

Weiju Ren

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Bio:

Dr. Weiju Ren's research and development (R&D) interests cover high temperature materials, mechanical behavior and analysis, materials informatics, verification and validation (V&V) of advanced modeling and simulation, and integrated computational materials engineering. He currently serves as Manager of Operations for Department of Energy's (DOE) Gen IV Materials Handbook Project to develop materials database system and coordinate international collaboration in materials for the Very High Temperature Reactor (VHTR) development, which includes former and present member countries of Canada, China, the European Union, France, Japan, South Africa, South Korea, Switzerland, and the United States. He is an active member of the American Society of Mechanical Engineers (ASME) and leads the development of the ASME Materials Properties Database system to support ASME codes and standards. He also leads the materials R&D collaboration between the United States and China for development of the Fluoride Salt-Cooled High-Temperature Reactor (FHR). In R&D for V&V of computational modeling and simulation, he currently leads the technical development of the Nuclear Energy - Knowledgebase for Advance Modeling and Simulation (NE-KAMS), and serves on the Strategy & Execution Committee and Knowledge Management Committee of DOE's Nuclear Energy Knowledge and Validation Center (NEKVAC) Directorate. He is a member of the American Society for Testing and Materials (ASTM) E08 for fatigue and fracture and E28 for mechanical testing; the ASME Boiler and Pressure Vessel Code (BPVC) WG Materials Database, Section II SG Nonferrous Alloys, Section II TG Data Analysis, and Section III WG Allowable Stress Criteria; the American Society of Metals (ASM); and the Minerals, Metals and Materials Society (TMS).

Areas of Expertise:

- **Nuclear energy systems and structural materials:**
Significant involvement in advanced nuclear energy systems development; International leadership in nuclear structural materials data collaboration and information management; Familiar with various nuclear energy system concepts; Experience in leading US nuclear structural metallic materials R&D activities.
- **Materials mechanical behavior, materials selection, qualification and life prediction:**
Extensive experience in mechanical testing, evaluation, and nuclear system materials selection and qualification; Co-author of ASM Handbooks Vol. 8 (Mechanical Testing and Evaluation) and Vol. 19 (Fatigue and Fracture); R&D awards from professional societies; ASM failure analysis training certificate.

- **Mechanization, automation, and instrumentation:**
Hands-on experience in design, construction, and operation of open as well as closed-loop automatic control systems for materials processing and testing; Decades of working experience in mechanical design and engineering instrumentation.
- **Physical metallurgy, microstructural characterization, and materials processing:**
Hands-on experience in study of structure/property relationships using SEM, EDS, OP, and (limited) TEM;
Substantial involvement in alloy development, hiping, powder sintering, casting, gelcasting, squeeze casting, die casting, and welding in industrial and government contract projects.
- **Working experience with metals, ceramics and polymer composites:**
Decades of R&D in structural metals, ceramics, and composites with publication records; Awards from professional societies for contributions in the areas of high temperature alloys and polymer composites.
- **Structural modeling and finite element analysis:**
ANSYS training certificates for linear and non-linear analyses; Publication records for FEA projects using self-developed computer code and commercial FEA software.
- **Information and knowledge management**
Leadership in developing several data and knowledge bases including the Gen IV Materials Handbook that manages \$180 million worth of high temperature materials information for DOE.
- **ASME Codes and ASTM Standards development**
Significant involvement in ASME Code and ASTM standard development; Founder of Materials Database Working Group under Committee on Materials for ASME Code.
- **Project management:**
Years of experience in managing R&D projects and funds, developing R&D plans and business programs; Project management training certificate; Reviewer for DOE SBIR/STTR and NUEP grants; Strong proposal, report, and presentation skills; Award from ASM International for leadership and professional society contributions.

Work Experience:

- *August 2003 – present: Research Staff Member*
Oak Ridge National Laboratory
Served as Technical Lead of high temperature metallic materials R&D in the US Gen IV Nuclear Energy Systems Program for structural materials evaluation, selection, and ASME Codification from 2003 to 2007;
Planned and initiated the Gen IV Materials Handbook Project for Gen IV Nuclear Energy Systems development, and serve as its Manager of Operations to coordinate collaborations with Canada, China, the European Union, France, Japan, South Korea, South Africa, and Switzerland;
Manage R&D funds up to multi- million dollars; Develop research proposals and project plans;
Conduct and supervise R&D projects for government, private industries, and collaborate with universities; Design, construct, and operate various mechanical/servo-hydraulic testing systems.
- *May 2002 to July 2003: Vice President*
Sigma International Development, Inc.

Developed business projects and wrote business plans, managed daily operations and sales, supervised co-workers.

- *June 1999 to April 2002: Scientist, Senior Scientist*

Air Force Research Laboratory, Wright-Patterson Air Force Base/Systran Federal Corp.

Investigated durability and damage tolerance of military aircraft engine materials for design and life prediction; Design, construct, and operate various manual and computer-controlled mechanical/servo-hydraulic testing systems; Worked on fretting, fretting fatigue and low/high cycle fatigue interaction; Performed modeling of elastic-plastic material behavior at various notches of nickel base superalloy U720; Used ANSYS for non-linear stress-strain analysis; Planned and conducted mechanical testing, data analysis, and SEM microstructural characterization.

- *June 1993 to June 1999: Research Associate, Project Engineer/Assistant Professor.*

Oak Ridge National Laboratory/University of Tennessee

Conducted government and industry contract projects on mechanical metallurgy, mechanical behavior, property evaluation, materials selection, materials processing, and converting R&D results into products; Developed durability design criteria of structural polymeric composites for GM, Chrysler and Ford; Accomplished various contract R&D projects on investigating fatigue, creep, crack growth, fracture behavior and processing methods of materials for Kraft Foods, Lockheed Martin, Thompson Aluminum Casting Company, Doehler-Jarvis Corporation, Rhenium Alloys Inc., and Inco Alloys International; Performed finite element analysis, failure analysis, data analysis and modeling; Supervised technicians, wrote reports, and gave presentations.

- *August 1990 to May 1993: Research Assistant, Teaching Assistant, Metallurgy Lab Supervisor (part time)*

Department of Materials Science and Engineering, University of Tennessee

Conducted contract R&D projects for Haynes International, Detroit Edison Company, DOE, Pressure Vessel Research Council, and Southeastern Universities Research Association, Inc. Hands-on experience with fractography, metallography, X-ray diffraction analysis, microwave sintering and powder synthesis; Developed software for data processing and material behavior modeling; Appointed as supervisor of metallurgy laboratory and supervised 4 teaching assistants; Taught undergraduate metallurgical laboratory courses on heat treatment, microstructural analysis and mechanical testing of materials.

- *January 1989 to August 1990: Visiting Scientist.*

Center for Materials Processing, University of Tennessee

Conducted contract projects for the DOE and the NASA on weldability of stainless steels and microwave processing of ceramics.

- *April 1987 to August 1988: Production Management Associate (part time).*

Simpson Household Appliance Corporation

Responsible for washing machine production line installation and management; Conducted English-Chinese translation; Supervised labor force training.

- *May 1986 to January 1989: Materials and Mechanical Engineer, Project Supervisor*

TJU Mechanical Engineering Research Institute

Conducted R&D projects and budget management; Supervised graduate students and technicians; Developed a computer-controlled servo-hydraulic welding crack simulation testing system and its apparatus control/data processing codes; Conducted FEA on welded structures.

- *September 1983 to May 1986: Research Assistant*

Department of Mechanical Engineering, Tianjin University

Initiated a "Welding Process Simulation System" project and successfully accomplished Phase I development, which included design and construction of the mechanical, electronic, and servo-hydraulic subsystems; Conducted FEA on welded structures.

