**Khalid Hattar**

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<http://www.lanl.gov/expertise/profiles/view/khalid-hattar>

U.S. Born; U.S. Citizen; DOE Q-clearance (2009-present)

**OVERVIEW:**

**Research Focus**

## Elucidating the response of microstructures to overlapping extreme conditions via combinations of *in situ* electron microscopy techniques.

## Utilizing film growth and ion beam modification techniques to produce nanostructured systems with tailored thermal, electrical, and mechanical properties

**Research Output** (as of August 9, 2021)

*215**total publications*: 141 journals, 69 conference proceedings, 4 book chapters, and 1 book editor

From *Google Scholar*: Citations =3,217 H-index = 30; i10-index = 78; i100-index = 7

Presentations: 85 Invited, 40 Contributed, and >238 Co-authored Presentations

Patents: 6 issued and 1 pending

# Education

**Ph. D., Materials Science and Engineering, University of Illinois** 2009
 **at Urbana-Champaign**, Urbana-Champaign, IL

Advisor: Prof. Ian M. Robertson

Dissertation: “Thermal and mechanical stability of nanograined face-centered cubic free-standing films.”

**B.S., Chemical Engineering, Materials Science emphasis, University of California,** 2003

**Santa Barbara**, Santa Barbara, CA

**High School Diploma, Materials Science emphasis, Don Bosco Technical Institute,** 1999

Rosemead, CA

# RESEARCH EXPERIENCE

**Sandia National Laboratories,** Albuquerque, NM **2004-Present**

***Principal Member of the Technical Staff – CINT Scientist***2018-present

***Principal Member of the Technical Staff*** 2015-2018

***Senior Member of the Technical Staff***2008-2015

***Visiting Scientist*** 2004-2008

* *In situ* ion irradiation TEM facility
	+ Developed an *in situ* ion irradiation TEM combining a JEOL 2100 TEM, 6 MV Tandem accelerator, and a 10 kV Colutron
	+ Developed the first *in situ* irradiation TEM with ion beam induced luminescence capability.
	+ Developed the first *in situ* ion irradiation TEM with microfluidic capabilities
	+ Developed the first *in situ* ion irradiation dynamic TEM

## *In situ* TEM study concerning:

## Thermal and mechanical properties investigation in pulsed-laser deposited metals and metal alloys

## Investigation into the plasticity of Ta via *in situ* TEM straining experiments

## Development and application of an *in situ* cryo-indentation TEM stage on nanotwinned Cu films

* *In situ* ion irradiation SEM facility
	+ Developed an *in situ* ion irradiation SEM combining a JEOL SEM and 6 MV Tandem accelerator
* Ion Beam Modification
	+ To mimic tritium decay, fusion, and fission environments
	+ Controlled modification of interface structure to investigate the thermal boundary conductance
	+ Development of a Smart Cut process for LiNbO3
	+ Targeted doping of Bi2Te3 and SiC for advanced surface electronics
	+ Ion based sub-surface strain gauge tagging of lap joints.
* Ion Beam Induced Luminescence (IBIL)
	+ Spectra and Lifetime measurements of MOFs, GaN, polymer, and ceramic scintillates
	+ Radiation effects microscopy including an Ion Photon Emission Microscopy (IPEM)

## *In situ* TEM study concerning:

## Abnormal grain growth in pulsed-laser deposited copper, gold, and nickel

## MEMS-based straining of bimodal grain size pulsed-laser deposited nickel

## Investigation into the microstructure of alumina template bismuth nanowires for thermoelectric applications

## Associate Adjunct Professor, Department of Mechanical Engineering 2018-2023

 **University of California, Riverside,** Riverside, CA

## Enhancing collaboration between SNL and UCR

## Visiting Scientist, Department of Nuclear Engineering University of California, 2017-2018

 **Berkeley,** Berkeley, CA

## Assisted in bringing a 3.5 MV Tandem Pelletron into operation

## Visiting Scientist, Microscopes and Ion Accelerators for Materials April 2017

## Investigation, University of Huddersfield, Huddersfield, England

* + The first ever *in situ* ion irradiation (He implants) in an environmental TEM

## Visiting Scientist, Stanford Nano Shared Facilities, Stanford University 2016

 Stanford, CA

## *In situ* TEM annealing experiments in hydrogen environment up to a pressure of 9 mbar.

## *In situ* TEM straining experiments in hydrogen environment up to a pressure of 9 mbar.

## Visiting Scientist, Lawrence Berkeley National Laboratories, Berkeley, CA 2009-2011

## Radiation effects microscopy

## Development of an IPEM for the 88” cyclotron

## Graduate Student Researcher, Los Alamos National Laboratory, Summer 2005, 2006

 Los Alamos, NM

## TEM analysis of Cu/Nb nanomultilayers after: cold rolling, He implantation and annealing, He implantation, and *in situ* TEM straining of Cu/Nb nanomultilayers

