K. Vierow**, P. Tsvetkov, Basic Research on High Temperature Gas Reactor Thermal Hydraulics and Reactor Physics – Progress Report for April 2010-October 2010, submitted to the Nuclear Regulatory Commission, December 2010.

For multiyear contracts that require annual progress reports, only the latest report is listed unless there is a special distinction among the yearly reports.

K. Publications in Popular Press/Magazines

1. **K. Vierow**, "Obtaining the Best of Both Worlds: Dual Experiences in Japan and the U.S.", *The Gakusai Forum for Interdisciplinary Dialogue*, Statistics Research Institute, Tokyo, Japan, Dec. 2000. (in Japanese)
2. **K. Vierow**, Interviewed by Exponent staff, "Nuclear Engineer Joins Faculty", *Exponent*, Purdue University's daily newspaper, p. 1, Mar. 23, 2001.
3. **K. Vierow**, M. Ishii, A. Solomon, Editorial to the Lafayette Journal and Courier, "Uninformed fear can't guide nuclear issues", Jul. 12, 2002.

4. **K. Vierow**, “An American’s View of the Changing U.S.”, *The Gakusai Forum for Interdisciplinary Dialogue*, Statistics Research Institute, Tokyo, Japan, Oct. 2002. (in Japanese)
5. **K. Vierow**, “Thermal Hydraulic Research in the Laboratory for Nuclear Heat Transfer Systems”, *Japanese Journal of Multiphase Flow*, Vol. 18, No. 1, Mar. 2004.
6. **K. Vierow**, Interview by Emil Venere, “Engineers Improving Programs Needed for Nuclear Reactor Safety”, Purdue University News release, <http://news.uns.purdue.edu/html4ever/2005/050125.Vierow.nukesafety.html>, Jan. 25, 2005.
7. **K. Vierow**, “Engineers Improving Programs Needed for Nuclear Reactor Safety”, scientific website *PhysOrg.com*, <http://www.physorg.com/news2824.html>, Jan. 26, 2005.
8. **K. Vierow**, Interview by ANS staff Rick Michal, “Karen Vierow: Severe Accident Code Analysis”, *Nuclear News*, monthly magazine of the American Nuclear Society, Mar. 2005.
9. **K. Vierow**, “Learning from Disaster”, *Mechanical Engineering*, monthly magazine of the American Society of Mechanical Engineers, pp. 18 and 20, Apr. 2005.

INVITED COLLOQUIA AND KEYNOTE LECTURES:

1. Invited lecture, “Working as an International Female Engineer in Japan”, ASME 17th Young Engineers’ Forum: A Focus on Global Engineering and Technical Careers for Women in Japan, **Tokyo, Japan**, Aug., 1999.
2. Colloquium, “Condensation Characteristics of Noncondensable Gas-Steam Mixtures and Analysis of Steam Explosions”, Institute of Nuclear Safety Systems (INSS), Mihama-cho, Fukui-ken, **Japan**, Sept., 2000.
3. Invited lecture, “Nuclear Waste: What are the Issues?”, SCI 460 Science and Technology, Invited by Prof. A. Hirsch, Head of Physics Dept., Purdue University, 2002, 2003, 2004.
4. Colloquium, “Condensation Heat Transfer Studies for Next Generation Passive Containment Heat Removal Systems”, Univ. of IL, Nuclear Plasma and Radiological Department, Champaign-Urbana, IL, Sept. 17, 2002.
5. Invited lecture, “Horizontal Heat Exchanger Experiments”, U.S. Nuclear Regulatory Commission, Rockville, MD, Jul. 7, 2003.
6. Colloquium, “Reactor Safety Investigations with MELCOR Severe Accident Analysis”, Korea Electric Power Corporation (KEPCO), Taejon, **Korea**, Oct. 8, 2003.
7. Colloquium, “Reactor Safety Investigations with MELCOR Severe Accident Analysis and Condensation Heat Removal Experiments”, Korea Institute of Nuclear Safety (KINS), Taejon, **Korea**, Oct. 8, 2003.
8. Colloquium, “Heat Transfer in the Presence of Noncondensable Gases for Nuclear Power Plant Applications”, Korea Institute for Science and Technology (KIST), Seoul, **Korea**, Oct. 10, 2003.
9. Colloquium, “Condensation of Steam and Noncondensable Gas Mixtures in Horizontal Heat Exchangers”, Nihon University, Tokyo, **Japan**, May 20, 2004.
10. Invited Lecture, “MELCOR Modeling of the ESBWR at Purdue University”, U.S. Nuclear Regulatory Commission, Rockville, MD, Sept. 21, 2004.
11. Invited Lecture, “Comparison of the MELCOR, MAAP4 and SCDAP/RELAP5 Severe Accident Codes for PWR Station Blackout Calculations”, hosted by NRC and FAI, MAAP4 Information Exchange Meeting, , Rockville, MD, Sept. 22, 2004.
12. **Keynote Lecture**, “Progress in and Challenges for U.S. Severe Accident Analysis Codes”, Sixth International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operations and Safety (NUTHOS-6), Nara, **Japan**, Oct. 8, 2004. (also noted in International Honors and Awards)
13. Colloquium, “Condensation Heat Transfer Studies for Next Generation Passive Containment Heat Removal Systems”, Pennsylvania State University, Dept. of Mechanical and Nuclear Engineering, University Park, PA, Jan. 13, 2005.
14. Colloquium, “Challenges and Research for Passive Safety System of Advanced LWRs”, University of Wisconsin – Madison, Department of Engineering Physics, Madison, WI, Feb. 8, 2005.
15. Colloquium, “State of the Art Modeling in U.S. Severe Accident Codes and Future Challenges”, at University of CA - Berkeley, Department of Nuclear Engineering, Berkeley, CA, Feb. 14, 2005.
16. Invited Lectures, “MELCOR Phenomenology and Program Structure” and “Modeling with MELCOR”, Ohio State University, Columbus, OH, May 19, 2005.