Professional Affiliations and Honors:

- American Society of Testing and Materials
 - Committee E08 (Fatigue and Fracture), member
 - Committee E28 (Mechanical Testing), member
- American Society for Mechanical Engineers
 - ASME BPVC – WG Materials Database, founder and contributing member
 - ASME BPVC – II (Materials) SG Nonferrous Alloys, member
 - ASME BPVC – III (Nuclear) WG Allowable Stress Criteria, member
- Pressure Vessel and Piping Division Materials & Fabrication Committee, member
- Materials Data Management Consortium, member
- ASM International, Dayton Chapter and Oak Ridge Chapter Executive Committees, 1996-2002
- Tau Beta Pi, National Engineering Honor Society
- Best Paper Award, ESD the Engineering Society, Advanced Composites Conference & Exposition 1998
- President's Award, American Society for Metals, 1998
- Best Paper Award, Society of Plastic Industry Composites Institute, International Composites Expo'98•
- First Place Award, Student International Competition, ASME Pressure Vessels & Piping Conference, 1995

Professional Services

- Reviewer, Journal of Nuclear Materials
- Reviewer, DOE SBIR/STTR Programs Grant Application
- Reviewer, DOE NUEP Program Grant Application
- Reviewer, Journal of Pressure Vessel Technology

Education:

- Ph.D., 1995, The University of Tennessee, Metallurgy Major, Materials Science and Engineering; Dissertation title: "Time-Dependent Fracture Mechanics Characterization of Haynes HR160 Superalloy."
- M.Sc., 1986, Tianjin University, Welding Major, Mechanical Engineering; Thesis title: "Development of Computerized Welding Experimental Simulation System."
- B.Sc., 1983, Tsinghua University, Mechanical Engineering; Graduation design project report title: "Development of Wire Feeding Control System for Automatic TIG Arc Welding."

Selected Business and Development Plans:

- "ASME Materials Database Development Plan - A Database to Support American Society of Mechanical Engineers Codes and Standards," ORNL/TM-2011/160, American Society of Mechanical Engineers and the U.S. Department of Energy, June 30, 2011, Weiju Ren and James Ramirez.
- "Implementation Plan and Initial Development of Nuclear Concrete Materials Database for Light Water Reactor Sustainability Program," ORNL/TM-2010/177, U. S. Department of Energy Light Water Reactor Sustainability Program, U. S. Department of Energy, September 30, 2010, Weiju Ren, Dan Naus, and Barry Oland.
- "Generation IV Reactors Integrated Materials Technology Program Plan: Focus on Very High Temperature Reactor Materials," ORNL/-2008/129, U. S. Department of Energy Generation IV Nuclear Reactor Program, U. S. Department of Energy, August 2008, B. Corwin with Weiju Ren et. al.
- "Next Generation Nuclear Plant Intermediate Heat Exchanger Materials Research and Development Plan," PLN-2804, Revision 0, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, April 2008, R. Wright with W. Ren et. al.
- "Next Generation Nuclear Plant Reactor Pressure Vessel Materials Research and Development Plan," PLN-2803, Revision 0, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, April 2008, R. Wright with W. Ren et. al.
- "Next Generation Nuclear Plant Materials Research and Development Program Plan," INEEL/EXT-05-00758, Revision 2, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, Office of Nuclear Energy Science and Technology, U. S. Department of Energy, September 2005, G. Hayner, W. Corwin with W. Ren et al.
- "Gen IV Materials Handbook Implementation Plan," Oak Ridge National Laboratory, ORNL/TM-2005/77, U. S. Department of Energy Generation IV Nuclear Reactor Program, submitted to the Generation IV Nuclear Reactor Program of the Department of Energy, P. Rittenhouse and W. Ren, March 29, 2005.
- "High Temperature Metallic Materials Test Plan for Generation IV Nuclear Reactors," ORNL/TM-2005/507, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, Office of Nuclear Energy Science and Technology, U. S. Department of Energy, November 30, 2004, W. Ren and R. W. Swindeman.

Publications:

BOOK CHAPTER PUBLICATIONS:

1. "Creep-Crack Growth Testing," ASM Handbook Vol. 8, *Mechanical Testing and Evaluation*, p. 586-595, October 2000, B. Gore, W. Ren and P. Liaw.
2. "Application of the Metal Compression Forming Process for the Production of an Aluminum Alloy Component," *Automotive Alloys*, Edited by S. K. Das, the Minerals, Metals & Materials Society, 1997, S. Viswanathan, W. D. Porter, W. Ren and R. M. Purgert.
3. "Fatigue and Fracture Mechanics of Heat-Resistant (Cr-Mo) Ferritic Steels," ASM Handbook, Vol. a. 19, *Fatigue and Fracture*, p. 704-711, December 1996, R. W. Swindeman & W. Ren.
4. "Welding Research," Vol. 2, 1987, Tianjin University Press, edited and translated by W. Ren and B. Qin.

PATENT AND INVENTION:

1. "Filled Friction Stir Welding Technology for Joining Oxide-Dispersion-Strengthened Alloys," Patent pending, ORNL Technology Transfer and Economic Development Office, ORNL invention disclosure No. 2042, Weiju Ren.

TECHNICAL PUBLICATIONS:

1. "Phase I Materials Property Database Development for ASME Codes and Standards," Proceedings of the ASME 2013 Pressure Vessels & Piping Division Conference, July 14-18, 2013, Paris, France, Weiju Ren and Lianshan Lin.
2. "Consideration of Ecosystem for ICME," Proceedings of the 2nd World Congress on Integrated Computational Materials Engineering: ICME 2013, Proceedings of the 2nd World Congress on Integrated Computational Materials Engineering, July 7-11, 2013, Salt Lake City, Utah, Weiju Ren.
3. "Knowledgebase Development for Data Quality Assessment, Uncertainty Quantification, and Simulation Validation," Program of the ASME 2013 Verification and Validation Symposium, May 22-24, 2013, Las Vegas, Nevada, Weiju Ren, Hyung B. Lee, and Kimberlyn C. Mousseau.
4. "Considerations of Alloy N for Fluoride Salt-Cooled High-Temperature Reactor Applications," PVP2011-57029, Proceedings of the ASME 2011 Pressure Vessels & Piping Division Conference, July 17-21, 2011, Baltimore, Maryland, Weiju Ren, Govindarajan Muralidharan, Dane F. Wilson, David E. Holcomb.

5. "Effective Materials Property Information Management for the 21st Century," invited publication by the Journal of Pressure Vessel Technology, Vol. 133, Issue 4, pp. 044002, August, 2011, Weiju Ren, David Cebon, and Steve Arnold.
6. "A Review of Alloy 800H for Applications In the Gen IV Nuclear Energy Systems," PVP2010-25278, Proceedings of the ASME 2010 Pressure Vessels & Piping Division / K-PVP Conference, July 18-22, 2010, Bellevue, WA, Weiju Ren and Robert Swindeman.
7. "Developing a Nuclear Grade of Alloy 617 for Gen IV Nuclear Energy Systems," Proceedings of 2010 International Congress on Advances in Nuclear Power Plants (ICAPP '10), June 13-17, 2010, San Diego, CA, Weiju Ren, Robert Swindeman, Michael Santella.
8. "Effective Materials Property Information Management for the 21st Century," PVP2009-77314, Proceedings of PVP2009, 2009 ASME Pressure Vessels and Piping Division Conference, July 26-30, 2009, Prague, Czech Republic, Weiju Ren, David Cebon, and Steve Arnold.
9. "Considerations of Alloy 617 Application in the Gen IV Nuclear Reactor Systems – Part I: Mechanical Property Challenges," PVP2009-77313, Proceedings of PVP2009, 2009 ASME Pressure Vessels and Piping Division Conference, July 26-30, 2009, Prague, Czech Republic, Weiju Ren.
10. "Considerations of Alloy 617 Application in the Gen IV Nuclear Reactor Systems – Part II: Metallurgical Property Challenges," PVP2009-78146, Proceedings of PVP2009, 2009 ASME Pressure Vessels and Piping Division Conference, July 26-30, 2009, Prague, Czech Republic, Weiju Ren.
11. "A Review on Current Status of Alloys 617 and 230 for Gen IV Nuclear Reactor Internals and Heat Exchangers," PVT-07-1108, Journal of Pressure Vessel Technology, Volume 131, No. 4, pp. 044002-1~15, August, 2009, Weiju Ren and Robert Swindeman.
12. "A Review Paper on Aging Effects in Alloy 617 for Gen IV Nuclear Reactor Applications," PVT-06-1190, Journal of Pressure Vessel Technology, Volume 131, No. 2, pp. 024002-1~15, April 2009, Weiju Ren and Robert Swindeman.
13. "Preliminary Considerations of Modified 9Cr-1Mo Steel for Gen IV Nuclear Reactor Application," PVP2008-61004, Proceedings of 2008 ASME Pressure Vessels and Piping Division Conference, July 27-31, 2008, Chicago, Illinois, USA, Weiju Ren.
14. "Status of Materials Handbooks for Particle Accelerator and Nuclear Reactor Applications," Journal of Nuclear Materials, Volume 377, Issue 1, p. 94-96, June 30, 2008, Stuart Maloy, Berylene Rogers, Weiju Ren, and Philip Rittenhouse.
15. "Development of Digital Materials Database for Design and Construction of New Power Plants," Proceedings of 2008 International Congress on Advances in Nuclear Power Plants (ICAPP'08), American Nuclear Society Annual Meeting, Paper 8019, June 8-12, 2008, Anaheim CA, USA, Weiju Ren.
16. "Toward the Development of a Consensus Materials Database for Pressure Technology Applications," *Engineering Safety, Applied Mechanics and Non-Destructive Evaluation*, Symposium Volume in Honor of Dr. Spencer H. Bush, Published by Stanford Mechanics Alumni Club (SMAC), and Proceedings of CREEP8, Eighth International Conference on Creep and Fatigue at Elevated Temperatures, July 22-26, 2007, San Antonio, TX, R. W. Swindeman, J. Ramirez and W. Ren.