## Annealing and vitrification of Stillinger-Webber amorphous Si using molecular dynamic simulations

## Undergraduate Student Researcher, University of California, San Diego Summer 2000

## Archeological excavation of Bronze Age foundry in southern Jordan

**PATENTS** (7 issued)

**Issued**

* Katherine L. Jungjohann and Khalid M. Hattar. Integrated Transmission Electron Microscope. US Patent 11,081,314 filed July 31, 2018 and issued August 03, 2021.
* Thomas Edwin Beechem III, Khalid Mikhiel Hattar, Jon Ihlefeld, Edward S. Piekos, Douglas L. Medlin, Luke Yates and Patrick E. Hopkins. Ion-implanted thermal barrier. U.S. Patent 10,418,304 filed August 21, 2019 and issued September 17, 2019.
* Matt Eichenfield, Jeremy Moore, Thomas A. Friedmann, Roy H. Olsson, Michael Wiwi, Camille Padilla, James Kenneth Douglas, Khalid Mikhiel Hattar. Second harmonic generation in resonant optical structures. U.S. Patent 18/9865987 filed June 5, 2017, and issued January 9, 2018.
* Khalid Mikhiel Hattar, Jon-Erik Mogonye, Somuri V. Prasad. Ion beam modification of noble metals for electrical contacts. U.S. Patent 2016/0027547 filed July 16, 2015, and issued January 28, 2016.
* Roy H. Olsson, Thomas A. Friedmann, Sara Jensen Homeijer, Michael Wiwi, Khalid Mikhiel Hattar, Blythe Clark, Todd Bauer, Stuart B. Van Deusen. A single crystal micromechanical resonator and fabrication methods thereof. U.S. Patent 2014/288,236 filed May 27, 2014, and issued December 20, 2016.
* Timothy J. Boyle, Khalid Mikhiel Hattar, Fernando Henry Garzon and Stephen J. Bauer. Tattletale ion-implanted nanoparticles. U.S. Patent 2019/0064111 filed August 21, 2018, and issued December 24, 2019
* Katherine L. Jungjohann, William.M. Mook, Claire Chisholm, Michael J. Shaw, Khalid Hattar, Paul C. Galambos, A.J. Leenheer, Sean J. Hearne. Active mechanical-environmental-thermal MEMS device for nanoscale characterization. U.S. Patent 15/925,118 filed March 19, 2018 and issued May 5, 2020.

**ACADEMIC JOURNALS**

**Edited**

Topic Editor, *Nanomaterials*, MDPI 2020-Present

Editor, *Heliyon*, Elsevier Journal 2018-2020

Guest editor (with Y. Wang), *Nanomaterials* Special Focus Issue: *Thermal, Mechanical and Radiation Stability of Nanostructured Metals*. 2021

Guest editor (with F. Abdeljawad), *Nanomaterials* Special Focus Issue: *Thermal, Mechanical and Radiation Stability of Nanostructured Metals*. 2021

Guest editor (with Y. Wang), *Materials* Special Focus Issue: *Radiation Damage in Materials: Helium Effects*. 12(1), 91, 2020

Guest editor (with D. Kaoumi, W. Weber, and J. Ribis), *Journal of Materials Research* Special Focus Issue: *Radiation Damage Characterization: State of the Art, Challenges, and Protocols.* 30(09), 2015

Guest editor (with S. Ohnuki, J. Hinks, E. Oliviero, N. Hashimoto), *Materials Transactions* Special Issue: *In Situ TEM Observation of High Energy Beam Irradiation.* 55(3), 2014

**Served as Peer Reviewer for These Journals (63):**

* *American Chemical Society (ACS) Omega*
* *ACS Applied Nano Materials*
* *American Institute of Physics (AIP) Proceedings*
* *Applied Energy*
* *Applied Materials Today*
* *Applied Physics A*
* *Applied Physics Letters (APL)*
* *Applied Surface Science*
* *Arabian Journal of Chemistry*
* *Chemical Physical Letters*
* *Chemistry of Materials*
* *Chinese Optics Letters*
* *Computational Materials Science*
* *Corrosion Science*
* *Crystals*
* *CrystEngComm*
* *Current Nanoscience*
* *Current Opinion in Solid State & Materials Science (COSSMS)*
* *Fusion Science and Technology*
* *Heliyon*
* *International Journal of Hydrogen Energy*
* *International Journal of Mechanical Sciences*
* *Journal of Alloys and Compounds (JAlCom)*
* *Journal of American Ceramic Society*
* *Journal of Applied Physics (JAP)*
* *Journal of Materials Research (JMR)*
* *Journal of Materials Science (JMS)*
* *Journal of Materials Science & Technology*
* *Journal of Nuclear Materials (JNM)*
* *Journal of Physical Chemistry*
* *Journal of Physical Chemistry Letters*
* *JOM: The Member Journal of TMS*
* *Materialia*
* *Materials & Design*
* *Materials Characterization*
* *Materials Letters*
* *Materials Research Letters (MRL)*
* *Materials Today*
* *Materials Transactions*
* *Metals*
* *Micromachines*
* *Micron*
* *Nanomaterials*
* *Nanoscale*
* *Nanoscale Horizons*
* *Nature Communications*
* *Nuclear Materials and Energy*
* *Nuclear Instruments and Methods in Physics Research, A*
* *Nuclear Instruments and Methods in Physics Research, B*
* *Nuclear Science and Techniques*
* *Optical Materials*
* *Optics and Laser Technology*
* *Philosophical Magazine*
* *Philosophical Magazine Letters*
* *Physics Procedia*
* *Physics Review Letters*
* *Quantum Beam Science*
* *Recent Patents on Materials Science*
* *Science Advances*
* *Scientific Reports*
* *Scripta Materialia*
* *Superlattices and Microstructures*
* *Surface Coatings and Technology*
* *Thin Solid Film*

### PROFESSIONAL ACTIVITIES & AFFILIATIONS

**Professional Affiliations**

American Nuclear Society 2019-Present

 Accelerator Applications Division Executive Committee 2020-Present

SPIE the international society for optics and photonics 2010-Present

Society for the Advanced of Material and Processing Engineering (SAMPE) 2010- 2012

Institute of Electrical and Electronics Engineers (IEEE) 2008-Present

American Institute of Chemical Engineers (AIChE) 2003-Present

Tau Beta Pi 2003-Present

Materials Research Society (MRS), UIUC chapter IT Officer 2003-Present

American Chemical Society (ACS) 2003-Present

ASM International 1995-Present

 ASM International Membership Engagement Council Chair 2020-Present

 ASM International Membership Engagement Council Vice Chair 2019-2020

 ASM International Membership Committee 2014-2019

 ASM International Albuquerque Chapter Recruiter 2012-2015

 ASM International Albuquerque Chapter President 2011-2012

 ASM International Albuquerque Chapter Vice President 2010-2011

 ASM International Don Bosco Technical Institute Chapter Secretary 1998-1999

**Advisory Boards**

UNM External Advisory Committee for the Electron Microscopy Facility 2021-present

UIUC Materials Science and Engineering Alumni Board Member 2016-2020

**Proposals Reviewed**

* Czech Science Foundation (CSF)
* DOE-BES Center for Integrated NanoTechnologies (CINT)
* DOE-BES Center for Functional Nanomaterials (CFN)
* DOE-Nuclear Energy (NE) Nuclear Science User Facility (NSUF)
* DOE-Fusion Energy Science (FES)
* Israel Science Foundation (ISF)
* National Aeronautics and Space Administration (NASA)
* National Science Foundation (NSF)
* North Carolina Space Grant
* Sandia’s Laboratory Directed Research and Development (SNL-LDRD)

**Scientific Workshop Reports**

Writer, Basic Research Needs for Future Nuclear Energy Workshop, *Physics and Chemistry of Interfaces Panel & Mastering the Hierarchy of Materials Design:* *Priority Research Directions (PRD)*, Rockville, MD, August 9-11, 2017.

