

# Yan-Ru Lin

R&D Associate Scientist | Oak Ridge National Laboratory

## PROFILE

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Over a decade of research expertise in nuclear materials and electron microscopy. Research focuses on understanding radiation damage effects in neutron and ion irradiated materials primarily using transmission electron microscopy (TEM). Expertise in development and application of aberration-corrected STEM, in-situ TEM, and 4D-STEM techniques.

## EXPERIENCE

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- **Oak Ridge National Laboratory, Oak Ridge, TN**

- **R&D Associate Scientist — 2023–Present**

- Leading international collaborative research on post-irradiation examination of radioactive materials and developing advanced characterization techniques to assess material properties. Emphasis on understanding key degradation mechanisms and mechanical property loss in materials for fusion and next-generation fission reactors.

- **Postdoctoral Research Associate — 2022–2023**

- Researched radiation effects in nuclear structural materials. Installed the world's first liquid electrochemical cell with electron dose monitoring for in-situ TEM experiments. Innovated flash polishing for FIB damage-free TEM sample preparation, developed a machine learning model for automatic defect detection, created a new SRIM-like code for radiation damage calculation, and implemented STEM-WBDF techniques for defect analysis.

- **University of Tennessee, Knoxville, TN**

- **Bredesen Center Joint Faculty — 2024–Present**

- Mentoring one PhD student in the Energy Science & Engineering program.

## EDUCATION

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University of Tennessee, Knoxville, TN — PhD, Materials Science & Engineering, 2021

National Tsing Hua University, Hsinchu, Taiwan — MS, Nuclear Engineering, 2014

National Tsing Hua University, Hsinchu, Taiwan — BS, Nuclear Engineering, 2012

## AWARDS

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2021	Mark Mills Award	American Nuclear Society
2021	Tickle Graduate Fellowship	University of Tennessee
2021	Professional Promise Distinction Award	University of Tennessee
2020	CMP Graduate Research Support	Tennessee Higher Education Commission
2019	MSE GRA Travel Award	University of Tennessee
2019	MeV Summer School Scholarship	U.S. Department of Energy
2018	Phi Kappa Phi	Honor Society of Phi Kappa Phi
2013	College of Science Elite Student Award	National Tsing Hua University
2012	NSRRC Research Fellowship	Taiwan Synchrotron Radiation Center
2012	Graduate Research Scholarship	Taiwan Bureau of Energy

## PEER-REVIEWED JOURNAL ARTICLES

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(citations=455, h-index=12, i10-index=14 on [Google Scholar](#))