17. "Initial Investigation on Joining ODS Alloy Using Friction Stir Welding for Gen IV Nuclear Reactor Heat Exchanger Applications," PVP2007-26663, Proceedings of the 2007 ASME Pressure Vessels and Piping Division Conference, July 22-26, 2007, San Antonio, TX, Zhili Feng and Weiju Ren.
18. "Preliminary Consideration of Alloys 617 and 230 for Generation IV Nuclear Reactor Applications," PVP200726091, Proceedings of the 2007 ASME Pressure Vessels and Piping Division Conference, July 22-26, 2007, San Antonio, TX, Weiju Ren and Robert Swindeman.
19. "A Review of Aging Effects in Alloy 617 for Gen IV Nuclear Reactor Applications," PVP2006-ICPVT11-93128, Proceedings of the 2006 ASME Pressure Vessels and Piping Division Conference, July 23 – 27, 2006, Vancouver, BC Canada, Weiju Ren and Robert Swindeman.
20. "Negligible Creep Conditions for Mod 9Cr-1Mo Steel," PVP2006-ICPVT11-93408, Proceedings of the 2006 ASME Pressure Vessels and Piping Division Conference, July 23 – 27, 2006, Vancouver, BC Canada, Bernard Riou, Claude Escaravage, Robert W. Swindeman, Weiju Ren, Marie-Thérèse Cabrillat, and Lucien Allais.
21. "Can Coverage of Alloy 800H in ASME Section III Subsection NH be Extended to 850°C?," PVP2006- ICPVT11-933333, Proceedings of the 2006 ASME Pressure Vessels and Piping Division Conference, July 23 – 27, 2006, Vancouver, BC Canada, Robert Swindeman, Michael Swindeman, and Weiju Ren.
22. "Construction of Web-Accessible Materials Handbook for Generation IV Nuclear Reactors," PVP2005-71780, Proceedings of the 2005 ASME Pressure Vessels and Piping Conference, July 17 – 21, 2005, Denver, Colorado USA, Weiju Ren and Philip Rittenhouse.
23. "A Brief Review of Models Representing Creep of Alloy 617," PVP2005-71784, Proceedings of the 2005 ASME Pressure Vessels and Piping Conference, July 17 – 21, 2005, Denver, Colorado USA, R. W. Swindeman, M. J. Swindeman and W. Ren.
24. "Evaluation of Coatings on Ti-6Al-4V Substrate Under Fretting Fatigue," *Surface and Coatings Technology*, Vol. 192, Issues 2-3, March 21, 2005, Weiju Ren, Shankar Mall, Jeffrey H. Sanders, and Shashi Sharma.
25. "Notch Size Effects on High Cycle Fatigue Limit Stress of Udimet 720," *Materials Science and Engineering*, A357 (2003), p. 141-152, W. Ren and Theodore Nicholas.
26. "Effects and Mechanisms of Low Cycle Fatigue and Plastic Deformation on High Cycle Fatigue Limit Reduction in Nickel-Base Superalloy Udimet 720," *Materials Science and Engineering*, A332 (2002) p.236-248. W. Ren and T. Nicholas.
27. "Degradation of Cu-Al Coating on Ti-6Al-4V Substrate Under Fretting Fatigue Conditions," *Tribology Transactions*, Vol. 46, n 3, July, 2003, p 353-360, J. Sanders with W. Ren et al.
28. "Creep Behavior of a Continuous Strand, Swirl Mat Reinforced Polymeric Composite in Simulated Automotive Environments for Durability Investigation, Part I: Experimental development and Creep- Rupture," *Materials Science and Engineering A* 334, 2002, p. 312 – 319, W. Ren.
29. "Creep Behavior of a Continuous Strand, Swirl Mat Reinforced Polymeric Composite in Simulated Automotive Environments for Durability Investigation, Part II: Creep-Deformation and Model Development," *Materials Science and Engineering A* 334, 2001, p. 320 – 326, W. Ren and D. N. Robinson.

30. "Durability-Based Design Criteria for a Chopped-Glass-Fiber Automotive Structural Composite," *Composites Science and Technology*, 61 (2001), p. 1083-1095, J. Corum with W. Ren et al.
31. "Evaluation of Coatings for High Cycle Fatigue Mitigation," Proceedings of the 2001 Annual Meeting of The Society of Tribologists and Lubrication Engineers (STLE). Orlando FL, May 2001, J. F. Sanders, S. K. Sharma, A. K. Rai, Weiju Ren, and S. Mall.
32. "Investigation on Coatings for Improving Fretting Fatigue Life of Titanium Alloy Ti-6Al-4V for Aerospace Applications," Proceedings of the 6th National Turbine Engine High cycle Fatigue (HCF) Conference, Jacksonville, FL, March 5-8, 2001, J. Sanders and W. Ren et al.
33. "Creep and Creep-Rupture Behavior of a Carbon-Fiber Reinforced Polymeric Composite," Proceedings of SAMPE-ACCE-DOE-SPE, Midwest Advanced Materials and Processing Conferences, Ed., M. Rokosz et al., Dearborn, MI, September 12-14, 2000, p. 155-163, K. C. Liu and W. Ren.
34. "Investigation of Mechanical Properties and Microstructure of Various Molybdenum-Rhenium Alloys," Proceedings of the Space Technology & Applications International Forum (STAIF-99), Albuquerque, NM, January 31-February 4, 1999, Todd Leonhardt with W. Ren et al.
35. "Durability-Based Design Criteria for a Continuous Strand Automotive Structural Composite," **Best Paper Award winner** in the Materials Track, Proceedings of the 13th Annual ESD Advanced Composites Technology Conference & Exposition (ACCE'98), Detroit, MI, September 28-29, 1998, J. M. Corum with W. Ren et al.
36. "Time-Dependent Behavior of a Candidate Polymeric Composite for Automotive Structures," Proceedings of the 13th Annual ESD Advanced Composites Technology Conference & Exposition (ACCE'98), Detroit, MI, September 28-29, 1998, W. Ren, C. R. Brinkman and D. N. Robinson.
37. "Time-Dependent Crack Growth Behavior of a Nitrogen Strengthened Ni-Fe-Cr-Nb-N Alloy 120," *Fatigue, Environmental Factors, and New Materials*, PVP-Vol. 374, p. 349-355, ASME 1998. W. Ren and R. W. Swindeman.
38. "Creep and Creep Rupture Behavior of a Continuous Strand, Swirl Mat Reinforced Polymer Composite in Automotive Environments," **Best Paper Award winner** in the Design category of the Product Awards Competition, Proceedings of International Composites Expo '98, Nashville, TN, January 19-21, 1998. W. Ren and C. R. Brinkman.
39. "Gelcast Tooling: Net Shape Casting and Green Machining," *Materials and Manufacturing Processes*, Vol. 13, Issue 3, p. 389-403, 1998, M. A. Janney, W. Ren, G. H. Kirby, Stephen D. Nunn, and Srinath Viswanathan.
40. "Fatigue Crack Initiation and Propagation Behavior of Pressure Vessel Steels," *Engineering Fracture Mechanics*, Vol. 57, No. 1, p. 85-104, 1997, P. Liaw with W. Ren et al.
41. "Gelcasting H13 Tool Steel," *Advances in Powder Metallurgy and Particulate Materials*, 1996, Metals Powder Industries Federation, Princeton, NJ; Proceedings of the World Conference on Powder Metallurgy and Particulate Materials, Washington, D. C., June 16-21, 1996, M. A. Janney, W. Ren, S. Viswanathan.