17. Colloquium, “State-of-the-Art Modeling in U.S. Severe Accident Codes and Current Modeling Uncertainties”, The Ohio State University, Columbus, OH, Oct. 25, 2005.
18. Invited presentation, “Status and Issues for Reactor Safety Code Modeling of Future Reactor Designs”, DOE National Laboratory Workshop, “Advanced Simulations: A Critical Tool for Future Nuclear Fuel Cycles”, Livermore, CA, Dec. 15, 2005.
19. Colloquium, “State-of-the-Art Modeling in Severe Accident Codes and Application of the MELCOR Code to Gen IV Reactors”, Pennsylvania State University, Dept. of Mechanical and Nuclear Engineering, University Park, PA, Jan. 12, 2006.
20. Colloquium, “Condensation Heat Transfer Studies for Next Generation Containment Passive Heat Removal Systems”, Texas A&M University, College Station, TX, Jan. 30, 2006.
21. Colloquium, “Heat Transfer Studies for Design of Passive Containment Heat Removal Systems”, University of Illinois Urbana-Champaign, Department of Nuclear, Plasma and Radiological Engineering, Urbana-Champaign, IL, Feb. 21, 2006.
22. Undergraduate Lecture, “Cool Stuff for Undergrads to Research in Next Generation Reactor Safety”, University of Illinois Urbana-Champaign, Department of Nuclear, Plasma and Radiological Engineering, Urbana-Champaign, IL, Feb. 21, 2006.
23. Colloquium, “Heat Transfer Studies for Design of Passive Containment Heat Removal Systems”, North Carolina State University, Department of Nuclear Engineering, Raleigh, NC, Mar. 30, 2006.
24. Presentation, “MELCOR Modeling of a Pebble Bed Modular Reactor”, Tsinghua University, Beijing, **China**, September 4, 2007
25. Invited speaker, “Severe Accident Investigations and Modeling – Recent Progress and Issues”, proc. of New Horizons in Nuclear Reactor Thermal Hydraulics Bhabha Atomic Research Centre (BARC), Mumbai, **India**, Jan 7-8, 2008. (also noted in International Honors and Awards)
26. Colloquium, “MELCOR Code Assessment by Simulation of TMI-2 Phases 1 and 2”, invited presentation, Atomic Energy Regulatory Board (AERB), Anushaktinagar, Mumbai, **India**, Jan. 10, 2008.
27. Colloquium, Prairie View A&M University, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE), Prairie View, TX, Oct. 27, 2009.
28. Pre-panel special talk, “The SOARCA Project and Analysis of Heat Transfer/Two-Phase Flow during Postulated Severe Accidents”, 2012 Japan-U.S. Seminar on Two-Phase Flow Dynamics, Tokyo, **Japan**, June 7-12, 2012.
29. Invited speaker, “Steam-Water Flooding Studies for Severe Accident Application”, Institute of Nuclear Safety System symposium, Mihama, **Japan**, June 13, 2012.

TEACHING:

COURSES TAUGHT AT PURDUE UNIVERSITY

COURSE TITLE	COURSE NUMBER	SEM/ YEAR	ENROLL MENT	RESPONS I BILITY
Introduction to Nuclear Engineering	200	S01	84	50%
		F01	128	100%
		S02	130	100%
		Sum. 02	1	100%
		F02	123	100%
		S03	108	100%
Nuclear Engineering Radiation Laboratory I	205L	S01	16	50%
		S04	8	10%
Nuclear Engineering Radiation Laboratory II	305/305L	F03	25	80%
Nuclear Thermal Hydraulics I (Fluid Mechanics)	350	F03	25	100%
		F04	32	100%
Nuclear Thermal Hydraulics II (Heat Transfer)	351	S04	18	100%
		S05	28	100%
Nuclear Thermal Hydraulics Laboratory	356/356L	S02	10	33%
	497C/497C-L	S03	12	33%
	355/355L	S04	18	33%
	355/355L	S05	26	33%
	355/355L	S06	42	50%
Senior Design Proposal	449	F04	27	100%
Design in Nuclear Engineering	450	S03	12	100%
		S06	27	100%
Undergraduate Seminar	298/398/498	S02	59	100%
		F02	60	100%
		S03	61	100%
		F03	88	100%
		S04	75	100%
		F04	103	100%
		S05	98	100%
		F05	116	100%
S06	101	100%		
Nuclear Engineering Principles	501	F01	5	100%

MODIFIED COURSES	COURSE NUMBER	SEM
Introduction to Nuclear Engineering	200	F01
Nuclear Thermal Hydraulics Laboratory	355/355L	S02
Nuclear Engineering Principles	501	F01

COURSES TAUGHT AT TEXAS A&M UNIVERSITY

COURSE TITLE	COURSE NUMBER	SEM/YEAR	ENROLLMENT	RESPONSIBILITY
Principles of Nuclear Engineering	101	S07	11	100%
Nuclear Engineering Systems and Design	406 (2 cr.)	F06	22	100%
	406 (3 cr.)	F07	20	100%
	406 (3 cr.)	F08	29	100%
	406 (3 cr.)	F09	37	100%
	406 (3 cr.)	F10	47	100%
	406 (3 cr.)	F11	13	50%
	406 (3 cr.)	F12	58	100%
	406 (3 cr.)	F13	67	100%
The Design of Nuclear Reactors	410 (4 cr.)	S09	28	100%
		S10	35	100%
		S12	44	100%
		S13	51	100%
		S14	56	100%
		S15		100%
Nuclear Reactor Safety Analysis	489	S07	8	100%
Nuclear Reactor Safety	609	F07	4	100%
		F09	8	100%
Severe Accident Analysis	689	S08	5	100%
	689	S12	7	100%
	689	S14	7	100%

DEVELOPED COURSES	COURSE NUMBER	SEM
Nuclear Reactor Safety Analysis	489	S07
Severe Accident Analysis	689	S08

MODIFIED COURSES	COURSE NUMBER	SEM
Nuclear Engineering Systems and Design (extended from 2 to 3 credits)	406	F07
Nuclear Engineering Systems and Design (integrated with NUEN 410 for a two-semester senior design sequence)	406	F09
The Design of Nuclear Reactors (integrated with NUEN 406 for a two-semester senior design sequence)	410	S09

GRADUATE STUDENT SUPERVISION

Ph.D. Degrees Completed at Purdue University

Date	Name of Student	Dissertation Topic
2005	Tiejun Wu	Horizontal In-Tubes Condensation in the Presence of a Noncondensable Gas
2007	Yehong Liao	Modeling Condensation with a Noncondensable Gas for Mixed Convection Flow
2007	Yong Jae Song	Experimental and Theoretical Study of Horizontal Tube Bundle for Passive Condensation Heat Transfer