1. **Y. Lin**, T. Koyanagi, D.J. Sprouster, C.M. Petrie, W. Fahrenholtz, G.E. Hilmas, Y. Katoh, "Response of  $^{11}\text{B}$  Enriched  $\text{ZrB}_2$  Ultra-High Temperature Ceramic to Neutron Irradiation at Elevated Temperatures", *Acta Materialia* 276 (2024) 120111
2. P. Zhu, **Y. Lin**, S. Agarwal, V. Pauly, S. Taller, S.J. Zinkle, "Comparison of hardening and microstructures of ferritic/martensitic steels irradiated with fast neutrons and dual ions", *Journal of Nuclear Materials* 599 (2024) 155211.
3. TS. Byun, T.G. Lach, **Y. Lin**, D.A. Collins, K. Epps, D.T. Hoelzer, "Characteristics of oxide-dispersion strengthened alloys produced by high-temperature severe deformation", *Journal of Nuclear Materials* 597 (2024) 155129.
4. Z. Yu, **Y. Lin**, M.J. Zachman, S.J. Zinkle, H. Xu, "The role of stacking fault tetrahedra on void swelling in irradiated copper", *Communications Materials* 5, 53 (2024)
5. C.P. Massey, C.K. Goetz, **Y. Lin**, J. Werden, S. Curlin, T.I. Siggillino, S.J. Zinkle, J.T. Busby, "Post-irradiation examination of commercial tantalum alloys following neutron irradiation", *Journal of Nuclear Materials* (2024) 154906
6. P. Zhu, Y. Zhao, **Y. Lin**, J. Henry, S.J. Zinkle, "Defect-specific strength factors and superposition model for predicting strengthening of ion irradiated Fe18Cr alloy", *Journal of Nuclear Materials* 588 (2024) 154823
7. **Y. Lin**, S.J. Zinkle, C.J. Ortiz, J-P. Crocombette, R. Webb, R.E. Stoller "Predicting displacement damage for ion irradiation: Origin of the overestimation of vacancy production in SRIM full-cascade calculations", *Current Opinion in Solid State and Materials Science* 27-6 (2023) 101120
8. Y. Li, M. Song, P. Zhu, **Y. Lin**, Z. Qi, Y. Zhao, S. Levine, S.J. Zinkle, "Flash electropolishing of BCC Fe and Fe-based alloys", *Journal of Nuclear Materials* (2023) 154672
9. S. Agarwal, A. Sawant, M. Faisal, S.E. Copp, J. Reyes-Zacarias, **Y. Lin**, S.J. Zinkle, "Application of a deep learning semantic segmentation model to helium bubbles and voids in nuclear materials", *Engineering Applications of Artificial Intelligence* 126A (2023) 106747
10. **Y. Lin**, A. Bhattacharya, S.J. Zinkle, "Analysis of position-dependent cavity parameters in irradiated metals to obtain insight into fundamental defect migration phenomena", *Materials & Design* 226 (2023) 111668
11. Q. Chen, Y. Cui, C. Zheng, **Y. Lin**, S.J. Zinkle, "A deep learning model for automatic analysis of cavities in irradiated materials", *Computational Materials Science* 221 (2023) 112073
12. **Y. Lin**, A. Bhattacharya, D. Chen, Y. Zhao, J. Kai, J. Henry, S.J. Zinkle, "The role of Cr concentration and temperature on cavity swelling with co-injected helium in dual ion irradiated Fe and Fe-Cr alloys", *Materials & Design* 223 (2022) 111134
13. **Y. Lin**, A. Bhattacharya, S.J. Zinkle, "The effect of helium on cavity swelling in dual-ion irradiated Fe and Fe-10Cr ferritic alloys", *Journal of Nuclear Materials* 569 (2022) 153907
14. Z. Yan and **Y. Lin**, "The effect of sink strength on helium bubble formation at elevated temperatures", *Nuclear Analysis* 1 (2022) 100003
15. **Y. Lin**, W. Chen, L. Tan, D.T. Hoelzer, Z. Yan, C. Hsieh, C. Huang, S.J. Zinkle, "Bubble formation in helium-implanted nanostructured ferritic alloys at elevated temperatures", *Acta Materialia* 217 (2021) 117165
16. S. Agarwal, **Y. Lin**, C. Li, R.E. Stoller, S.J. Zinkle, "On the use of SRIM for calculating vacancy production: Quick calculation and Full-cascade options", *Nuclear Instruments and Methods in Physics Research Section B* 503 (2021) 11-29
17. **Y. Lin**, W. Chen, M. Li, J. Henry, S.J. Zinkle, "Dynamic observation of dual-beam irradiated Fe and Fe-10Cr alloys at 435°C", *Acta Materialia* 209 (2021) 116793

18. **Y. Lin**, A. Bhattacharya, D. Chen, J. Kai, J. Henry, S.J. Zinkle, "Temperature-dependent cavity swelling in dual-ion irradiated Fe and Fe-Cr ferritic alloys", *Acta Materialia* 207 (2021) 116660
19. Z. Yan, T. Yang, **Y. Lin**, Y. Lu, Y. Su, S.J. Zinkle, Y. Wang, "Effects of temperature on helium bubble behavior in Fe-9Cr alloy", *Journal of Nuclear Materials* 532 (2020) 152045
20. J. Brechtel, H. Wang, N. Kumar, T. Yang, **Y. Lin**, H. Bei, J. Neufeind, W. Dmowski, S.J. Zinkle, "Investigation of the thermal and neutron irradiation response of BAM-11 bulk metallic glass", *Journal of Nuclear Materials* 526 (2019) 151771
21. K. Fung, **Y. Lin**, P. Yu, J. Kai, A. Hu "Microscopic origin of black spot defect swelling in single crystal 3C-SiC", *Journal of Nuclear Materials* 508 (2018) 292-298
22. **Y. Lin**, L. Chen, C. Hsieh, M. Chang, S. Lo, F. Chen, J. Kai, "Atomic structure of nano voids in irradiated 3C-SiC", *Journal of Nuclear Materials* 498 (2018) 71-75
23. **Y. Lin**, L. Chen, C. Hsieh, M. Chang, K. Fung, A. Hu, S.C. Lo, F. Chen, J. Kai, "Atomic configuration of point defect clusters in ion-irradiated silicon carbide", *Scientific Reports* 7 (2017) 14635
24. **Y. Lin**, C. Ku, C. Ho, W. Chuang, S. Kondo, J. Kai, "Irradiation-induced microstructural evolution and swelling of 3C-SiC", *Journal of Nuclear Materials* 459 (2015) 276-283
25. **Y. Lin**, C. Ho, W. Chuang, C. Ku, J. Kai, "Swelling of ion-irradiated 3C-SiC characterized by synchrotron radiation based XRD and TEM", *Journal of Nuclear Materials* 455(1) (2014) 292-296
26. **Y. Lin**, C. Ho, C. Hsieh, M. Chang, S. Lo, F. Chen, J. Kai, "Atomic configuration of irradiation-induced planar defects in 3C-SiC", *Applied Physics Letters* 104(12) (2014) 121909