42. "S-N Curve for Crack Initiation and an Estimate of Fatigue Crack Nucleus Size," *Fatigue and Fracture Mechanics*, ASTM 27th National Symposium and the *Associated ASTM STP 1296*, 1995, C. Y. Yang with W. Ren et al.

43. "Aging, Welding and Grain Size Effects on the Creep Crack Propagation Behavior of HR160 Alloy," *Heat- Resistant Materials II*, Proceedings of the 2nd International Conference on Heat-Resistant Materials, September 11-14, 1995, Gatlinburg, TN, W. Ren, P. Liaw, R. W. Swindeman, B. G. Gieseke & G. Y. Lai.
44. "Time-Dependent Fracture Mechanics Characterization of Haynes HR160 Superalloy," *Fatigue and Fracture Mechanics in Pressure Vessels and Piping*, PVP-Vol. 304, p. 563-584, ASME 1995. **First Place and \$1,000 Cash Award winner** of The Third Annual Student Paper International Competition, ASME/JSME PVPD, July 1995, W. Ren.
45. "Time-Dependent Fracture Mechanics Characterization of Haynes HR160 Superalloy," PhD. Dissertation, The University of Tennessee, May 1995, W. Ren.
46. "Life Prediction Technology," Proceedings of The 9th Power Plant Dynamics, Control & Testing Symposium, Hyatt Regency Hotel, Knoxville, TN, May 24-26, 1995, P. Liaw with W. Ren et al.
47. "Multiphase Electrodispersion Precipitation of Zirconia Powders," Proceedings of MRS Spring Meeting, San Francisco, CA, April 4-8, 1994, M. T. Harris, W. Ren and T. T. Meek.
48. "Development of Computerized Welding Experimental Simulation System," thesis for master degree, June 1986, Tianjin University, W. Ren.
49. "Development of Wire Feeding Control System for Automatic TIG Arc Welding," graduation design project report for bachelor degree, June 1983, Tsinghua University, W. Ren.

TECHNICAL PROJECT REPORTS:

- "ASME Codes and Standards Materials Properties Database Development and Operation Manual (1.0)," ORNL/TM-2013/91, American Society of Mechanical Engineers, March 8, 2013, Weiju Ren.
- "Interoperability of Material Databases 2012 Progress Report," International Nuclear Energy Research Initiative, Project Number: 2010-005-E, Program Area: Gen IV, Oak Ridge National Laboratory, December 2012, Lianshan Lin and Weiju Ren.
- "Advanced Alloy Development for the Next Generation Liquid Fluoride Salt Cooled Nuclear Reactor," LDRD Report for proposal number. 05714, Oak Ridge National Laboratory, November 2012, Govindarajan Muralidharan, Sheng Dai, David E. Holcomb, Weiju Ren, Michael L. Santella, Raymond R. Unocic, Dane F. Wilson.
- "NE-KAMS Demonstration Final Technical Report," Nuclear Energy Advanced Modeling and Simulation Program, U. S. Department of Energy, September 30, 2012, Hyung Lee, Kimberlyn C. Mousseau, Richard W. Johnson, and Weiju Ren.
- "Nuclear Energy Knowledge Base for Advanced Modeling and Simulation - Functionalities and Operation (Beta)," Nuclear Energy Advanced Modeling and Simulation Program, U. S. Department of Energy, September 30, 2012, Weiju Ren.
- "Gen IV Materials Handbook FY12 Development Status Report," U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, September 30, 2012, Weiju Ren.

- “Investigation of Creep Properties of Dual Microstructure Heat Treatment Powder Metallurgy Superalloy for Advanced Turbine Disks”, ORNL/ LTR-2012/83, U. S. Department of Energy Work for Others Program, U. S. Department of Energy, February 24, 2012, Weiju Ren and Charles S. Hawkins.
- “Gen IV Materials Handbook Functionalities and Operation (3A) – Handbook Version 3.0 –”, ORNL/TM-2011/248_3A, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, February 15, 2012, Weiju Ren.
- “Investigation on Volumetric Dilatometry of Advanced Turbine Disk Superalloy”, ORNL/LTR-2011/443, U. S. Department of Energy Work for Others Program, U. S. Department of Energy, October 3, 2011, Weiju Ren, Mike McAlister, and Edgar Lara-Curzio.
- “Nuclear Concrete Materials Database Phase I Development,” ORNL/TM-2011/ 296, U. S. Department of Energy Light Water Reactor Sustainability Program, U. S. Department of Energy, September 30, 2011, Weiju Ren and Dan Naus.
- “Gen IV Materials Handbook Functionalities and Operation (2A) – Handbook Version 2.0 –,” ORNL/TM-2011/248, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, July 31, 2011, Weiju Ren.
- “ASME Materials Database Development Plan - A Database to Support American Society of Mechanical Engineers Codes and Standards,” ORNL/TM-2011/160, American Society of Mechanical Engineers and the U.S. Department of Energy, June 30, 2011, Weiju Ren and James Ramirez.
- “Nuclear Graphite Irradiation Properties Data Management System Design and Demo Evaluation,” ORNL/TM-2010/313, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, November 23, 2010, Weiju Ren.
- “Implementation Plan and Initial Development of Nuclear Concrete Materials Database for Light Water Reactor Sustainability Program,” ORNL/TM-2010/177, U. S. Department of Energy Light Water Reactor Sustainability Program, U. S. Department of Energy, September 30, 2010, Weiju Ren, Dan Naus, and Barry Oland.
- “Gen IV Materials Handbook FY10 Development Status Report,” ORNL/TM-2010/165, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, August 30, 2010, Weiju Ren.
- “Gen IV Materials Handbook Functionalities and Operation,” ORNL/TM-2009/285, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, December 2, 2009, Weiju Ren.
- “Gen IV Materials Handbook FY09 Development Status Report,” ORNL/TM-2009/95, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, August 30, 2009, Weiju Ren and William R. Corwin.
- “Generation IV Reactors Integrated Materials Technology Program Plan: Focus on Very High Temperature Reactor Materials,” ORNL/-2008/129, U. S. Department of Energy Generation IV Nuclear Reactor Program, U. S. Department of Energy, August 2008, B. Corwin with Weiju Ren et. al.
- “Summary Report On FY2008 Gen IV Materials Handbook Development,” ORNL/TM-2008/106, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, July 15, 2008, Weiju Ren.

- “Next Generation Nuclear Plant Intermediate Heat Exchanger Materials Research and Development Plan,” PLN-2804, Revision 0, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, April 2008, R. Wright with W. Ren et. al.
- “Next Generation Nuclear Plant Reactor Pressure Vessel Materials Research and Development Plan,” PLN-2803, Revision 0, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, April 2008, R. Wright with W. Ren et. al.
- “Gen IV Materials Handbook GIF Release for Architecture and Functionality Demonstration,” ORNL/GEN4/LTR-08-002, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, March 7, 2008, Weiju Ren.
- “Gen IV Materials Handbook FY07 Development Status Report,” ORNL/GEN4/LTR-07-001, U. S. Department of Energy Generation IV Nuclear Energy Systems Program, U. S. Department of Energy, July 15, 2007, Weiju Ren.
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- “Remaining Life Assessment of Steam Headers,” industrial contract report submitted to Detroit Edison Company, January 12, 1994; P. Liaw with W. Ren et al.
- “The Hot Ductility and Hot Cracking Behavior of Modified 316 Stainless Steels Designed for High Temperature Service,” DOE R&D contract report, submitted to The Oak Ridge National Laboratory, July 20, 1989, ORNL/Sub/88-07685/01, T. P. S. Gill with W. Ren et al.
- “Investigation of Welding and Joining Techniques for Advanced Austenitic Alloys,” DOE R&D contract report, September 30, 1989, submitted to The Oak Ridge National Laboratory, T. P. S. Gill with W. Ren et al.