M.S. Degrees Completed at Purdue University

Date	Name of Student	Thesis Topic
2003	Jennifer Johnson	MELCOR Assessment against SCDAP/RELAP5
2004	Anthony Pollman	The Temperature Dependence of Contact Angle for Water on Metal under High Pressure Conditions
2005	Christopher Burns	Development of Candling Model for Reactor Safety Codes
2006	Kevin Hogan	Pebble Bed Modular Reactor Analysis with MELCOR
2007	Hamad Alkaabi	Severe Accident Analysis Methods for Pebble Bed Modular Reactors

M.S. and Ph.D. Advisory Committee Activity at Purdue University

Degree	Name of Student	Major Professor	School	Grad. Date
M.S.	Alan Meginnis	V. Ransom	NUCL	2001
Ph.D.	Todd Smith	M. Ishii	NUCL	2002
Ph.D.	Robert Bean	C. K. Choi	NUCL	2003
M.S.	Selim Kuran	M. Ishii	NUCL	2003
M.S.	Sidarth Paranjape	M. Ishii	NUCL	2003
Ph.D.	Yunlin Xu	T. J. Downar	NUCL	2004
Ph.D.	Yiban Xu	M. Ishii	NUCL	2004
Ph.D.	Seung Min Oh	S. T. Revankar	NUCL	2004
Ph.D.	Ho Jun Yoon	M. Ishii	NUCL	2004
M.S.	Xiang Cheng Kong	S. T. Revankar	NUCL	2004
M.S.	Ravikanth Sattuluri	S. T. Revankar	NUCL	2004
M.S.	Christopher Cotton	T. J. Downar	NUCL	2004
M.S.	Kyoung Suk Woo	M. Ishii	NUCL	2005
Ph.D.	Suwat Trutassanawin	S. Garimella, J. Braun	ME	2006
Ph.D.	Selim Kuran	M. Ishii	NUCL	2006
M.S.	Philip Smagacz	R. Taleyarkhan	NUCL	2006
M.S.	Hayden Olenik	S. T. Revankar	NUCL	2006
M.S.	Damien Stefanczyck	M. Ishii	NUCL	2006
M.S.	Joseph Lapinskas	R. Taleyarkhan	NUCL	2006

Ph.D. Degrees Completed at Texas A&M University

Date	Name of Student	Dissertation Topic
2009	Kevin Hogan	A Mechanistic Model for Flooding in Vertical Tubes

M.S. Degrees Completed at Texas A&M University

Date	Name of Student	Thesis Topic
2008	Matthew Solmos	An Experimental Investigation of the Countercurrent Flow Limitation
2008	Ni Zhen	Prismatic Modular Reactor Analysis with MELCOR
2009	Adam Bingham	Thermal Hydraulic Analysis of Advanced Mixed Oxide Fuel Assemblies with VIPRE-01
2009	Susan (Niki) Williams	Flooding Experiments with Steam and Water in a Large Diameter Vertical Tube
2010	James Corson	Development of MELCOR Input Techniques For High Temperature Gas-Cooled Reactor Analysis
2010	Adam Redwine	Impact of Climate Change on Long Term Nuclear Power Plant Operation
2011	Andrew Dercher	Development of Modeling Techniques for a Gen IV Fast Reactor
2012	Wes Cullum	Subcooling Effects for Flooding Experiments with Steam and Water in a Large Diameter Vertical Tube
2012	Brad Appel	Multiphysics Design and Simulation of a Tungsten-Cermet Nuclear Thermal Rocket
2012	Brad Beeny	Thermal Hydraulic Analysis of a Reduced Scale High Temperature Gas-Cooled Reactor Test Facility and Its Prototype with MELCOR
2012	Patrick McDermott	Thermal-Hydraulic Analysis of Seed-Blanket Unit Duplex Fuel Assemblies with VIPRE-01
2012	Matthew Solom	Breaking the Tension: Development and Investigation of a Centrifugal Tensioned Metastable Fluid Detector System
2014	Benjamin Larsen	Statistical Analysis of Microgravity Two-Phase Slug Flow via the Drift Flux Model

Graduate Degrees in Progress at Texas A&M University

Degree	Name of Student	Thesis Topic	Anticipated Grad. Date
PhD	Matthew Solom	Extended Operation of the RCIC	2015
PhD	Brad Beeny	3-D Simulation of Reactor Core Cooling	2016
MS	Nicholas Mohammed	CCFL for Air-Water and Steam-Water	2015
MS	Matthew Garza	CCFL for Air-Water and Steam-Water	2016
MS	Matthew Deck	MELCOR Improvements for Severe Accident Modeling	2016

M.S. and Ph.D. Advisory Committee Activity at Texas A&M University

<u>Degree</u>	<u>Name of Student</u>	<u>Major Professor</u>	<u>Dept.</u>	<u>Grad. Date</u>
M.S.	Adam Shepherd	F. Best	NUEN	2009
Ph.D.	Andrew Goldmann	Y. Hassan	NUEN	2009
Ph.D.	Luis Ortega	S. McDeavitt	NUEN	2009
M.S.	Casey Klein	F. Best	NUEN	2009
M.S.	Ngoc Nguyen	F. Best	NUEN	2009
M.S.	Michael Naramore	S. McDeavitt	NUEN	2010
Ph.D.	Navdeep Singh	D. Banerjee	MEEN	2010
M.S.	Sarat Chandra Kuchibhatla	D. Ranjan	MEEN	2010
M.S.	Chan Hyun Park	J. Alvarado	MEEN	2011
M.S.	Michael Leimon	P. Tsvetkov	NUEN	2012
M.S.	Bryce Matsuo	D. Ranjan	MEEN	2012
Ph.D.	Donghyun Shin	D. Banerjee	MEEN	2013
M.S.	Yusuf Turhan	J. Morrison	MEEN	2014
M.S.	Eric Umrigar	J. Alvarado	MEEN	2014
Ph.D.	Chun-Wei Yao	J. Alvarado	MEEN	2014
M.S.	Kun Yu	D. Ranjan, J. Alvarado	MEEN	2014
Ph.D.	Ahmad Al Rashdan	P. Tsvetkov	NUEN	2014
M.S.	Burak Erdogan	J. Morrison	MEEN	2014
M.S.	Gautham Annamalai	J. Morrison	MEEN	2014
Ph.D.	Sarat Chandra Kuchibhatla	D. Ranjan	MEEN	2015
M.S.	Sandeep Pidarti	D. Ranjan, J. N. Reddy	MEEN	2015
Ph.D.	Aaron Totemeier	S. McDeavitt	NUEN	2015
M.S.	Pedro Antonio Gomez	M. Pate	MEEN	2015
M.S.	Jack Cavaluzzi	P. Nelson	NUEN	2015
M.S.	Wenjie Yin	J. Morrison	MEEN	2015
Ph.D.	Vishal Patel	P. Tsvetkov	NUEN	2016