## GRANTS

(Secured 14 grants, totaling over \$1.5M in funding)

1. **Co-PI**, "MEMS-Enabled In Operando Spectroscopy And Imaging During Heating", Technology Commercialization Fund Core Laboratory Infrastructure for Market Readiness (CLIMR), U.S. Department of Energy, Office of Technology Transitions, \$420,000, 2024
2. **PI**, Bredesen Center PhD program fund, UT-Oak Ridge Innovation Institute, \$70,000, 2024
3. **Co-PI**, "Materials Development, Validation, and Testing for Advanced Nuclear Reactors", Technology Commercialization Fund - Voucher Provider Program, U.S. Department of Energy, \$200,000, 2024
4. **PI**, "Post-Irradiation Examination of Ultra High Temperature Ceramics", ORNL Fusion Materials Program, Office of Fusion Energy Sciences, U.S. Department of Energy, \$50,000, 2024
5. **PI**, "4D-STEM Techniques for Nuclear Material Characterization", ORNL Fusion Materials Program, Office of Fusion Energy Sciences, U.S. Department of Energy, \$50,000, 2024
6. **PI**, "APT characterization of oxide dispersoids in additively manufactured 14YWT ferritic Alloys", CNMS Nanoscience Research Program, Project Number CNMS2023-R-02259, Oak Ridge National Laboratory: CNMS Facility Access, U.S. Department of Energy, \$50,000, 2023
7. **Co-PI**, "Electron tomography study of dislocation loops and precipitates in ion irradiated Fe-Cr alloys", Nuclear Science User Facilities - Rapid Turnaround Experiment (NSUF-RTE), Project Number 23-1905, Oak Ridge National Laboratory: LAMDA Facility Access, U.S. Department of Energy, \$50,000, 2023
8. **Co-PI**, "Microstructural characterization of C-C composites", Nuclear Science User Facilities - Rapid Turnaround Experiment (NSUF-RTE), Project Number 23-1908, Oak

- Ridge National Laboratory: LAMDA Facility Access, U.S. Department of Energy, \$50,000, 2023
9. **PI**, “4D-STEM and EELS study of defect bias and helium distribution in dual-ion irradiated Cu”, CNMS Nanoscience Research Program, Project Number CNMS2023-A-01757, Oak Ridge National Laboratory: CNMS Facility Access, U.S. Department of Energy, \$50,000, 2023
  10. **Co-PI**, “Examining microstructures and mechanical properties of neutron and ion irradiated T91, HT9 and 800H alloys”, Nuclear Science User Facilities - Rapid Turnaround Experiment (NSUF-RTE), Project Number 22-4456, Oak Ridge National Laboratory: LAMDA Facility Access, U.S. Department of Energy, \$50,000, 2022
  11. **Co-PI**, “Characterization on 2-D Petal-shaped loop and <001> loop formation mechanism”, CNMS Nanoscience Research Program, Project Number CNMS2022-B-01662, Oak Ridge National Laboratory: CNMS Facility Access, U.S. Department of Energy, \$50,000, 2022
  12. **PI**, “Fundamentals of Cavity Formation in  $\alpha$ -Fe and Fe-Cr Alloys”, Tickle Graduate Fellowship, Tickle College of Engineering, University of Tennessee, \$175,000/5 yrs, 2021
  13. **PI**, “SANS Characterization of Nanostructured Ferritic Alloys”, U.S. Department of Energy, Spallation Neutron Source (SNS), Project Number IPTS-26783.1, Oak Ridge National Laboratory: BL-6 EQ-SANS Facility Access, U.S. Department of Energy, \$50,000, 2021
  14. **PI**, “Fundamentals of Cavity Formation in  $\alpha$ -Fe and Fe-Cr Alloys”, Center for Materials Processing (CMP) Program, Tennessee Higher Education Commission, \$20,000, 2020
  15. **PI**, “Bubble formation of in-situ He-implanted 14YWT and CNA advanced nanostructured ferritic alloys”, Nuclear Science User Facilities - Rapid Turnaround Experiment (NSUF-RTE), Project Number 19-1634, Argonne National Laboratory: IVEM Facility Access, U.S. Department of Energy, \$50,000, 2019