TECHNICAL PRESENTATIONS:

- “Knowledge Based Development for Data Quality Assessment, Uncertainty Quantification, and Simulation Validation,” ASME Verification and Validation Symposium 2013, Las Vegas, Nevada, May 22-24, 2013, Weiju Ren, Kimberlyn Mousseau, Hyung Lee.
- “ASME Materials Properties Database Phase I: Progress Reports and Discussion,” Materials Database Working Group Meeting, ASME Code Week, Miami, FL, May 13 -17, 2013, John Grimes, Weiju Ren, and John Arnold.
- “Interoperability of Material Databases – 2013 Progress Report,” International Nuclear Energy Research Initiative (I-NERI) United States – European Union 2013 Project Review Meeting, I-NERI 2012-005-E, Idaho Falls, ID, April 23-24, 2013, Weiju Ren, Lianshan Lin, Peter Hähner, Timothy Austin.
- “Gen IV Materials Handbook Development and Near-Future Actions – 2013 Spring,” Generation IV International Forum, Very High Temperature Reactor System, Materials Project Management Board Meeting, New York, NY, U.S.A, April 9 - 11, 2012, Weiju Ren.
- “ASME Materials Database Phase I Third Period Progress and Discussion,” American Society of Mechanical Engineers Code Week, Los Angeles CA, February 10 -15, 2013, Weiju Ren.

- “Advanced Alloy Development for the Next Generation Liquid Fluoride Salt Cooled Nuclear Reactors,” Advanced SMR/ARC Working Group Meeting, Oak Ridge National Laboratory, February 5-7, 2013, G. Muralidharan and Weiju Ren et al.
- “Gen IV Materials Handbook, Code Design Base for SMR Specific Materials,” Advanced SMR/ARC Working Group Meeting, Oak Ridge National Laboratory, February 5-7, 2013, Weiju Ren.
- “Gen IV Digital Information and Knowledge Management Infrastructure,” Knowledge Management Collaboration Meeting, Oak Ridge, Tennessee, January 22-23, 2013, Weiju Ren.
- “Data Management System Development Needs and Status 2013 Spring Report,” the 21th Materials Data Management Consortium Meeting, Orlando FL, January 8 - 11, 2013, Weiju Ren.
- “ASME Materials Database Phase-I Second Period Progress and Near-Future Tasks,” American Society of Mechanical Engineers Code Week, Phoenix AZ, November 4-9, 2012, Weiju Ren.
- “Nuclear Energy – Knowledge base for Advanced Modeling and Simulation Pathways Demonstration,” NEAMS Program NE-KAMS Review Meeting, Department of Energy Headquarters, Germantown, October 24, 2012, Kimberlyn C. Mousseau, Weiju Ren, Hyung Lee, and Greg Weirs.
- “Gen IV Materials Handbook Development and Near-Future Actions – 2012 Fall,” Generation IV International Forum, Very High Temperature Reactor System, Materials Project Management Board Meeting, Beijing, P. R. China, October 16 - 18, 2012, Weiju Ren and Bill Corwin.
- “Nuclear Energy – Knowledge base for Advanced Modeling and Simulation Demonstration,” Consortium for Advanced Simulation of Light Water Reactors Co-location Meeting, Oak Ridge National Laboratory, Oak Ridge TN, October 10, 2012, Kimberlyn C. Mousseau, Weiju Ren, Hyung Lee, Greg Weirs, and Rich Johnson.
- “ASME Materials Database Phase-I First Period Progress and Near-Future Tasks,” American Society of Mechanical Engineers Code Week, Washington DC, August 14, 2012, Weiju Ren.
- “Nuclear Energy – Knowledge base for Advanced Modeling and Simulation,” Nuclear Energy Advanced Modeling and Simulation Working Group Meeting, Argonne National Laboratory, Chicago IL, August 7, 2012, Kimberlyn C. Mousseau, Weiju Ren, Hyung Lee, Greg Weirs.
- “Gen IV Materials Handbook Development Needs and Status 2012 Fall Report,” the 20th Materials Data Management Consortium Meeting, Indianapolis IN, July 31 - August 2, 2012, Weiju Ren.
- “Status and Plans for CF8C-Plus Code Case Project,” CF8C-Plus Code Case Review Meeting, Oak Ridge National Laboratory, Materials Science and Engineering Division, June 5, 2012, Weiju Ren.
- “Progress and Status of Gen IV Materials Handbook Graphite Section,” Generation IV International Forum 2012 Spring Graphite Working Group Meeting, Oak Ridge TN, United States, May 10 - 11, 2012, Weiju Ren.
- “Design and Construction of Relational Database for Structural Modeling Verification and Validation,” ASME Verification and Validation Symposium 2012, Las Vegas, Nevada, May 2-4, 2012, Weiju Ren.

- “Gen IV Materials Handbook Development and Near-Future Actions – 2012 Spring,” Generation IV International Forum Very High Temperature Reactor System Materials Project Management Board Meeting, Knutsford, The United Kingdom, March 27 - 29, 2012, Weiju Ren.
- “Tasks and Priorities for ASME Materials Database Development,” American Society of Mechanical Engineers Boiler and Pressure Vessel Code Week, Houston TX, February 5-9, 2012, Weiju Ren.
- “Gen IV Materials Handbook Development Needs and Status 2012 Spring Report,” the 18th Materials Data Management Consortium Meeting, Los Angeles, CA, January 10-12, 2012, Weiju Ren.
- “Nuclear Energy – Knowledge Base for Advanced Modeling and Simulation, CASL Implementation,” Consortium of Advanced Simulation of Light Water Reactors (CASL) Validation Data Working Group Meeting, Department of Energy NE-KAMS, November 10, 2011, Nam Dinh, Kimberlyn Mousseau, Hyung Lee, Weiju Ren, and Sam Alessi.
- “Materials Information Management for ASME Code Development,” American Society of Mechanical Engineers Boiler and Pressure Vessel Code Week, St. Louis MO, November 8, 2011, Weiju Ren.
- “Gen IV Materials Handbook System Review for the NEAMS Program,” NEAMS ORNL Onsite Preparation Review Meeting, DOE Nuclear Energy Advanced Modeling and Simulation Program, Oak Ridge TN, November 2, 2011, Weiju Ren.
- “Gen IV Materials Handbook Development Progress and Near-Future Actions – 2011 Fall,” Generation IV International Forum, Very High Temperature Reactor System Materials Project Management Board Meeting, Wuerlingingen, Switzerland, September 13-15, 2011, Weiju Ren.
- “Progress in Graphite Irradiation Property Information Management Schema Design and Development – 2011 Fall,” Gen IV International Forum 2011 Fall Graphite Working Group Meeting, Jeju, South Korea, September 26-27, 2011, Weiju Ren.
- “Gen IV Materials Handbook Development Needs and Status 2011 Fall Report,” the 18th Materials Data Management Consortium Meeting, Santa Fe, NM, August 1-3, 2011, Weiju Ren.
- “Relational Materials Database Applications in Nuclear Structural Modeling Verification and Validation,” Materials and Technologies for Nuclear Power Plants II, SESSION 2.4K (MF-7-2), Pressure Vessels & Piping Division Conference, July 17-21, 2011, Baltimore, Maryland, Weiju Ren.
- “Considerations of Alloy N for Fluoride Salt-Cooled High-Temperature Reactor Applications,” Materials and Technologies for Nuclear Power Plants II, SESSION 2.4K (MF-7-2), Pressure Vessels & Piping Division Conference, July 17-21, 2011, Baltimore, Maryland, Weiju Ren, Govindarajan Muralidharan, Dane F. Wilson, David E. Holcomb.
- “Organizing and Planning for the ASME Materials Database Development,” BPVC Section II Executive Committee Meeting, ASME Code Week, Las Vegas NV, March 10, 2011, Weiju Ren.
- “ASME Boiler and Pressure Vessel Code Materials Database Development Planning,” ASME Materials Database Working Group Planning Meeting, ASME Code Week, Las Vegas NV, March 10, 2011, Weiju Ren.
- “Interoperability of Material Databases,” I-NERI United States –Euratom 2011 Project Review Meeting, Washington DC, April 12 – 13, 2011, Weiju Ren, Peter Hähner, and Hans-Helmut Over.