M.S. and Ph.D. Advisory Committee Activity at Other Universities

<u>Degree</u>	<u>Name of Student</u>	<u>Major Professor</u>	<u>Dept.</u>	<u>Grad. Date</u>
Ph.D.	Anthony Pollman	M. di Marzo	U of MD, ME	2011

**EDUCATIONAL GRANTS AND CONTRACTS RECEIVED AT TEXAS A&M UNIV.
(external)**

Source	Investigators	Dates	Vierow's Share (total award)	Project Title
U.S. Nuclear Regulatory Commission	K. Vierow (PI) F. Best J. Ford Y. Hassan S. McDeavitt J. Ragusa W. D. Reece L. Shao P. Tsvetkov	10/01/07- 09/30/08	\$60,000 (\$200,000)	Safety Curriculum Development to Facilitate Nuclear Energy in the 21 st Century
U.S. Nuclear Regulatory Comm.	K. Vierow (PI)	08/01/08- 07/31/10	\$193,961 (\$193,961)	Undergraduate Scholarship Program
U.S. Nuclear Regulatory Comm.	K. Vierow (PI)	09/01/09- 08/31/13	\$376,609 (\$376,609)	Graduate Fellowship Program
Department of Energy	K. Vierow (PI)	09/01/09- 08/31/14	determined annually* FY09: \$165,000 FY10: \$175,000	Nuclear Energy University Programs – Fellowship and Scholarship Cooperative Agreement Dercher, Hackemack, Johns, Sames Patel, Hackemack, Holladay, Kelly, Sames, Smiley
U.S. Nuclear Regulatory Comm.	K. Vierow (PI) J. W. Poston Sr.	10/01/12- 09/30/15	\$224,998**	Iraqi Radioactive Sources Regulatory Authority (IRSRA) – Health Physics
Total			\$970,570	

* The students applied for awards which were passed through the agreement that the PI established between TEES and the DOE. The PI served as the faculty administrator for these awards until no longer Chair of the department's Scholarship and Fellowship Committee.

** The Iraqi graduate student who came to study in our department returned home within the first two months on campus. Therefore, the award was terminated after only a fraction was spent.

TECHNOLOGY TRANSFER/INDUSTRY INTERACTIONS:

CONTRIBUTIONS TO TECHNOLOGY TRANSFER

With 11 years of industrial employment at **Hitachi, Ltd.** (Japan), **General Electric Nuclear Energy** and the **Nuclear Power Engineering Corporation** (Japan), I have established a network of colleagues in the energy sector that participate in joint collaborations. I have had two experimental programs sponsored by industry that have produced fundamental heat transfer data and I regularly provide technical advice to the sponsors.

In spring 2008, I led an effort within the Department of Nuclear Engineering to develop stronger collaborative ties with **Entergy Nuclear**. In response to Entergy Nuclear's request for research topics, I coordinated our research topics. I hosted a meeting with Mr. Charles Turk, TAMU NE Former Student, on February 18, 2008. Dr. Tsvetkov and I received gift funding for a project from Entergy. I have also held discussions in 2008 and 2009 with **Heat Transfer Research, Inc.**, on collaborative submission of a Grant Opportunities for Academic Liaison with Industry (GOALI) research proposal to the National Science Foundation.

In January 2005, I hosted the **President of Bechtel Nuclear, Mr. E. James Reinsch**, at Purdue University's School of Nuclear Engineering. At the time, Mr. Reinsch was also the **Vice President/President-elect of the American Nuclear Society**. The visit promoted interaction among the students and one of the world's largest power plant architect engineering firms, along with providing the current society president first-hand knowledge of the School's strengths and capabilities.

I was a consultant to the **U.S. Nuclear Regulatory Commission**, on contract from Brookhaven National Laboratory for Oct. 2003-July 2004. As a panel member, I provided guidance to the NRC on hypothetical accident issues with the Canadian reactor design ACR-700.

I was a consultant to the **U.S. Department of Energy (DOE)**, on contract from Sandia National Laboratory for Nov. 2013-Nov. 2014. As a reviewer on their proposed Reactor Safety Technologies Program, I provided input on the DOE's fiscal year 14 through fiscal year 19 work plans. I also provided input through this contract to the Electric Power Research Institute (EPRI) and the DOE on their tasks to support the Fukushima recovery efforts.

I am currently a consultant to the **U.S. Department of Energy (DOE)**, on contract from Sandia National Laboratory for Nov. 2014-Nov. 2015. I am providing guidance with respect to use of the MELCOR and MAAP severe accident codes for severe accident use.

INDUSTRY INTERACTIONS

At Purdue University, I received industry sponsorship for experimental investigations of fundamental heat transfer mechanisms occurring in condenser heat exchangers.

Investigation of Condensation Heat Transfer and Fluid Flow in PWR Steam Generator Tubes in the Presence of Noncondensable Gases (2001-2004)

Sponsor: **Institute of Nuclear Safety System, Inc.**, a subsidiary of the Kansai Electric Power Company (Japanese industry)

This project experimentally investigates condensation in the upward leg of PWR steam generator tubes under maintenance or accident conditions. The objective was to determine whether the heat transfer mode under investigation is efficient enough to simplify an existing safety system in nuclear reactors.

Horizontal Heat Exchanger Design and Analysis for Passive Containment Heat Removal Systems (2001-2003)

Sponsor: **Tokyo Electric Power Company, Ltd.** (Japanese industry)

Fundamental research into the condensation heat transfer rates in a horizontal tube was conducted. The experimental data is the basis of new condensation models for nuclear reactor safety system analysis.

Effects of Environmental Changes Due to Climate Fluctuations on Long-term Nuclear Power Plant Operations and New Plant Planning (2008-2010)

Sponsor: **Entergy** (US nuclear industry)

In collaboration with the Entergy staff, this proposed research program assessing the effects of environmental changes due to climate fluctuations on long-term nuclear power plant operations and management.