## TECHNICAL REPORTS

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1. **Y. Lin**, R. Stoller, S. Zinkle, “Predicting Displacement Damage for Ion Irradiation: Origin of the Overestimation of Vacancy Production in SRIM Full-Cascade Calculations”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/75 (2024)
2. **Y. Lin**, S. J. Zinkle, J. D. Arregui-Mena, M. G. Burke, “Application of Weak-Beam Dark-Field STEM for Dislocation Loop Analysis”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/75 (2024)
3. **Y. Lin**, T. Koyanagi, C. Petrie, Y. Katoh, D. Sprouster, W. Fahrenholtz, G. Hilmas, “Response of  $^{11}\text{B}$  Enriched  $\text{ZrB}_2$  Ultra-High Temperature Ceramic to Neutron Irradiation at Elevated Temperatures”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/75 (2024)
4. T.S. Byun, T. Lach, **Y. Lin**, “Mechanical and Microstructural Characteristics of Low-Cost ODS Alloys”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/75 (2024)
5. **Y. Lin**, T. Koyanagi, C. Petrie, Y. Kato, D. Sprouster, L.L. Snead, “Dimensional stability of neutron-irradiated Boron-11 enriched zirconium diboride”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/74 (2023)
6. T. Byun, T. Lach, **Y. Lin**, D. Collins, D. Hoelzer, “Basic characteristic of low-cost ODS alloys”, U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/74 (2023)

7. **Y. Lin**, T. Byun, "Impact of helium on the neutron irradiation response of isotropically tailored F82H RAFM steel at 86 dpa", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/74 (2023)
8. D. Collins, **Y. Lin**, K. Hanson, T. Byun, "Feasibility Studies and Downselection of New Materials and Manufacturing Technologies for Nuclear Applications", U.S. DOE, ORNL/TM-2023/3094 (2023)
9. T. Byun, D. Collins, B. Fillingim, T. Feldhausen, H. Hyer, **Y. Lin**, D.T. Hoelzer, K. Hanson, "Downselection and Basic Properties of Additively Manufactured ODS Alloys", U.S. DOE, ORNL/TM-2023/3033 (2023)
10. **Y. Lin**, T. Koyanagi, C.M. Petrie, M.G. Burke, Y. Katoh, "Microstructure of neutron-irradiated Boron-11 enriched Zirconium diboride at elevated temperatures", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/73 (2022)
11. Y Li, Y. Zhao, S.J. Zinkle, A. Bhattacharya, **Y. Lin**, "Irradiation-induced dislocation loop decoration and atomic structure of the petal shaped dislocation loops in Fe-Cr alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/72 (2022) 116-122
12. **Y. Lin** and S.J. Zinkle, "Bubble formation of in-situ He-Implanted 14YWT and CNA advanced nanostructured ferritic alloys", U.S. DOE Office of Nuclear Energy, Nuclear Science User Facility, Annual Report, (2021) 62-65
13. **Y. Lin**, S.J. Zinkle, L. Tan, D.T. Hoelzer, "Bubble formation on helium-implanted nanostructured ferritic alloys at elevated temperatures", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/70 (2021) 136-137
14. **Y. Lin**, S.J. Zinkle, D.T. Hoelzer, L. Tan, "Effect of helium on cavity swelling in dual-ion irradiated high purity iron-chromium alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/70 (2021) 125-130
15. **Y. Lin**, S.J. Zinkle, D.T. Hoelzer, L. Tan, "STEM study of helium-implanted nanostructured ferritic alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/69 (2020) 56-58
16. **Y. Lin**, S.J. Zinkle, W. Chen, M. Li, "Dynamic observation of dual-beam irradiated Fe and Fe-10Cr alloys at 435°C", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/69 (2020) 177
17. **Y. Lin**, S.J. Zinkle, A. Bhattacharya, "Temperature-dependent cavity swelling in dual-ion irradiated Fe and Fe-Cr ferritic alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/69 (2020) 178-179
18. **Y. Lin**, A. Bhattacharya, J. Henry, S.J. Zinkle, "Study of the void swelling in ion irradiated high-purity Fe and Fe-Cr alloys", University of Michigan, Michigan Ion Beam Laboratory (MIBL), Annual Report 2020, (2020) 35
19. **Y. Lin**, S.J. Zinkle, W. Chen, "Dislocation loop evolution of in-situ dual ion irradiated Fe and Fe-10Cr alloy", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/68 (2020) 7-10
20. **Y. Lin**, D.T. Hoelzer, L. Tan, S.J. Zinkle, "Bubble formation in helium-implanted nanostructured ferritic alloys at 500 and 700°C", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/67 (2019) 16-20
21. **Y. Lin**, S.J. Zinkle, D.T. Hoelzer, L. Tan, "Bubble formation behavior for in-situ He-implanted 14YWT and CAN advanced nanostructured ferritic alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/66 (2019) 20-23