- “Gen IV Materials Handbook Development Progress and Near-Future Actions – 2011 Spring,” **invited presentation** at the Generation IV International Forum, Very High Temperature Reactor System Materials Project Management Board Meeting, Vancouver, BC Canada, March 21-24, 2011, Weiju Ren.
- “Gen IV Materials Handbook Development Needs and Status,” the 17th Materials Data Management Consortium Meeting, Melbourne FL, February 27 –March 1, 2011, Weiju Ren.
- “Progress in Graphite Irradiation Property Information Management Schema Design and Development – 2011 Spring,” **invited presentation**, Gen IV International Forum 2011 Spring Graphite Working Group Meeting, Paris, France, January 27-28, 2011
- “Progress in Graphite Irradiation Creep Test Information Management Schema Design and Development,” **invited presentation**, Gen IV International Forum, 2010 Fall Graphite Working Group Meeting, Eastbourne, United Kingdom, September 16-17, 2010, Weiju Ren
- “Gen IV Materials Handbook Development Needs and Status,” The 16th Materials Data Management Consortium Meeting, Oak Ridge National Laboratory, Oak Ridge, TN 37831, July 27 - 29, 2010, Weiju Ren
- “Discussions on the Necessity for Defining a Nuclear Grade of Alloy 617,” 2010 Coordinated NE Materials Meeting, Oak Ridge, Tennessee, July 19-23, 2010, Weiju Ren
- “Gen IV Materials Handbook Database for International Collaboration in Nuclear Energy Systems Development,” ASME 2010 Pressure Vessels & Piping Division / K-PVP Conference, July 18-22, 2010, Bellevue, WA, Weiju Ren and Robert Swindeman.
- “A Review of Alloy 800H for Applications In the Gen IV Nuclear Energy Systems,” PVP2010-25278, ASME 2010 Pressure Vessels & Piping Division / K-PVP Conference, July 18-22, 2010, Bellevue, WA, Weiju Ren and Robert Swindeman.
- “Overview of Advanced Materials Database Development,” **invited presentation**, Advanced Materials Council and Database Meeting, Infrastructure and Geophysical Division, Department of Homeland Security, Washington, DC, July 14 - 15, 2010, Weiju Ren.
- “Developing a Nuclear Grade of Alloy 617 for Gen IV Nuclear Energy Systems,” American Society 2010 Annual Meeting and International Congress on Advances in Nuclear Power Plants (ICAPP ‘10), June 16, 2010, San Diego, CA, Weiju Ren, Robert Swindeman, Michael Santella.
- “Gen IV Materials Handbook and a Paradigm Shift in Materials Data Management,” **invited presentation** to ASME Standard and Technology management, American Society of Mechanical Engineers, Boiler and Pressure Vessel Code Week, San Antonio, Texas, May 2 - 7, 2010, Weiju Ren.
- “Gen IV Materials Handbook Version 1.1 Release and LLD Uploading Methods,” **invited presentation** at the Generation IV International Forum, Very High Temperature Reactor System Materials Project Management Board Meeting, Centurion, Pretoria, South Africa, September 16 – 18, 2010, Weiju Ren.
- “Gen IV Materials Handbook Project Briefing,” DOE Nuclear Energy ORNL Onsite Review Meeting, Oak Ridge, TN, January 26, 2010, Weiju Ren.
- “Discussion on MI V5 Functionalities and Use Cases for Gen IV Materials Handbook Development,” the 15th Material Data Management Consortium Meeting, Raytheon, Tucson AZ, January 12-14, 2010, Weiju Ren.

- “Gen IV Materials Handbook and Design of Its Graphite Section,” **invited presentation** at the Generation IV International Forum Very High Temperature Reactor System Graphite Working Group Meeting, Idaho Falls ID, October 1 - 2, 2009, Weiju Ren.
- “Review and Discussion of 2009 Gen IV Materials Handbook Development,” **invited presentation** at the Generation IV International Forum Very High Temperature Reactor System Materials Project Management Board Meeting, Aix en Provence, France, September 14 – 16, 2009, Weiju Ren and William Corwin.
- “Gen IV Materials Handbook Development Status and Near Future Functionality Needs,” the 14th Material Data Management Consortium Meeting, Future of Flight Center, The Boeing Corporation, Seattle, WA, August 4 - 6, 2009, Weiju Ren.
- “Effective Materials Property Information Management for the 21st Century,” Materials and Technologies Applicable to Nuclear Power Plants, 2008 ASME Pressure Vessels and Piping Conference, July 26-30, 2009, Prague, Czech Republic, Weiju Ren, David Cebon, and Steven M. Arnold.
- “Challenges for Alloy 617 Application in the Gen IV Nuclear Reactor Systems,” Materials and Technologies Applicable to Nuclear Power Plants, 2008 ASME Pressure Vessels and Piping Conference, July 26-30, 2009, Prague, Czech Republic, Weiju Ren.
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- “R&D Capabilities and Activities Supporting Nuclear Energy Development,” Westinghouse-Oak Ridge Materials Meeting, Oak Ridge National Laboratory, Oak Ridge TN, April 24, 2009, Weiju Ren.
- “Gen IV Materials Handbook 2009 Development Status,” **invited presentation** at the Gen IV International Forum Very High Temperature Reactor Provisional Management Board Meeting, Idaho Falls, ID, March 31 – April 2, 2009, Weiju Ren and Bill Corwin.
- “A New Technique Developed for Remote Massive Data Uploading,” the 13th Material Data Management Consortium Meeting, NASA Marshall Space Flight Center, Cambridge, Huntsville, AL, January 13 – 15, 2009, Weiju Ren.
- “Development of Gen IV Materials Handbook Using Granta MI System,” **invited presentation** at the MDMC Member and Granta MI User Seminar during the 12th Material Data Management Consortium Meeting, Queen’s College, Cambridge University, Cambridge, UK, August 6 – 8, 2008, Weiju Ren.
- “Gen IV Materials Handbook Current Status and Common MI System Functionality Needs,” the 12th Material Data Management Consortium Meeting, August 6 – 8, 2008, Queen’s College, Cambridge University, Cambridge, UK, Weiju Ren.
- “A Review of 9Cr-1Mo-V Steel for Gen IV Nuclear Reactor Pressure Vessel Application,” MF-8-1: Materials and Technologies Applicable to Nuclear Power Plants, 2008 ASME Pressure Vessels and Piping Conference, July 27 – 31, 2008, Chicago IL, Weiju Ren.
- “Development Status and Data Exchange Functionalities of Gen IV Materials Handbook,” MF-8-2: Materials and Technologies Applicable to Nuclear Power Plants, 2008 ASME Pressure Vessels and Piping Conference, July 27 – 31, 2008, Chicago IL, Weiju Ren.
- “Development of Digital Materials Database for Design and Construction of New Power Plants,” 2008 International Congress on Advances in Nuclear Power Plants (ICAPP’08), June 8 – 12, 2008, Anaheim, CA, Weiju Ren.

- “Structural Materials Data Collection and Management for NNGNP Development,” Next Generation Nuclear Plant (NNGNP) R&D FY08 Technical Review Meeting, Idaho National Laboratory, Idaho Falls, Idaho, May 5-8, 2008, Weiju Ren.
- “Progress and Functionality Needs in the Construction of Gen IV Materials Handbook Database,” the 11th Material Data Management Consortium Meeting, GE - Energy, Greenville, SC, January 15-17, 2008, Weiju Ren.
- “Update on and Access to Gen IV Materials Handbook,” Gen IV International Forum Very High Temperature Reactor Provisional Management Board Meeting, Petten, Netherlands, October 15-17, 2007, Bill Corwin and Weiju Ren.
- “Microstructural Characterization of Ferritic-Martensitic Steels Using SANS/USANS/USAXS Techniques,” 2007 American Crystallographic Association Annual Meeting Salt Lake City, Utah, July 21 – 26, 2007, Govindarajan Muralidharan with Weiju Ren et al.
- “Initial Investigation on Joining ODS Alloy Using Friction Stir Welding for Gen IV Nuclear Reactor Heat Exchanger Applications,” 2007 ASME Pressure Vessels and Piping Division Conference, July 22-26, 2007, San Antonio, TX, Weiju Ren and Zhili Feng.
- “Preliminary Consideration of Alloys 617 and 230 for Generation IV Nuclear Reactor Applications,” 2007 ASME Pressure Vessels and Piping Division Conference, July 22-26, 2007, San Antonio, TX, Weiju Ren and Robert Swindeman.
- “Current Status and Future Plans for Gen IV Materials Handbook Development,” **invited presentation** at the Gen IV International Forum Very High Temperature Reactor Provisional Management Board Meeting, Mito, Japan, April 17 -20, 2007, Weiju Ren.
- “Development of Online Structural Materials Handbook for Gen IV Nuclear Reactor Systems,” **invited presentation** (host sponsored travel and lodging) at the International Symposium of Materials Database, MITS 2007, Tsukuba Science City, Japan, March 16, 2007, Weiju Ren.
- “The Development of Materials Handbook for Gen IV Nuclear Reactor Systems,” Department of Energy Gen IV Materials Handbook Review Meeting, DOE Headquarters, Germantown MD, February 22, 2007, Weiju Ren.
- “Interactions of Low Cycle Fatigue, Notch Size, Plastic Deformation, and High Cycle Fatigue,” **invited presentation** at Materials Science and Engineering Seminar, University of Tennessee, February 6, 2007, Weiju Ren.
- “Revision 5 of the AFCI Materials Handbook and Status of the Gen IV Materials Handbook,” The Eighth International Workshop on Spallation Materials Technology (IWSMT-8), Taos, NM, October 16 - 20, 2006, Stuart Maloy, Berylene Rogers, Weiju Ren, and Philip Rittenhouse.
- “Small-angle Neutron Scattering Investigations and Computational Modeling of Creep Cavitation in Nanoparticle Strengthened Materials,” August 14, 2006, ORNL FY07 Neutron Sciences Initiative FY 2007 Laboratory Directed Research and Development R&D Fund Review Meeting, W. Ren with G. Muralidharan et al.
- “Application of the MI System to Gen IV Materials Handbook Development at ORNL,” the second 2006 Material Data Management Consortium Semiannual Meeting, July 31 - August 2, 2006, Los Alamos, MN, Weiju Ren.