SERVICE:

SERVICE TO GOVERNMENT AND PROFESSIONAL ORGANIZATIONS

ASME = American Society of Mechanical Engineers, ANS = American Nuclear Society

Referee for Technical Proposals Submitted to Government Agencies

- U.S. Civilian Research and Development Foundation (U.S. Department of State), proposal submitted to the International Science and Technology Center (ISTC), a Science Center established to provide peaceful, non-weapons opportunities to weapons scientists and engineers in the New Independent States (NIS) of the former Soviet Union (2003)
- Department of Energy, Nuclear Engineering and Education Research (NEER) proposals (2004, 2005, 2006)
- Department of Energy, Advanced Nuclear Research at Universities (ANRU) proposals (2004)
- Department of Energy, Nuclear Engineering Research Incentive Program (NERI) proposals (2005, 2006)
- Canadian Natural Science and Engineering Research Council Collaborative Research and Development Grant application (2007)
- Review Panel Member, Nuclear Regulatory Commission FY09 Education Grants, Mar. 17-18, 2009, Bethesda, MD (2009)
- Department of Energy, NE University Programs Research and Development proposals (2009)
- Review Panel Member, Nuclear Regulatory Commission FY10 Education Grants, Mar. 2010, Bethesda, MD (2010)
- Department of Energy, NE University Programs Research and Development proposals (2010)
- Review Panel Member (one of two faculty with Dr. Neil Todreas, MIT), NE University Programs Graduate Fellowship program (2010)
- Office of Nonproliferation Research and Engineering (NA-22) Office of Proliferation Detection, proposals submitted by national laboratories, FY10, (2010)
- Nuclear Regulatory Commission FY12 Education Grant proposals (2012)
- Office of Nonproliferation Research and Engineering (NA-22) Office of Proliferation Detection, proposals submitted by national laboratories, FY12, (2012)
- Department of Energy, Nuclear Energy University Programs (NEUP) Research and Development pre-application proposals (2013)
- Department of Energy, Nuclear Energy University Programs (NEUP) Research and Development full proposals (2014)

Referee for Professional Journals

- Annals of Nuclear Energy (2013)
- ASME Journal of Fluids Engineering (2001, 2005, 2006)
- ASME Journal of Heat Transfer (2002, 2003, 2004, 2005, 2005, 2007, 2008, 2011)

- ASME Journal of Thermal Science and Engineering Applications (2012, 2012, 2014)
- Chemical Engineering Science (2010)
- Energy Conversion and Management Journal (2007)
- Experimental Heat Transfer (2001, 2005)
- Heat and Mass Transfer (**Europe**) (2006, 2010, 2013, 2014, 2014)
- Instrument Society of America, ISATRANS-D-08-00065 (2008)
- International Journal of Heat and Mass Transfer (2007, 2008, 2011, 2012, 2013)
- International Journal of Hydrogen Energy (2012)
- International Journal of Multiphase Flow (2004, 2007, 2011, 2013, 2014)
- International Journal of Transport Phenomena (2004)
- International Journal of Thermal Sciences (2013, 2014)
- Journal of ASTM International (2006)
- Journal of Loss Prevention in the Process Industries (2008)
- Journal of Visualization (**Japan**) (2002, 2004)
- Measurement Science and Technology (2005, 2006)
- Meccanica An International Journal of Theoretical and Applied Mechanics (AIMETA) (2009)
- Nuclear Engineering and Design (1999, 2004, 2004, 2006, 2006, 2006, 2007, 2007, 2007, 2007, 2008, 2008, 2008, 2008, 2009, 2010, 2010, 2011, 2012, 2012, 2012, 2012, 2012, 2012, 2012, 2012, 2013, 2014, 2014)
- Nuclear Engineering and Technology (**Korea**) (2005, 2008)
- Nuclear Technology (2004, 2004, 2005, 2005, 2005, 2006, 2007, 2007, 2008, 2009, 2010, 2010, 2011, 2012, 2012, 2013, 2013, 2013, 2014)
- Progress in Nuclear Energy (2003, 2004, 2013, 2014, 2014)
- Review of Scientific Instruments (Inst. Appl. Phys.) (2006)
- Science and Technology of Nuclear Installations (2011)

Positions in Professional Societies

- **President** ANS Student Chapter of Purdue University 1986-1987
- Member International Exchange Committee of the **Japan Society for Multiphase Flow** 1999-2000
- Member ANS Honors and Awards Committee 2001-2004

- Member ANS Book Publishing Committee 2001-2010
- Member Faculty Advisor Handbook Subcommittee of the ANS Student Sections Committee 2002
- Member ANS Student Sections Committee 2002-2003
- Member ANS Public Speaker’s Bureau 2002-2011
- **Chair** ANS Book Publishing Committee 2003-2007
- Member ANS Thermal Hydraulic Division Program Comm. 2003-2010
- **VP/Pres.-Elect** ANS Alpha Nu Sigma Honor Society 2003-2004
- **President** ANS Alpha Nu Sigma Honor Society 2004-2007
- **Elected Member** ANS Thermal Hydraulics Division Executive Comm. 2004-2011
- Member ANS Thermal Hydraulics Div. Honors and Awards 2005-2008, 2010-2014
- **Chair** ANS Thermal Hydraulics Div. Honors and Awards 2013-2014
- Member ASME K-13 Committee Heat Transfer in Multiphase Systems 2005-2011
- **Secretary** ANS Thermal Hydraulics Div. 2006-2007
- **Treasurer** ANS Thermal Hydraulics Div. 2007-2008
- **Vice Chair/Chair-Elect** ANS Thermal Hydraulics Div. 2008-2009
- **Chair** ANS Thermal Hydraulics Div. 2009-2010

Domestic Conference Activities for Professional Societies

- **Assistant Technical Program Chair**, ANS 2002 Annual Meeting, Hollywood, FL 2002
- Chair Student Programs for ANS 2002 Annual Meeting 2002
- **Assistant Technical Program Chair**, ANS 2005 Annual Meeting, San Diego, CA 2005
- Panel Session Organizer and Moderator, “State-Of-The-Art Reactor Consequence Analyses (SOARCA) Project: Overview, Insights, and Path Forward—Panel”, sponsored by NISD, ANS 2012 Winter Meeting, San Diego, CA 2012
- Numerous Session Chair and Session Organizer positions for ASME, ANS, AIAA/ASME, IMECE/ASME conferences
- Referee Numerous American Nuclear Society conferences
- Referee Numerous American Society of Mechanical Engineers meetings