22. **Y. Lin**, S.J. Zinkle, A. Bhattacharya, "Cavity denuded zone in dual beam irradiated Fe and FeCr alloys", U.S. DOE Office of Fusion Energy Science, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/66 (2019) 9-14
23. **Y. Lin**, and S.J. Zinkle, "Cavity denuded zone in neutron-irradiated copper", U.S. DOE Office of Fusion Energy, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/65 (2018) 78-82
24. **Y. Lin**, S.J. Zinkle, D.T. Hoelzer, L. Tan "Bubble formation in helium-implanted nanostructured 14YWT and CNA3 ferritic alloys at elevated temperatures", U.S. DOE Office of Fusion Energy, Fusion Materials, Semiannual Progress Report, DOE/ER-0313/65 (2018) 71-73

## PRESENTATIONS

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1. "The Response of  $^{11}\text{B}$  Enriched ZrB<sub>2</sub> Ultra-high Temperature Ceramic to Neutron Irradiation at Elevated Temperatures", The 21st International Conference on Fusion Reactor Materials (**ICFRM**), Granada, Spain, October 2023. (Oral presentation)
2. "Effect of Helium on Cavity Swelling in Dual-ion Irradiated Fe and Fe-10Cr Ferritic Alloys", The Minerals, Metals & Materials Society (**TMS**) Meeting, San Diego, California, USA, March 2023. (Oral presentation)
3. "Helium Effects on Defect Evolution of In-situ Irradiated Additive-manufactured Grade 91 Steel", The Minerals, Metals & Materials Society (**TMS**) Meeting, San Diego, California, USA, March 2023. (Oral presentation)
4. "Effect of electron beam water radiolysis on in-situ liquid cell TEM", Liquid Phase Electron Microscopy Gordon Research Conference (**GRC**), Ventura, California, USA, October 2022. (Poster)
5. "Effect of Cr and He on Cavity Swelling in Dual-Ion Irradiated High Purity Fe-Cr Alloys", The Minerals, Metals & Materials Society (**TMS**) Meeting, Anaheim, California, USA, March 2022. (Oral presentation)
6. "Formation of cavities in Fe and Fe-Cr ferritic alloys", The Materials in Nuclear Energy Systems (**MiNES**) meeting, Philadelphia, USA, November 2021. (Oral presentation)
7. "Effect of Helium on Cavity Swelling in Dual-Ion Irradiated High Purity Fe and Fe-Cr Alloys", The 20th International Conference on Fusion Reactor Materials (**ICFRM**), Online Event, November 2021. (Poster)
8. "Temperature-dependent Cavity Swelling in Dual-Ion Irradiated Fe and Fe-Cr Alloys", The Nuclear Materials Conference (**NuMat**), Online Event, October 2020. (Poster)
9. "Dynamic observation of dual-beam irradiated Fe and Fe-10Cr alloys", The Nuclear Materials Conference (**NuMat**), Online Event, October 2020. (Oral presentation)
10. "Void Swelling in Ion-irradiated High-purity Fe and Fe-Cr alloys: Peak Swelling Temperature and Carbon Effect", The 19th International Conference on Fusion Reactor Materials (**ICFRM**), La Jolla, USA, October 2019. (Oral presentation)
11. "Peak Swelling Temperature in Ion Irradiated High-purity Fe and Fe-Cr Alloys", The Materials in Nuclear Energy Systems (**MiNES**) meeting, Baltimore, USA, October 2019. (Poster)
12. "Bubble formation in helium-implanted nanostructured 14YWT and CNA ferritic alloys at elevated temperatures", The Nuclear Materials Conference (**NuMat**), 2018, Seattle, USA, October 2018. (Poster)
13. "Ion-irradiation-induced defect in 3C-SiC characterized by synchrotron radiation-based XRD and TEM", The 16th International Conference on Fusion Reactor Materials (**ICFRM**), Aachen, Germany, October 2015. (Oral presentation)
14. "The microstructure evolution and point defect-induced swelling in irradiated 3C-SiC", The 17th International Conference on Fusion Reactor Materials (**ICFRM**), Beijing, China, October 2013. (Poster)