- “A Review of Aging Effects in Alloy 617 for Gen IV Nuclear Reactor Applications,” 2006 ASME Pressure Vessels and Piping Division Conference, July 23 – 27, 2006, Vancouver, BC Canada, Weiju Ren and Robert Swindeman.
- “Materials Handbook Development for the Gen IV Nuclear Reactor Systems,” PVP06 Materials Database Development Panel, 2006 ASME Pressure Vessels and Piping Division Conference, July 23 – 27, 2006, Vancouver, BC Canada, Weiju Ren.
- “Use of the Mat-DB in Generation IV Project - Purpose, Status, and Collaboration Prospects,” **invited presentation** at Generation IV Nuclear Reactor Project Meeting, European Commission, Joint Research Centre, Monday 29th May 2006, Weiju Ren.
- “Gen IV Nuclear Reactor Materials R&D at the Oak Ridge National Laboratory,” **invited presentation** at Generation IV Nuclear Reactor Project Meeting, European Commission, Joint Research Centre, Monday 29th May 2006, Weiju Ren.
- “High Temperature Alloys for NGNP Intermediate Heat Exchanger,” Initial ANL, INL and ORNL Collaboration Meeting for NGNP IHX and RPV Design, Idaho Fall, Idaho, April 4, 2006, Weiju Ren.
- “Gen IV Materials Handbook Development - History, Status, and Future Plan,” Inaugural Gen IV Materials Handbook Advisory Committee Meeting, Santa Fe, NM, February 28, 2006, Weiju Ren.
- “Modeling and Experiment for Refining Alloy 617 Chemistry for Nuclear Application,” Gen IV Materials Review Committee Meeting, Charlotte, NC, December 14, 2005, Weiju Ren, Mike Santella and Bob Swindeman.
- “Development and Status of Gen IV Materials Handbook,” AFCE-Gen IV Materials Working Group Meeting, Washington, DC, November 17, 2005, Weiju Ren and Pil Rittenhouse.
- “Refinement of Alloy 617 for Nuclear Application and Fossil Energy R&D on 617,” Alloy 617 and Other High Alloys Workshop for Gen IV Nuclear Reactors, Oak Ridge, Tennessee, USA, October 7, 2005, Weiju Ren, Robert W. Swindeman, Mike Santella, John Shingledecker.
- “ORNL R&D Plans and Activities on Alloy 230 and Others for Gen IV and Fossil Energy Programs,” Alloy 617 and Other High Alloys Workshop for Gen IV Nuclear Reactors, Oak Ridge, Tennessee, USA, October 7, 2005, Weiju Ren, Robert W. Swindeman, Mike Santella, John Shingledecker.
- “VHTR and Gen IV High Temperature Metallic Materials R&D Activities at ORNL,” Heatric/Gen IV Nuclear Reactor IHX Meeting, Oak Ridge, Tennessee, USA, August 16 – 17, 2005, Weiju Ren.
- “Construction of Web-Accessible Materials Handbook for Generation IV Nuclear Reactors,” the 2005 ASME Pressure Vessels and Piping Conference, Denver, Colorado, July 17 – 21, 2005, Weiju Ren and Philip Rittenhouse.
- “High Temperature Metallic Materials Testing in Support of High Temperature Design Methodology,” Generation IV International Forum, Very High Temperature Reactor System Materials and Components Provisional Management Board Meeting, Oak Ridge, TN, April 12 – 14, 2005, Robert W. Swindeman and Weiju Ren.
- “Test Plan for High Temperature Metallic Materials for Generation IV Nuclear Reactors,” **invited presentation** at the Generation IV International Forum Very High Temperature Reactor System Materials

and Components Provisional Management Board Meeting, Oak Ridge, TN, April 12 – 14, 2005, Weiju Ren and Robert W. Swindeman.

- “Development of the GEN IV Materials Handbook,” **invited presentation** at the Generation IV International Forum Very High Temperature Reactor System Materials and Components Provisional Management Board Meeting, Oak Ridge, TN, April 12 – 14, 2005, Weiju Ren.
- “An Interactive Materials Database for the Generation IV Nuclear Reactors,” AFCI-Gen IV Materials Working Group Meeting, Albuquerque, New Mexico, March 31 – April 1, 2005, Weiju Ren.
- “Effects of Applied Stresses on Oxidation of Superalloys,” The 137th TMS Annual Meeting, San Francisco, California, February 13-17, 2005, B. R. Barnard with W. Ren et al.
- “Progress in Gen IV High Temperature Metallic Materials Tasks and Activities,” Gen IV Materials Program Semiannual Review Meeting, Oak Ridge, Tennessee, February 2, 2005, W. Ren and R. W. Swindeman.
- “The Representation of Creep and Rupture in Alloy 617 by Continuum Damage Models,” ASM Materials Solutions Conference and Show, Columbus OH, October 18 - 20, 2004, M. J. Swindeman, R. W. Swindeman, J. P. Shingledecker and W. Ren.
- “High Temperature Metallic Materials R&D Plan for NGNP FY05,” Detailed NGNP Materials FY05 Planning Meeting, Oak Ridge, Tennessee, October 12 - 14, 2004, W. Ren and R. W. Swindeman.
- “Environmental Testing And Thermal Aging,” Detailed NGNP Materials FY05 Planning Meeting, Oak Ridge, Tennessee, October 12 - 14, 2004, R. W. Swindeman, W. Ren, T. E. McGreevy, D. F. Wilson and R. Wright.
- “Gen IV High-Temperature Materials Program Including NGNP and Crosscutting Technology Needs,” Second AFCI-Gen IV Materials Working Group Meeting, Oak Ridge, Tennessee, October 5 - 6, 2004, R. W. Swindeman and W. Ren.
- “Materials Database Construction for Generation IV Nuclear Reactors,” VHTR Materials R&D Collaboration Meeting, Generation IV International Forum, Idaho Falls, Idaho, May 4 - 6, 2004, W. Ren.
- “Internals and Structural Materials for Next Generation Nuclear Plant,” VHTR Materials R&D Collaboration Meeting, Generation IV International Forum, Idaho Falls, Idaho, May 4 - 6, 2004, W. Ren, R. Swindeman and P. Rittenhouse.
- “Materials R&D for High-Temperature Metallic Gas-Cooled Fast Reactor Components,” the Gas-Cooled Fast Reactor Materials Meeting, Oak Ridge, TN, April 7 - 8, 2004, W. Ren and R. Swindeman.
- “Evaluation of Coatings for High Cycle Fatigue Mitigation,” the 56th Society of Tribologists and Lubrication Engineers Annual Meeting, Orlando FL, May 20-24, 2001, J. Sanders with W. Ren et al.
- “Durability of Cu-Al Coating under Reduced Fretting Fatigue Loading Conditions,” Fretting Fatigue Project Coordination Meeting, Air Force Research Laboratory, Wright-Patterson Air Force Base, Dayton OH, March 20, 2001, W. Ren.
- “Investigation on Coatings for Improving Fretting Fatigue Life of Titanium Alloy Ti-6Al-4V for Aerospace Applications,” The 6th National Turbine Engine High Cycle Fatigue (HCF) Conference, Jacksonville, FL, March 5-8, 2001, J. Sanders and W. Ren et al.