International Program Activities

- **Technical Program Director**, International Conference on Nuclear Engineering – 2 (ICONE-2) (ASME/JSME), San Francisco, CA (Mar., 1993)
- **Technical Program Director**, The Second Workshop on Super Simulators for Nuclear Power Plants (Univ. of Tokyo), Tokyo, Japan (Oct., 1994)

- Member, Technical Session Organizing Committee, 9th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-9) (ANS), San Francisco, CA (Oct., 1999)
- Member, International Exchange Committee of the Japan Society for Multiphase Flow (1999-2000)
- Member, Technical Program Committee, International Congress on Advanced Nuclear Power Plants (ICAPP'02) (ANS), Hollywood, FL (June, 2002)
- **Thermal Hydraulics Track Leader**, International Congress on Advanced Nuclear Power Plants (ICAPP'02) (ANS), Hollywood, FL (June, 2002)
- Forum Organizer, ASME Fluids Engineering Division Summer Meeting, Forum on Wavelet Applications in Fluid Mechanics, 3rd ASME-JSME Joint Fluids Engineering Conference, (American Society of Mechanical Engineers and Japan Society of Mechanical Engineers) Montreal, Canada (July, 2002)
- Member, Technical Program Committee, 2003 International Congress on Advanced Nuclear Power Plants (ICAPP'03) (ANS, European Nuclear Society, others), Cordoba, Spain (May, 2003)
- Forum Organizer, ASME Fluids Engineering Division Summer Meeting, Forum on Wavelet Applications in Fluid Mechanics, 4th ASME-JSME Joint Fluids Engineering Conference, (American Society of Mechanical Engineers and Japan Society of Mechanical Engineers) Honolulu, HI (July, 2003)
- Member, Technical Program Committee, International Conference on Advanced Nuclear Power Plants and Global Environment (ANP2003/GENES4) (ASME), Kyoto, Japan (Sept., 2003)
- Member, Technical Program Committee, Sixth International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operations and Safety (NUTHOS-6), Nara, Japan (Oct., 2004)
- Member, Technical Program Committee, 11th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-11) (ANS, French Nuclear Society, others), France (Oct., 2005)
- **Assistant Technical Program Chair**, 12th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-12) (ANS), Pittsburgh, PA (Oct., 2007)
- Member, Reviewers' Committee for *Nuclear Engineering and Technology* (NET), journal of the Korean Nuclear Society (2008)
- Member, Technical Program Committee, 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-13) (ANS, Atomic Energy Society of Japan, others), Japan (Oct., 2009)
- Member, International Steering Committee, 13th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-13) (ANS, Atomic Energy Society of Japan, others), Japan (Oct., 2009)
- Member, Advisory Board, Modeling, Experimentation and Validation (MeV) Summer School, established by Idaho National Laboratory, Argonne National Laboratory and Idaho State University, Idaho Falls, ID (2009)
- Member, International Organizing Committee, International Summer School of Nuclear Power Plants, organized by Y. Oka, Univ. of Tokyo, Tokai, Japan (2009)
- Member, Technical Program Committee, NUTHOS-8, Nuclear Reactor Thermal Hydraulics, Operation and Safety, Beijing, China (Oct., 2010)

- Member, Technical Program Committee, 9th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics, Operations and Safety (NUTHOS-9), Kaohsiung, Taiwan, September 9-13, 2012.
- Member, Technical Program Committee, 10th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics, Operations and Safety (NUTHOS-10), Okinawa, Japan, December 14-18, 2014.

Numerous Session Chair and Session Organizer positions for international conferences

FACULTY GOVERNANCE AND SERVICE

Purdue University, School of Nuclear Engineering Committee Membership

- Member Nuclear Engineering Undergraduate Committee 2001-2006
- Member Nuclear Engineering Graduate Committee 2001-2005
- **Faculty Advisor** ANS Student Chapter 2001-2006
- **Faculty Advisor** Alpha Nu Sigma Honor Society 2001-2006
- Member Nuclear Engineering Head Search Advisory Comm. 2001
- **Co-chair** Nuclear Engineering Undergraduate Committee 2002-2005
- Member Nuclear Engineering Computer Committee 2002-2006
- Member Nuclear Engineering Faculty Search Committee 2002
- Member Nuclear Engineering Expansion Committee 2005-2006
- Member Nuclear Engineering Safety Committee 2005-2006
- Member Nuclear Engineering Curriculum Committee 2006

Purdue University, College of Engineering Committee Membership

- Member Schools of Engineering Grievance Committee 2001-2003
- Member Academic Reinvestment Program Proposal Review Committee 2001-2002
- Member Academic Personnel Grievance Committee 2001-2006
- Member Freshman Engineering Education Committee 2002-2003
- Member System of Systems Cluster Hire Search Committee 2003-2006
- Member Engineering Recruitment Committee 2005-2006
- **Elected Member** Committee for Faculty Relations (CFR) 2005-2006
- Member Engineering Faculty Awards Committee 2005-2006

Purdue University Committee Membership

- Member School of Health Science Faculty Search Committee 2001-2002
- Member Campus Grievance Steering Committee 2005-2006

Texas A&M Univ., Dept. of Nuclear Engineering Committee Membership

- Member Scholarship Committee 2006-2011
- **Faculty Advisor** ANS Student Chapter 2006-2011
- **Faculty Advisor** Alpha Nu Sigma Honor Society 2006-current
- Member Distance Education Committee 2007-2008
- **Chair** NUEN Scholarship and Fellowship Committee 2007-2010
- **Faculty Advisor** Women in Nuclear (WIN) Student Chapter 2009-current
- Member NUEN ABET Committee 3 (Program Outcomes) 2010
- **Chair** Graduate Admissions Committee 2011-current
- Member Department Head Search Committee 2012

- **Chair** NUEN Growth Committee 2013
- Member NUEN Growth Committee 2013-current
- Member NUEN Faculty Search and Screen Committee 2013-current
- Member NUEN Post-tenure Review Committee 2013-current

Texas A&M Univ., College of Engineering Committee Membership

- Member Engineering Honors and Awards Committee 2006-2008
- Member Reactor Safety Board 2007-current
- Member TEES Environmental Stewardship Advisory Council 2008-2009
- Alternate Member Institute of Engineering Education and Innovation 2011
- Member Committee of Department Growth Committee Chairs 2013-2014
- Member Engineering Education Center Common Fluid Mechanics Lab Subcommittee 2014-current

Texas A&M University Committee Membership

- Member NSF-ADVANCE Award and Search Committee Training 2011-2012
- Member NSF-ADVANCE Departmental Mini Grant Comm. 2013-current

ACTIVITIES ON DIVERSITY AND CLIMATE:

Diversity – female faculty and students

One of my goals as an educator is to encourage all students to reach for their highest potential. I expend particular effort to assist female students and encourage international exchange.