Writer, IAEA Technical Meeting on Advanced Materials for Energy Storage and Conversion; International Atomic Energy Agency (IAEA); Vienna, Austria; September 2012.

**Conferences, Workshops, & Sessions Organized (26)**

 ***Center for Integrated Nanotechnologies Annual Meeting***

* Symposium Organizer, *Exploring New Frontiers in Chemistry and Physics with Electron Microscopy,* CINT Annual Meeting, Santa Fe, NM; September, 2017.

 ***Conference on Application of Accelerators in Research & Industry (CAARI)***

* Topic Editor, *Radiation Effects,* CAARI, Grapevine, TX; August 2018.
* Session organizer, *In Situ Characterization of Radiation Damage,* CAARI, Fort Worth, TX; October, 2016.
* Session organizer, *In Situ Characterization of Radiation Damage,* CAARI, San Antonio, TX; May, 2014.
* Session organizer, *In Situ TEM of Radiation Damage,* CAARI, Fort Worth, TX; August, 2012.

***Materials Research Society (MRS) Annual Conference***

* Symposium Co-chair, *MM: Materials under Extreme Environments*, MRS Fall Meeting; Boston, MA; 2012.

***The Minerals, Metals, Materials Society (TMS) Annual Conference***

* Symposium Co-chair, *Seeing is Believing -- Understanding Environmental Degradation and Mechanical Response Using Advanced Characterization Techniques: An SMD Symposium in Honor of Ian M. Robertson*, TMS 2022, Anaheim, CA, March 2022
* Symposium Co-chair, *Mechanical Behavior of Nuclear Reactor Components,* TMS 2021, Orlando, FL, March 2021(virtual)
* Symposium Co-chair, *Radiation Effects in Metals and Ceramics*, TMS 2020, San ,iego, CA, February 2020.
* Symposium Co-chair, *Mechanical Behavior of Nuclear Reactor Components*, TMS 2019, San Antonio, TX, March 2019.
* Symposium Co-chair, *Nanostructured Materials for Nuclear Applications II*, TMS 2018, San Diego, CA; March 2018.
* Symposium Co-Chair, *Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms,* TMS 2017, San Diego, CA; March 2017.
* Symposium Co-chair, *Advanced Characterization Techniques for Quantifying Deformation Mechanisms,* TMS 2016, Nashville, TN; March, 2016.
* Symposium Co-chair, *Nanostructured Materials for Nuclear Applications*, TMS 2016, Nashville, TN; March, 2016.
* Symposium Co-chair, *Advanced Characterization Techniques for Quantifying Deformation Mechanisms*, TMS 2015, Orlando, Fl; March, 2015.
* Symposium Co-chair, *Advanced Characterization Techniques for Quantifying and Modeling Deformation Mechanisms*, TMS 2014, San Diego, CA; March 2014.

***Materials Science and Technology (MS&T) Annual Conference***

* Program Organizer, *Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments,* MS&T, Columbus OH; October 2021.
* Program Organizer, *Advancements in In Situ Electron Microscopy Characterization II,* MS&T, Pittsburgh, PA; October 2017.
* Program Organizer, *Advancements in In Situ Electron Microscopy Characterization,* MS&T, Salt Lake City, UT; October, 2016.

***Microscopy & Microanalysis (M&M) Annual Conference***

* Symposium Co-chair, *PO2: Microscopy and Microanalysis of Nuclear and Irradiated Materials*, M&M 2019, Portland, OR; August 2019.
* Symposium Co-chair, *MM: Nuclear and Irradiated Materials*, M&M 2016, Columbus, OH; August 2016*.*
* Symposium Co-chair, *MM: Nuclear and Irradiated Materials*, M&M 2015, Portland, OR; August, 2015*.*

***Plasticity***

* Mini-symposium co-organizer: *In Situ Characterization in Nanomechanics and Radiation Damage,* Plasticity 2013, Nassau, Bahamas; January 3-8, 2013.

***Rio Grande Symposium on Advanced Materials***

* Symposium co-organizer, 2014
* Symposium co-organizer, 2011

***Society of Engineering Science (SES) Annual Conference***

* Symposium co-organizer: *Thermal and Mechanical Stability of Irradiated Metals and Metal Alloys*, College Station, TX; October 26-28, 2015.

***SPIE: International Society for Optics & Electronics Annual Conference***

* Symposium co-organizer: *Radiation Detectors in Medicine, Industry, and National Security XIX.* San Diego, CA, August, 2018.
* Symposium co-organizer: *Penetrating Radiation Systems and Applications XII,* San Diego, CA, August, 2011.
* Symposium co-organizer: *Penetrating Radiation Systems and Applications XIII,* San Diego, CA, August, 2012.

***Telluride Science Research Center (TRSC) Workshop***

* Workshop co-organizer: *Development of an Integrated Transmission Electron Microscope,* Telluride, CO, June, 2018.