- “Fretting Fatigue Resistance of TiCN, CrN+MoS₂ and Cu-Based Coating Systems on Ti-6Al-4V for Aircraft Engines,” Fretting Fatigue Project SBIR Coordination Meeting, Air Force Research Laboratory, Wright-Patterson Air Force Base, Dayton OH, July 19, 2000, W. Ren.
- “Preliminary Investigation Results of Coating for Fretting Fatigue Resistance of Ti-6Al-4V for Aircraft Engine Blades and Disks,” Fretting Fatigue Project Reviewing Meeting, the Air Force Institute of Technology, Dayton OH, February 2000, W. Ren.
- “Model Development for Creep Deformation of Chopped Fiber/Baydur 420 IMR/P4 Composite in Representative Automotive Environments,” the 13th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 6, 1999, W. Ren.
- “Baseline Creep Behavior of Carbon Fiber Composite in ±45° and 0/90° Directions,” the 13th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 6, 1999, W. Ren.
- “Development of Creep-Rupture Design Curves and Equations for Chopped Fiber/Baydur 420 IMR/P4 Composite in Representative Automotive Environments,” the 13th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 6, 1999, W. Ren.
- “Effects of Stress Concentrations on P4 Chopped-Fiber Composite,” the 13th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1999, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.
- “Prior Load Effects on Fiber/Baydur 420 IMR/P4 Composite,” the 13th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1999, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.
- “Fatigue, Creep-Fatigue and Creep Crack Characterization of a Superalloy,” **invited presentation**, Air Force Research Laboratory, Wright-Patterson Air Force Base, Dayton OH, February 1, 1999, W. Ren.
- “Damage Tolerance of Chopped-Glass Fiber,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.
- “Prior Load Effects on P4 Chopped-Fiber Composite,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.
- “Finite Element Analysis on a Pick-Up Truck Box Model Made of the CSM Isocyanurate Composite,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, W. Ren, J. Wang and J. M. Corum.
- “Experiments on Carbon Fiber Composite for Creep Behavior in 90° and 45° Orientations,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, W. Ren.

- “Creep Deformation Behavior of Chopped Fiber/Baydur 420 IMR/P4 Composite,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, W. Ren.
- “Creep-Rupture Behavior of Chopped Fiber/Baydur 420 IMR/P4 Composite,” the 12th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1998, W. Ren.
- “Time-Dependent Behavior of a Candidate Polymeric Composite for Automotive Structures,” the 13th Annual ESD Advanced Composites Technology Conference & Exposition (ACCE’98), Detroit MI, September 28-29, 1998, W. Ren, C. R. Brinkman and D. N. Robinson.
- “Microstructure and Time-Dependent Fracture Mechanics Characterization of High Temperature Component Alloys,” **invited presentation**, Exxon Research & Engineering Corp., Clinton NJ, September 24, 1998, W. Ren.
- “Time-Dependent Crack Growth Behavior of a Nitrogen Strengthened Ni-Fe-Cr-Nb-N Alloy 120,” ASME/JSME Joint Pressure Vessels and Piping Division Conference, San Diego CA, July 26-30, 1998. W. Ren and R. W. Swindeman.
- “Welding and Elevated Temperature Service Effects on Creep Crack Behavior of a Nickel Base Superalloy,” **invited presentation**, Edison Welding Institute, Columbus OH, June 22, 1998, W. Ren.
- “Carbon Fiber Polymer Composite - Preliminary Test Results of Its Creep and Creep-Rupture Behavior in Air 50% Relative Humidity,” the 11th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1998, W. Ren.
- “Chopped Glass Fiber Polymer Composite - Preliminary Test Results of Its Creep and Creep-Rupture Behavior in Air 50% Relative Humidity,” the 11th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1998, W. Ren.
- “Creep and Creep Rupture Behavior of a Continuous Strand, Swirl Mat Reinforced Polymer Composite in Automotive Environments,” International Composites Expo ‘98, Nashville, TN. January 19-21, 1998. W. Ren and C. R. Brinkman.
- “Environmental Effects on Creep-Deformation and Rupture Design Curves of the CSM Isocyanurate Composite for Compressive Loadings,” the 10th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1997, W. Ren and C. R. Brinkman.
- “Development of Creep-Rupture Correlation and Design Curves in Various Environments,” the 10th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1997, W. Ren and C. R. Brinkman.
- “Effects of Prior Static, Cyclic, and Sustained Loadings on the CSM Isocyanurate Composite,” the 10th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1997, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.
- “Sensitivity to Stress Concentrations: Holes in the CSM Isocyanurate Composite,” the 10th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of

Lightweight Composite Structures Project, November 1997, J. M. Corum, R. L. Battiste, W. Ren and M. B. Ruggles.

- “Creep Rupture Behavior of the CSM Isocyanurate Composite,” the 9th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1997, W. Ren and C. R. Brinkman.
- “Time-Dependent Deformation Behavior of the CSM Isocyanurate Composite,” the 9th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1997, W. Ren and C. R. Brinkman.
- “Baydur 420 IMR/Chopped Fiber Composite Characterization,” the 9th ACC/ORNL Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1997, J. M. Corum, R. L. Battiste, M. B. Ruggles and W. Ren.
- “Low-Energy Impacts-Effects of Holes on Properties of CSM Isocyanurate Composite,” the 9th ACC/ORNL Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1997, J. M. Corum, R. L. Battiste, M. B. Ruggles and W. Ren.
- “Effects of Prior Static, Cyclic, and Sustained Loadings on CSM Isocyanurate Composite,” the 9th ACC/ORNL Coordination Meeting on Durability of Lightweight Composite Structures Project, May 1997, J. M. Corum, R. L. Battiste, M. B. Ruggles and W. Ren.
- “Creep and Creep Rupture Behavior of Isocyanurate Reinforced with a Continuous-Strand, E-Glass Mat,” the 8th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1996, W. Ren, C. R. Brinkman and H. E. McCoy.
- “Fluid and Vibration Effects on Creep,” the 8th Automotive Composites Consortium/Oak Ridge National Laboratory Coordination Meeting on Durability of Lightweight Composite Structures Project, November 1996, W. Ren, C. R. Brinkman and H. E. McCoy.
- “Creep-Fatigue Crack Propagation Behavior of Haynes HR160 Alloy,” TMS Annual Meeting, February 4 – 8, 1996, Anaheim, CA, W. Ren, P. Liaw, R.W. Swindeman, B.G. Gieseke, G.Y. Lai.
- “Aging, Welding and Grain Size Effects on the Creep Crack Propagation Behavior of HR160 Alloy,” the 2nd International Conference on Heat-Resistant Materials, September 11-14, 1995, Gatlinburg, TN, W. Ren, P. Liaw, R. W. Swindeman, B. G. Gieseke & G. Y. Lai.
- “Time-Dependent Fracture Mechanics Characterization of Haynes HR160 Superalloy,” the Third Annual Student Paper Competition, ASME/JSME Joint Pressure Vessels and Piping Conference, Honolulu, Hawaii, July 1995, W. Ren.
- “Microstructural Characterization of Aged 2-1/4Cr-1Mo Steel,” the Second International Conference on Microstructures and Mechanical Properties of Aging Materials, TMS Annual Meeting, Las Vegas, Nevada, October 1994, P. Liaw with W. Ren et al.
- “Creep Crack Propagation Behavior of Haynes HR160 Alloy,” TMS Materials Week 1994, October 3, 1994, Rosemont IL, W. Ren, P. Liaw, R. W. Swindeman, B. G. Gieseke and G. Y. Lai.

- “A New Method to Synthesize Ultrafine and Fine Ceramic Composite Powders,” ASM Conference on Processing, Fabrication and Application of Advanced Composites, August 9-11, 1993, Long Beach, CA, W. Ren, T. T. Meek and M. Harris.
- “Processing of a Ceramic in a Hybrid Furnace,” the 45th Pacific Coast Regional Meeting, November, 1-4, 1992, San Francisco, CA, T. T. Meek with W. Ren et al.