From my own experiences in the U.S. and Japan, I understand that women can feel there are disadvantages to being female in the engineering world. I have experienced failures that I believe were unearned, due to lack of recognition from colleagues or the inability of peers to accept that women can be technically competent. I also know that there is a significant percentage of male peers in the engineering world that enthusiastically accepts female coworkers who demonstrate their technical capabilities. The environment to succeed is here and I would like female students who are experiencing doubts to recognize this.

Some of my activities related to diversity are listed below.

- Served as the School of Nuclear Engineering host faculty in the Women in Engineering Program recruiting programs, Society of Women Engineers Awards Weekend events and other established programs
- Included female students in my research laboratory
- Initiated a luncheon for all of the female students, faculty and staff in the School of Nuclear Engineering, 2004
- Attended the Purdue University Engineering Diversity Forum: Gender Workshop, Fort Tecumseh, IN, Mar. 10-11, 2004
- Attended the Purdue University Engineering Diversity Forum: Multicultural Workshop, Indianapolis, Mar. 7-9, 2001
- Participated in Purdue University's Women Faculty in Engineering Committee activities
- Wrote a successful proposal on behalf of the School of Nuclear Engineering for an ANS NEED Grant for Academic Programs (NGAP), grant for recruiting underrepresented groups to nuclear engineering, 2005-2006 school year, \$750
- Advised a student group at Texas A&M University who established a new Women in Nuclear student chapter, and advised that chapter from creation to the present.

I have been active in the NSF-sponsored ADVANCE program at Texas A&M University. During 2011-2012, I participated in committee that created training materials for faculty search and screen committees. In 2013, I applied for, and received, a grant to host a pre-eminent female scientist as part of the ADVANCE Speakers program. Dr. Rita Bowser, Vice President of Westinghouse Electric Corporation, visited for two days under this grant, delivering a technical seminar to the Department of Nuclear Engineering, a talk at a Women in Nuclear student chapter meeting and an inspirational "It's okay to wear earrings to a board meeting (and 4 other myths exposed)" seminar to the university audience.

Since 2013, I have also served as a member of the ADVANCE Departmental Mini-grant Committee. This committee reviews applications for ADVANCE grants to improve the diversity climate within departments. The committee also reviews the reports from the funded projects and makes recommendations on whether to continue funding.

On April 7, 2014, I served as a panelist in the ADVANCE Center's Roadmap for a Successful Academic Career Workshop.

Climate – female faculty and students

Since 2011, I have been a member of the TAMU-MOMs group, which meets once or twice a semester to discuss work-life balance issues and provide support to women with young children are in the family. I became the group's organizer in August 2014.

Diversity – international students

Regarding cultural diversity, I would like to encourage more exchange between American and Japanese students and researchers. I am proficient in written and spoken Japanese and I have a deep understanding of the Japanese culture. To this end, I undertook the following while at Purdue University:

- Supported a graduate student to spend two summers at the Tokyo University of Marine Science and Technology participating in experimental research
- Formed a collaboration with the host faculty on the above experimental program that led to the student's Master's Degree thesis
- Established two collaborations with Japanese colleagues that became funded research programs

At Texas A&M University, since the fall of 2012, I have been hosting a Japanese graduate student intern in my lab each fall. The students are from Professor Michitsugu Mori's laboratory at Hokkaido University.

- Takeshi Takahashi, Oct. 1 – Dec. 4, 2012
- Yuhei Hamada, Dec. 6, 2013 – Jan. 16, 2014
- Hiroki Koukami, Oct. 1 – Dec. 7, 2014

From September 2013 through May 2014, I hosted a Fulbright Scholar visiting from Russia, Ms. Alexandra Sitdkova.

Related outreach activities are listed in the Outreach Activities section.

PROFESSIONAL OUTREACH ACTIVITIES:

TECHNICAL OUTREACH ACTIVITIES

Purdue University

- Faculty Judge, 2001 Student ANS Conference, Texas A&M, College Station, TX, Mar. 29-Apr. 1, 2001
- Participant, MELCOR 1.8.5 Users Workshop, Bethesda, MD, May 9-May 14, 2001, and in Albuquerque, NM, May 13-15, 2002
- Faculty Judge, 2003 Student ANS Conference, Univ. of CA Berkeley, Berkeley, CA, Apr. 2-5, 2003
- Faculty Judge, 2004 Student ANS Conference, Univ. of WI, Madison, Madison, WI, Apr. 1-3, 2004
- School of Nuclear Engineering faculty representative, “ENVision”, Purdue University Engineering Open House, West Lafayette, IN, April 17, 2004
- Workshop Participant and Chicago Area Expert to “News and Terrorism: Communicating in a Crisis – Chicago Workshop”, keynote speaker Tom Ridge, U.S. Dept. of Homeland Security, National Academies of Science and Engineering, Radio and Television News Directors Foundation, Chicago, IL, Aug. 11, 2004
- Faculty Judge, 2005 Student ANS Conference, Ohio State University, Columbus, OH, Apr. 14-16, 2005
- Referee, Industrial Roundtable Scholarship Program for the Purdue Engineering Student Council, Apr. 2005

Texas A&M University

- Reviewer for proposals for the Texas A&M-CONACYT: Collaborative Research Grant Program, 2007
- Faculty Judge, 2008 Student ANS Conference, Texas A&M University, College Station, TX, Feb. 28 – Mar. 1, 2008
- Technical judge for TAMU Student Research Week, Topic: Nuclear Sciences and Engineering, Mar. 24-28, 2008
- Technical judge for TAMU Student Research Week, Topic: Nuclear Sciences and Engineering, Mar. 23-27, 2009
- Department faculty representative, Public hearing on Exelon’s proposed nuclear plant in Victoria County, Victoria, TX, April 15, 2010.
- Reviewer for 2012-2013 TAMU Energy Institute Graduate Fellowships
- Reviewer for 2013-2014 TAMU Energy Institute Graduate Fellowships
- Reviewer for proposals to *Explorations: the Texas A&M Undergraduate Journal*, editor: Dr. Sumana Datta, Executive Director, Honors and Undergraduate Research, Texas A&M University, February 2014
- Reviewer for 2014-2015 TAMU Energy Institute Graduate Fellowships
- Member, Texas A&M Energy Institute, 2012-current