***Workshop on TEM with In-situ Irradiation (WOTWSI)***

* Workshop Co-Chair, Huddersfield, UK March 2018.
* Workshop Co-Chair, Orsay, France March 2016.
* Workshop Co-Chair, Sapporo, Japan, July 2013*.*
* Workshop Chair, Albuquerque, NM, USA, July 2011*.*

### SELECTED HONORS & AWARDS

**National**

Arab American Foundation “40 Under 40” Awardee 2020

Excellent Service as a Reviewer for Materialia 2019

R&D 100 Award for Triplet-Harvesting Plastic Scintillators, R&D 100 2014

Back Cover Author, *Chemical Communications* 50(57) 2014

President of the ASM Albuquerque Chapter, Five Star Award Winner, International Materials 2010-2011 Information Society

Finalist, Graduate student Award for the 2008 MRS Spring Meeting, Materials Research Society 2008

Cover Competition Winner, *Materials Today* 2007

Intel/Racheff Award for Outstanding Graduate Research 2005

Trophy Award for Outstanding Conference Proceeding, Materials Research Society Fall 2004

**Institutional, Sandia National Laboratories**

Sandia Spot Award for “Unmatched productivity and leadership in the CINT program” 2018

Sandia Inventor Award for Single Crystal Micromechanical Resonator 2018

Sandia Employee Recognition Team Award Nomination for “NSUF Team” 2017

Sandia Employee Recognition Award Nomination for “Rapid MoU with DOE-NE NSUF” 2017

Sandia National Laboratories Spot Award for “The 2016 Tritium Grand Challenge Proposal” 2016

Participant in Sandia’s Advanced Strategic Training (AST) Program 2015

Sandia Employee Recognition Award Team Nomination for “Predicting Performance Margins” 2014

Sandia Employee Recognition Award Individual Nomination for “In-situ ion irradiation TEM” 2013

Sandia Employee Recognition Award Team Nomination for “Predicting Performance Margins” 2013

Sandia National Laboratories Spot Award for “Advancements in in-situ characterization efforts” 2012

Sandia Employee Recognition Award Team Nomination for “Advanced Materials for Water 2012 Power Technologies”

Sandia Employee Recognition Award Team Nomination for “Aberration-Corrected 2012 Scanning Transmission Electron Microscope (AC-STEM) Realization Team”

Sandia Employee Recognition Award Team Nomination for “Advanced Materials for Detecting 2011 Ionizing Radiation Team”

Sandia National Laboratories Spot Award for “I3TEM” 2011

Sandia National Laboratories Spot Award for “RadFX of Neutrons in Metals LDRD” 2010

Sandia Employee Recognition Award Team Nomination for “Ion Beam Lab Interim Move 2010 Team”

Sandia Employee Recognition Award Team Nomination for “Grain Growth of Nanograined 2010 Metals Team”

 **TEACHING & MENTORING**

 Served on 6 dissertation committees. Mentored 18 Post-Docs, 49 students, and 1 teacher intern.

 **Courses Taught and Assisted**

Substitute taught, “ME 266/MSE 208: Mechanics and Physics of Materials,” 2020

University of California, Riverside (UCR)

Substitute taught, “ME 156: Mechanical Behavior of Materials,” 2019

University of California, Riverside (UCR)

Co-taught, “Chemical Security Risk Assessment for Algerian Academic Laboratories” 2019

Teaching Assistant, “Thermal and Mechanical Behavior of Materials,” 2005, 2007
Illinois at Urbana-Champaign (UIUC)

Teaching Assistant, “Microstructure Characterization,” UIUC 2006

Teaching Assistant, “Introduction to Materials Science,” UIUC 2004

 **Dissertation Committees (6)**

* W. Streit Cunningham, Stony Brook University
* Ethan A. Scott, University of Virginia
* James Nathaniel II, Drexel University
* Anton Neff, University of Illinois, Urbana-Champaign (now at post-doctoral fellow at ORNL)
* Olivia Donaldson, Stony Brook University (now at Post-doctoral researcher at UC-Irvine)
* Greg Vetterick, Drexel University (now at TerraPower)

 **Post-doctoral Researchers (18)**

* Ryan Schoell
* Ryan DeMott [co-advised]
* Kathryn Small [co-advised]
* Nathan Madden
* Eric Lang
* Zachary Milne
* Marissa Ringgold [co-advised]
* Riley Parrish (now at Northrop Grumman)
* Trevor Clark
* Anthony Monterrosa (now at Intel, Chandler, AZ)
* Christopher M. Barr (now at JHU-APL)
* Claire Chisholm (now Microscopy and Microanalysis Facility Manager at UCSB)
* Samuel A. Briggs (now Professor in NucE at Oregon State University)
* Caitlin A. Taylor [co-advised] (now Los Alamos Staff, NM)
* Patrick M. Price (now Sandia Staff, NM)
* Brittany R. Muntifering [co-advised] (now Sandia Staff, NM)
* Daniel C. Bufford (now Sandia Staff, NM)
* Shreyas Rajasekhara [co-advised] (now at Intel Hillsboro, OR)