15. “Microstructural evolution of Hi-NiClon Type-S SiC composite under ion irradiation at elevated temperatures”, International Symposium on New Frontier of Advanced Si-Based Ceramics and Composites (**ISASC**), Seoul, Korea, March 2012. (Poster)

## PROFESSIONAL ACTIVITIES

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1. **Technical Reviewer**, proposal review for Nuclear Science User Facilities (NSUF) - Rapid Turnaround Experiment (RTE) program, U.S. Department of Energy, 2024-present
2. **Technical Reviewer**, proposal review for Laboratory Directed Research & Development (LDRD) program, Oak Ridge National Laboratory, 2024-present
3. **Guest Editor**, ‘Materials’, Special Issue: Mechanical Behavior and Radiation Response of Materials, 2024.
4. **Program Committee Co-Chair** at ‘The 12th Vacuum and Surface Sciences Conference of Asia and Australia (VASSCAA-12)’, Taipei, Taiwan, 2024
5. **Symposium Session Chair** at ‘The Minerals, Metals & Materials Society (TMS) Meeting’, San Diego, CA, 2023

## MENTORING AND TEACHING EXPERIENCE

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1. **Hsujui Chang**, graduate student in Bredesen Center - Energy Science & Engineering, University of Tennessee, PhD advisor, 2024–Present

## SOFTWARE PROJECTS

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- **IRAD** (<https://code.ornl.gov/liny/irad>)  
Developed a Monte Carlo simulation program using the binary collision approximation (BCA) to simulate ion transport in materials. Addressed the vacancy overestimation problem in SRIM by implementing replacement energy correction in IRAD. The program accurately calculates vacancies/displacements and implanted ion concentration based on total ion fluence.

## PROFESSIONAL MEMBERSHIPS

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The Minerals, Metals, and Materials Society (TMS), American Nuclear Society (ANS), Microscopy Society of America (MSA), and Microanalysis Society (MAS)

## PEER-REVIEW SERVICE

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Acta Materialia, Journal of Nuclear Materials, Journal of Materials Science, Journal of Materials Science & Technology, Nuclear Instruments and Methods in Physics Research Section B

## SKILLS

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Microscopy (TEM, SEM, FIB), Materials Characterization Techniques (XRD, APT, Metallography, SAXS, SANS), Mechanical Testing (Tensile Test & Nanoindentation), Accelerator Techniques (Ion Beam & Synchrotron Radiation), Programming Languages (MATLAB, Python, C++)

## GRADUATE ADVISORS AND POSTDOCTORAL SPONSORS

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1. **Prof. M. Grace Burke**, Oak Ridge National Laboratory (Postdoc)
2. **Prof. Steven J. Zinkle**, University of Tennessee, Knoxville (PhD)
3. **Dr. Arunodaya Bhattacharya**, Oak Ridge National Laboratory (PhD co-advisor)
4. **Prof. Ji-Jung Kai**, National Tsing Hua University, Taiwan (MS)
5. **Dr. Ching-Shun Ku**, National Synchrotron Radiation Center, Taiwan (MS co-advisor)