DIVERSITY-RELATED OUTREACH ACTIVITIES

School of Nuclear Engineering, Purdue University

- Resource person for Purdue Women in Engineering's "Alums for Seniors" Program, 1999-2000
- Member, Women Faculty in Engineering Committee, 2001-present
- Participant, Purdue University Engineering Diversity Forum: Multicultural Workshop, Indianapolis, Mar. 7-9, 2001.
- School of Nuclear Engineering host faculty for "Seminar for Top Engineering Projects" (STEP), Minority Introduction to Engineering (MITE) and Pre-Freshman and Cooperative Education (PREFACE) summer programs for high school honor students, 2001, 2003, 2004, 2005
- School of Nuclear Engineering host faculty for "Love Engineering at Purdue" (LEAP) summer program for middle school girls, Purdue University, June 12, 2001 and July 8, 2002
- School of Nuclear Engineering host faculty and presenter for "Women in Engineering Program Career Day", program for high school juniors considering engineering at Purdue University, Oct. 15, 2001
- School of Nuclear Engineering host faculty and presenter for "Women in Engineering Program Engineering Preview Day", program for high school juniors considering engineering at Purdue University, Apr. 2002, Oct. 2002, Apr. 2003, Oct. 2003, Apr., 2004, Apr. 2005, Apr. 2006
- Member, Society of Women Engineers Merit Award Selection Committee, Purdue University, 2003, 2004, 2005, 2006
- Participant, Purdue University Engineering Diversity Forum: Gender Workshop, Fort Tecumseh, Mar. 10-11, 2004
- Moderator, Diversity Session, 2004 Student ANS Conference, Univ. of WI, Madison, Apr. 1-3, 2004
- School of Nuclear Engineering host faculty for high school outreach program, collaboration between the Key Learning Community for underrepresented students and the Purdue-based NASA Specialized Center of Research and Training for Advanced Life Support (NSCORT), Aug. 5, 2004

Department of Nuclear Engineering, Texas A&M University

- Panelist, TTVN seminar on Graduate Fellowships and Undergraduate Research Opportunities for Nuclear Engineers, developed by John Ford and Office of Proposal Development, to Prairie View A&M University and Kingsville A&M University, Feb. 8, 2007
- Department of Nuclear Engineering faculty presenter for Society of Women Engineers summer camp, presentation to middle school girls, Jun. 2008
- Host faculty for 3 high school teachers within the Department of Nuclear Engineering, National Science Foundation-funded summer program (Enrichment Experiences in Engineering for Teacher summer program), 4 weeks in Jun. 2008

- Faculty advisor to student group that successfully applied for establishment of a Women in Nuclear (WIN) student chapter at Texas A&M University. 2009 - current
- Colloquium, , “Nuclear Engineering Careers and Grad School Opportunities at TAMU”, Prairie View A&M University, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE), Prairie View, TX, Oct. 27, 2009 (also listed under Recruiting Activities)
- Presentation, University of Houston – Downtown, to the Nuclear Regulatory Commission funded Scholars Academy, an academic unit within UH’s College of Sciences and Technology. Apr. 3, 2012 (also listed under Recruiting Activities).

Texas A&M University

- Member, ADVANCE Award & Search Committee Training, 2011-2012 (also listed under Faculty Governance)
- Reviewer, 2013 Merit and Diversity Fellowships, Office of Graduate Studies, Texas A&M University.
- Host, for Dr. Rita Bowser of Westinghouse Electric Corporation, as an NSF-ADVANCE program speaker (explained above).
- Reviewer, 2014 Diversity Fellowships, Office of Graduate Studies, Texas A&M University.
- Panelist, NSF-ADVANCE Center’s Roadmap for a Successful Academic Career Workshop, April 7, 2014.

RECRUITING OUTREACH ACTIVITIES

School of Nuclear Engineering, Purdue University

- School of Nuclear Engineering host faculty for Freshman Honors Program tours, 2002, 2003
- School of Nuclear Engineering host faculty for ENGR105H freshman honor student tours, 2003, 2004, 2005
- School of Nuclear Engineering speaker at naval career seminar for Navy Reserve Officer Training Corps, (NROTC) freshman students, NS 202, Feb. 2004, Feb. 2005.
- School of Nuclear Engineering host faculty for “Purdue Scholar’s Day”, program for high school juniors considering engineering at Purdue University, Dec. 6, 2003, Dec. 4, 2004, Dec. 3, 2005
- Wrote a successful proposal on behalf of the School of Nuclear Engineering for an ANS NEED Grant for Academic Programs (NGAP), grant for recruiting underrepresented groups to nuclear engineering, 2005-2006 school year
- Recruiting activities for female students listed under Diversity-Related Outreach Activities

Department of Nuclear Engineering, Texas A&M University

- Department of Nuclear Engineering host faculty for ENGR 111 recruiting lectures, Feb. 27, 2007

- Department of Nuclear Engineering host faculty for ENGR 111 recruiting lectures, Feb. 26, 2008
- Chair of the NUEN Scholarship and Fellowship Committee that awards scholarships and fellowships to attract top students
- PI for TAMU Nuclear Engineering Undergraduate Scholarship Grant funded by the U.S. Nuclear Regulatory Commission, Aug. 2008-Jul. 2010
- PI for TAMU Nuclear Engineering Graduate Fellowship Grant funded by the U.S. Nuclear Regulatory Commission, Sept. 2009 – Aug. 2013
- Department of Nuclear Engineering host faculty for ENGR 111 recruiting lectures, Oct. 7, 2008
- Colloquium, “Nuclear Engineering Careers and Grad School Opportunities at TAMU”, Prairie View A&M University, National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE), Prairie View, TX, Oct. 27, 2009 (also listed under Diversity-related Outreach Activities)
- Presentation, University of Houston – Downtown, to the Nuclear Regulatory Commission funded Scholars Academy, an academic unit within UH’s College of Sciences and Technology. Apr. 3, 2012 (also listed as a Diversity-related Outreach Activity).