 **Student Interns (49)**

* Alyssa Daniel, STAR, Summer 2021[co-advised]
* Kaitlyn Moo, UGA, Summer 2021
* Arjun Kanthawar, UGA, Summer 2021
* Daniel Ranke, UGA, Summer 2021
* Benjamin Bischoff, UGA, Summer 2021
* Kory Burns GSA, Winter 2020-Present, UF
* Emily Hopkins, UGA, Summer 2020
* Sarah Tutt, UGA, Summer 2019
* Mason Cannon, STAR, Summer 2019
* Jack McMahan MAC, Summer 2019
* Ayla Attanasio, Winter 2019-Present, NMT
* Ethan Scott, GSA, Fall 2018-Present, UVa
* Macy Vereb, STAR, Summer 2018, Fall 2018-Summer 2019
* Nicholas Nathan, MAC, Summer 2018
* Nathan Madden, SCGSR, 2018, UIUC
* Jennifer D. Schuler, SCGSR, 2018, UC-Irvine (now at GlobalFoundries)
* Cody A. Dennett, SCGSR, 2017, MIT (now a postdoctoral fellow at INL)
* Kathryn Small, GSA, Summer 2017, Drexel University (now a PhD candidate JHU)
* Brooks Clingman, UGA, Summer 2017, UT-Austin (now in Grad school at MIT)
* Sarah Blair, NSF STEP, UNM, Summer 2015 & 2017 (now at Stanford)
* Chesten Browning, STAR, Summer 2017 (now at Occidental College)
* Izaac Pacheco, STAR, Summer 2017
* Ann Uribe, CIESESE, Summer 2017
* Brian Tobie MAC, Summer 2017
* Manuel Franco, GSA, Summer 2016-Summer 2017, (now at Palo Verde nuclear generating station)
* Matthew Armijo, STAR, Summer 2016 (now at NMT)
* Mark Blair, NSF STEP, UNM, Summer 2016
* Jacob Kolar, GSA, Michigan Tech, 2015-2016
* Andrew Golembeski, NSF REU, University of Rochester, Summer 2015 (now at JSat Automation)
* Christian Herrmann, MAC, Summer 2015 (now at USNA)
* Scott Coon, STAR, Summer 2015 (now at KRQE)
* Justin Davis, NSF STEP, UNM, Summer 2015
* Cajer Gong, GSA, Carnegie Mellon University, Summer 2015 (Now at Apple)
* Olivia Donaldson, GSA, Stony Brook University, Summer 2014 (now at GE aviation)
* Mackenzie Steckbeck, STAR and UGA, 2013-2014 (now at Owens Corning)
* Aubrianna Kinghorn, STAR and UGA, 2012-2013, Summer 2014 (GIS specialist Environmental Systems Research Institute)
* Anh Nguyen, STAR, Summer 2014
* Claire Chisholm, GRA, UC Berkeley, Summer 2013 (now Microscopy and Microanalysis Facility Manager at UCSB)
* Eric Gross, UGA, University of New Mexico, 2010-2013 (now at Cybersecurity USDA)
* Janelle Villone, GRA, New Mexico Tech, 2009-2013 (now at Intel Hillsboro, OR)
* Sarah Pratt, UGA, University of New Mexico, 2010-2012 (now at ¡Explora! Science Museum)
* Melissa Dosanjh, UGA, New Mexico Tech, 2010-2012, (now at Staff at SNL)
* Antonio Cruz, Solano Community College, Summer 2012 (now at Redwood Electric Group)
* Cody Powell, STAR and UGA, 2009-2011, (now at Jaynes Corporation)
* Brad Yates, GRA, University of Florida, Summer 2011 (now at Intel Hillsboro, OR)
* Cristiano Fontana, GRA, 2011, (now at University of Padua)
* Kelsae Adame, STAR, Summer 2011, (now at UCB/PNNL NNSA intern)
* Landon Davis, STAR, Summer 2011(now at Barnett law firm)
* Deyanira Nunez, STAR, Summer 2010, (now at UNM coordinator of student services)

 **High School Teacher Intern**

 Aldo Corona, HS Teacher, DBTI, Summer 2014 (now at Alicat Scientific)

 **COLLABORATIONS**

**Co-Authors** (as of June 24, 2019)

**2021:** Aman Haque, Asher Leff, Assel Aitkaliyeva, Benjamin R. Dacus, Bethany Matthews, Biswajit Ray, Brad L. Boyce, Caitlin A. Taylor, Christopher M. Barr, Cody A. Dennett, Colin Ophus, Daniel C. Bufford, Daniel L. Buller, Danny J. Edwards, David G. Cahill, David M. Frazer, David P Adams, Ehsan Hosseinian, Ethan A. Scott, Fadi Abdeljawad, Frank Yu, Gregory A. Vetterick, Hongbin Bei, Hyejin Jang, Jacob Gutierrez-Kolar, James E. Nathaniel, Jason R. Trelewicz, Jianmin Zuo, Jin Gu Kang, John J. Mecholsky, John T. Gaskins, Jon Kevin Baldwin, Josh Kacher, Joshua D. Sugar, Jun Ma, Katherine L. Jungjohann, Lauren Nagel, Lei Lu, Malek Alkayyali, Mark Goorsky, Mark A. Kirk, Maryla Wasiolek, Michael P. Short, Michel Sassi, Mitra L. Taheri, Narayana P. Bhat, Nathan M. Heckman, Olivier Pierron, Osman El-Atwani, Patrick E. Hopkins, Patrick M. Price, Paul V. Braun, Pete Baldo, Preeti Kumari, Qingsong Pan, Qun Yang, Renliang Yuan, Riley J. Parrish, Sandra Stangebye, Sanjiv Sinha, Saurabh Gupta, Sean W. King, Stephen M. Foiles, Steven R. Spurgeon, Stuart Maloy, Tanvi Ajantiwalay, Tiffany Kaspar, Timothy Boykin, Timothy A. Furnish, Ting Zhu, Trevor Clark, Umeshwarnath Surendranathan, Umeshwarnath Surendranathan, W. Streit Cunningham, Weilin Jiang, Yasir Mahmood, Yin Zhang, Zahabul Islam, hu Diao

**2020:** Abhinav Parakh, Amanda Petford-Long, Amir Ali, Andrea M. Hodge, Ang-Yu Lu, Ann Chiaramonti, Anthony M. Monterrosa, Biswajit Ray, Blythe G. Clark, Brad L. Boyce, Brittany Muntifering, Caitlin A. Taylor, Charlette M. Grigorian, Cheng Sun, Christina M. Rost, Christine C. Wu

Christopher M. Barr, Claire Ganski, Colin Ophus, David Doan, David B. Robinson, Dereck N.F. Muche, Djamel Kaoumi, Dong Jun Park, Douglas L. Medlin, Edgar C. Buck, Eliana N.S. Muccillo, Ericmoore Jossou, Ethan A. Scott, Gowtham S. Jawaharram, Gregory B. Thompson, Guild Copeland, Haimei Zheng, Hanfei Yan, Henry A. Padilla, Hojun Lim, Hyun-Gil Kim, Isabella van Rooyen, James E. Nathaniel, Jay D. Carroll, Jeffrey L. Braun, Jennifer D. Schuler, Jessica A. Krogstad, Jian Gan, Jianmin Qu, Jie Ding, Jing Kong, Joel A. Bahena, John T. Gaskins, Jon K. Baldwin, Joseph R. Michael, Joshua D. Sugar, Jui-Han Fu, Julia Mausz, K.S.N. Vikrant, Lewys Jones, Libor Kovarik, Lin Feng, Lin Li, Lingfeng He, Lynne Ecker, Mark Goorsky, Maryla Wasiolek, Matthew J. Olszta, Mehmet Topsakal, Mehrdad T Kiani, Ming-Hui Chiu, Mitra L. Taheri, Mitsuhiro Murayama, Mohamed Elbakhshwan, Nathan J. Madden, Nathan M. Heckman, Norman Salmon, Norman C. Bartelt, Patrick Price, Patrick E. Hopkins, Patrick Zarnas, Pranav K. Suri, Preeti Kumari, Qiang Li, Qianying Guo, R. Edwin Garcia, R. Lee Penn, Remi Dingreville, Radhika P. Patil, Rafal E. Dunin-Borkowski, Renu Sharma, Ricardo H.R. Castro, Robert S. Averback, Robson L. Grosso, Ryan B. Sills, Ryan Schoell, Samuel Briggs, Sergei V. Kalinin, Shen J. Dillon, Shicheng Xu, Simerjeet K. Gill, Stanley S. Chou, Steven R. Spurgeon, Subhashish Meher, Thomas Koenig, Timothy J. Rupert, Tingyu Bai, Vincent Tung, Wei-Chang D. Yang, Xiaojing Huang, Xin Zhang, Yen-Chang Chen, Yingge Du, Yong S. Chu, Yongqiang Wang, Youho Lee, Yucong Gu, Zachary H. Aitken, Zhe Fan, Zhongxia Shang

**2019:** A.A. Moghadam, Aman Haque, Angela L. Paoletta, Anthony M. Monterrosa, , Bai Cui, Baoming Wang, Barney L. Doyle, Benjamin Coryell, Benjamin J. Cowen, Bethany E. Matthews, Brad Baker, Brad L. Boyce, Brittany R. Muntifering, Bruce Arey, Brian Tobie, Bryan Korth, Bryan W. Reed, Caitlin A. Taylor, Charlette M. Grigorian, Christopher M. Barr, Claire Chisholm, Cody A. Dennett, Craig Burkhart, Dan J. Masiel, Dale Zschiesche, Dan Qu, Daniel C. Bufford, Daniel L. Buller, David Robinson, David Senor, Djamel Kaoumi, Elizabeth Getto, Emily Aradi, Erik Luther, Gowtham S. Jawaharram, Graeme Greaves, Guild Copeland, Hongbin Bei, Howard T. Hartman, Ihsan M. Taie, Joe T. McKeown, Jamie M. Kropka, Jeffery A. Aguiar, Jennifer D. Schuler, Jon M. Schwantes, Jonathan A. Hinks, Joshua D. Sugar, K. Knipling, Karen Kruska, Karren L. More, Katherine Jungjohann, Ke Jin, LaRico Treadwell, Maria Kosmidou, Mathew D. Ingraham, Matthew J. Olszta, Matthew L. Gong, Michael Nastasi, Michael P. Short, Michele A. Conroy, Michele L. Ostraat, Mohamed S. El-Genk, Nathan M. Heckman, Nicholas Glavin, Nicolas J. Briot, Osman El-Atwani, Patrick M. Price, Paul G. Kotula, R. Charles Choens, Ruth S. Bloom, Rachael O. Grudt, Ram Devanathan, Remi Dingreville, Ron Goeke, Sang Tae Park, Samuel A. Briggs, Sarah H. Pratt, Seongtae Kwon, Shen J. Dillon, Steven C. Hayden, T. John Balk, Tatiana S. Pilyugina, Timothy C. Droubay, Timothy J. Kucharski, Timothy J. Rupert, Tina M. Nenoff, Tolga Tasdizen, Weilin Jiang, William J. Weber, William M. Mook, Xing Wang, Xueliang Yan, Yanwen Zhang, Zahabul Islam

## CONTINUING EDUCATION

## Strategic Engagement Training (SET) Program, Sandia National Laboratories 2014-2018

## The purpose of the SET program is to provide Sandia's technical staff with the acumen required to build relationships and develop programs and funding with potential partners and collaborators.

## Previously known as Advanced Strategic Training or AST

## U.S. Particle Accelerator School, University of New Mexico June 16-27, 2014

## A national graduate-level program that provides training and workforce development in the science and technology of charged particle accelerators and associated systems

**California Basic Educational Skills Test™ (CBEST®)** Passed 2/8/2003

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NSF Center for Advanced Materials Research

Volunteer, Sandia’s CSI Dog Napping 2009-Present

Crew, Albuquerque Balloon Fiesta’s international pilots 2009-Present

Board Member, UIUC Materials Science and Engineering Alumni Board 2016-2020

Judge, SNL and LANL Postdoctoral Technical Showcase 2018, 2019

Volunteer, Manos Program at Sandia National Laboratories 2011

Board Member, St. Martha’s Catholic School Executive Board 2009-2012

Judge, FIRST LEGO League Competition 2003-2007

Judge, Illinois State Science Fair 2004, 2005

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**FULL PUBLICATION LIST** (as of August 9, 2021)

*215**total publications*: 141 journals, 69 conference proceedings, 4 book chapters, and 1 book editor

From *Google Scholar*: Citations =3,217; H-index = 30; i10-index = 78; i100-index = 7

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1. Hattar, K., J. H. Han, T. Saif, I. M. Robertson. “Development and Application of a MEMS-Based *In Situ* TEM Straining Device for Ultra-Fine Grained Metallic Systems,” *Microscopy and Microanalysis* 10(Suppl 2), 50-51 (2004

**FULL PRESENTATION LIST**

85 Invited, 40 Contributed, and >238 Co-authored Presentations

**Invited Presentation**

85. Hattar, Khalid, Eric Lang, W. Streit Cunningham, Suveen Mathaudhu, and Jason Trelewicz. "In-situ Irradiation, Helium Implantation and Heating to Elucidate Mechanisms in Tungsten Alloys." Microscopy & Microanalysis 2021; August 1-5 2021; Virtual 84. Christopher M. Barr, Ta Duong, Daniel C. Bufford, Abhilash Molkeri, Nathan Heckman, David P. Adams, Ankit Srivastava, Michael Demkowicz, Brad L. Boyce and Khalid Hattar; “High-Cycle Fatigue In Situ in the Transmission Electron Microscope” Materials Research Society (MRS) Spring 2021 Meeting, April 17-23, 2021; Virtual

83. K. Hattar; “Deconvoluting Mechanism in Complex Environments via In-situ Electron Microscopy” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

82. K. Hattar; “Exploring Materials Response to Extreme Environments via In-situ TEM” Université de Lille / Institut Universitaire de France Seminar; February 18, 2021; Virtual

81. Caitlin A. Taylor and Khalid Hattar; “ Capabilities for Studying Hydrogen Isotope Behavior in Materials” ASM International Albuquerque Chapter Meeting; January 27th, 2021; Virtual

80. K. Hattar; “Exploring Extreme Environments via In-situ Electron Microscopy” Materials Science & Technology 2020; November 2-6, 2020; Virtual

79. Khalid Hattar, Samuel A. Briggs, Christopher M. Barr, Nathan Heckman, Trevor Clark, and Brad L Boyce; “Exploring the Extremes via In-Situ Scanning Electron Microscopy” 69th Annual SES Virtual Conference; August 5-6, 2020; Virtual

78. K. Hattar “Exploring Coupled Extreme Environments via In-situ Transmission Electron Microscopy” Microscopy & Microanalysis; August 3-7, 2020; Virtual

77. K. Hattar “In-situ Failure in Fatigue and Other Extreme Environments” Bruker Virtual Seminar on In-Situ Tensile Testing in the TEM and SEM with Hysitron Picoindenters June 25th, 2020.

76. K. Hattar “History and Future of In-situ Transmission Electron Microscopy Corrosion Experiments:” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

75. K. Hattar “Tailoring the Thermal, Mechanical, and Acoustic Properties of Subsurfaces through Ion Beam Modification” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA **Keynote**

74. K. Hattar, Chris M. Barr, Anthony Monterrosa, Gowtham Jawaharram, Samuel Briggs, Nathan Heckman, Brad L. Boyce, Shen J. Dillon; “Pushing the Frontiers of Electron Microscopy Stressors” Pushing the Frontiers of Electron Microscopy Stressors; September 1-6, 2019. Ashville, NC, USA

73. K. Hattar; “Exploring the Extremes with Adequate Temporal Resolution” Ultrafast Electron Microscopy Workshop, Argonne National Laboratory; April 25-26, 2019. Argonne, IL, USA

72. K. Hattar; “The Response of Metals to Extreme Environments” Glenn Research Center, National Aeronautics and Space Administration; April 3rd, 2019. Cleveland, OH, USA

71. K. Hattar; “The Response of Metals to Extreme Environments” Materials Science and Engineering, Case Western University; April 2nd, 2019. Cleveland, OH, USA

70. K. Hattar, E. Scott, C. Dennett, C. Saltonstall, T. Beechem, P. Hopkins, and M. Short “Tailoring Thermal Properties through Ion Beam Modifications” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

69. K. Hattar, C.M. Barr, S.A. Briggs, B. R. Muntifering, D.C. Bufford, C.A. Taylor, N. Li, and A. Haque; “Towards Controlling Grain Boundary Stability through Ion Beam Modification” Materials Science & Technology 2018; October 14 –18, 2018. Columbus, OH, USA

68. S.A. Briggs, C.M. Barr, and K. Hattar; “Studies of Radiation Effects on Mechanical Properties Using In-Situ Scanning and Transmission Electron Microscopy” Society of Engineering Science 55th Annual Technical Meeting; October 10-12, 2018; Madrid, Spain

67. Christopher M. Barr, Brittany R. Muntifering, Caitlin A. Taylor, Daniel C. Bufford, David Adams, “Exploring the Interplay Between Grain Boundaries and Radiation Damage” 25th International Conference on the Application of Accelerators in Research and Industry (CAARI 2018); August 12 – 17, 2018; Gaylord Texan Resort in Grapevine, Texas, USA

66. K. Hattar, S.A. Briggs, and K. Jungjohann; “The Possibility of an Integrated Electron Microscopy Toolset for Studying Superimposed Extreme Environments” Next-Generation Transmission Electron Microscopy (NexTEM) 2018; October 8-10, 2018; Richland, WAS, USA

65. K. Hattar, “Progress in Coupling Electron Microscopy and Ion Beam Induced Luminescence” 25th International Conference on the Application of Accelerators in Research and Industry (CAARI 2018); August 12 – 17, 2018; Gaylord Texan Resort in Grapevine, Texas, USA

64. K. Hattar, “Exploring Extreme Environments with Nanometer Resolution” May 23, 2018; UC, Riverside Material Science and Engineering Seminar Riverside, CA

63. K. Hattar, O. Donaldson, K. Small, J. Trelewicz, “Exploring the Thermal and Mechanical Stability of Amorphous and Nanocrystalline Tantalum Films” TMS 147th Annual Meeting; March 11-15, 2017; Phoenix, AZ

62. K. Hattar, C. Barr, D. Bufford, B. Muntifering, K. Small, A. L. Koh, and R. Karnesky; “Comparison of Hydrogen Introduction Techniques for In-situ TEM Straining Experiments:” TMS 147th Annual Meeting; March 11-15, 2017; Phoenix, AZ

61. D. Bufford, F. Abdeljawad, C. Barr, P. Price, and K. Hattar; “Comparing Grain Growth Mechanisms in Nanocrystalline FCC Metals due to Ion Irradiation, Mechanical Loading, Conductive Heating, and Laser Heating” TMS 147th Annual Meeting; March 11-15, 2017; Phoenix, AZ

60. K. Hattar, “Understanding and Tailoring Nanomaterials for Extreme Environments” Los Alamos National Laboratories, March 5, 2018; Los Alamos, NM

59. K. Hattar, “Deconvoluting Reactor Environmental Effects with Nanometer Resolution” University of California, Berkeley, Nuclear Engineering Department Seminar; January 22, 2018; Berkeley, CA

58. K. Hattar, “Exploring Materials in Extreme Environments with Nanometer Resolution” University of Florida, Materials Science & Engineering Seminar; November 14, 2017; Gainesville, FL

57. K. Hattar, W. Martin, D. Hanson, and M. Wasiolek “Nuclear Science User facility Program: Sandia Participation and Opportunities” Department of Nuclear Engineering Graduate Student Seminar, University of New Mexico, November 14th, 2017; Albuquerque, NM

56. K. Hattar, B. Muntifering, P. Price, C, Barr, S. Briggs, C. Taylor, D. Bufford, “Integrative In-situ TEM” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

55. K. Hattar, “Using Ion Irradiation In-situ to Support Tritium Science” Tritium Sustainment Program 8th Research and Development Workshop; September 13, 2017; Richland, WA

54. K. Hattar, “Understanding and Tailoring Nanomaterials for Extreme Environments” University of Florida, Nuclear Engineering Seminar; August 21, 2017; Gainesville, FL

53. K. Hattar and D. Hanson, “Sandia’s Experimental Radiation Capabilities” NSUF facility meeting; May 24-25, 2017; Idaho Fall, ID

52. K. Hattar & R. Dingreville, “Nanomaterials Response to Radiation Environments” Department of Nuclear Engineering Graduate Student Seminar, University of New Mexico, April 3rd, 2017; Albuquerque, NM

51. K. Hattar, “Correlating Mechanisms and Properties in Extreme Environments Utilizing Advanced Electron Microscopy” Department of Mechanical Engineering Seminar at University of Texas, El Paso March 6th, 2017; El Paso, TX

50. K. Hattar, D.C. Bufford, S. Foiles, and F. Abdeljawad; “Exploring the role of texture, grain boundary character, and grooving on grain growth in metallic thin films” TMS 146th Annual Meeting; February 26th-March 2nd 2017 San Diego, CA

49. P. Price, D. Bufford, R. Sisson, M. Abere, S.T. Park, B. Reed, D. Masiel, D. Adams, and K. Hattar, *Can Single Ion Strikes Be Directly Observed in Relevant Time and Length Scales?* Workshop on Dynamics of radiation effects in materials, December 15-16, 2016

48. K. Hattar, R. Dingreville, S. Foiles, and W. Wampler, *Can Single Ion Strikes be Directly Observed in Relevant Time and Length Scales?,* Radiation Effects Seminar, Sandia National Laboratories, September 29, 2016; Albuquerque, NM

47. K. Hattar, *Exploring the Response of Materials to Radiation with In-situ Microscopy,* University of New Mexico, Graduate Student Seminar, September 27, 2016; Albuquerque, NM

46. K. Hattar, *In situ Ion Irradiation Transmission Electron Microscope at Sandia National Laboratories*; Atomic Energy Commission (CEA) September 15-16, 2016; Orsay/Saclay, France

45. K. Hattar, D.C. Bufford, and B.R. Muntifering; *Exploring the Thermal, Mechanical, and Radiation Stability of Nanocrystalline Metals via In situ TEM*; TherMec 2016; May 30-June 4, 2016; Graz, Austria

44. K. Hattar; *In situ Ion Irradiation Transmission Electron Microscope at Sandia National Laboratories*; Nuclear Science User Facilities Ion Beam Investment Options Workshop; March 22-24, 2016; Idaho Fall, ID

43. K. Hattar, D.C. Bufford, B. Muntifering, B.L. Doyle, D.L. Buller; *Recent advancements in Sandia’s In situ Ion Irradiation Transmission Electron Microscope*; The Fourth Workshop On TEM With In Situ Irradiation; March 16-18, 2016; Orsay & Gif sur Yvette, France

42. K. Hattar; *In situ TEM Investigations of Overlapping and Harsh Environments*; 2nd Joint Sandia-Georgia Tech Materials Workshop; February 10-11, 2016; Albuquerque, NM

41. D.C Bufford, W. M. Mook, and K. Hattar; *Correlating grain orientation and grain boundary character to the failure path in nanocrystalline metals*; International Symposium on Plasticity and Its Current Applications; January 3-9, 2016; Kona, HI

40. K. Hattar; *Investigating overlapping and harsh environments via in-situ TEM*; International Symposium on Plasticity and Its Current Applications; January 3-9, 2016; Kona, HI

39. K. Hattar; *In-situ Ion Irradiation TEM*; UIUC MSE 481 Electron Microscopy Guest Lecture; October 21, 2015; Urbana, IL

38. D. Bufford, W. Mook, D. Adams, K. Hattar; *Investigating the Mechanical and Radiation Stability of Grain Boundaries via In-situ TEM and Precession Electron Diffraction;* MS&T 2015; October 5, 2015; Columbus, OH

37. K. Hattar; *Nanoscale Observation of Ion Beam Tailoring via In-situ TEM*; Department Seminar at University of Nebraska in Lincoln; September 8, 2015; Lincoln, NE

36. K. Hattar; *Attempting to Understand Materials in the Extreme from the Nanoscale Up*; Colorado School of Mines Metallurgy and Materials Engineering Department Colloquium; January 2015; Golden, CO

35. K. Hattar; Bufford, Daniel Charles; Marshall, Michael Thomas; Buller, Daniel L.; Doyle, Barney L.; *Progress Towards In-situ TEM Experiments in Combinations of Extreme Environments;* 2014 MRS Fall Meeting & Exhibit 11/30/2014 - 12/05/2014, Boston, MA, USA

34. K. Hattar, X. Zhao, M.-R. He, J.A. Sharon, L.N. Brewer, B.L. Boyce, D.S. Gianola; *Mechanical Response of Self-Ion Irradiated* *Single Crystal, FCC Micropillars*; Society of Engineering Science 51st Annual Technical Meeting; October 2014; West Lafayette, IN

33. K. Hattar; *Recent Developments in In situ TEM to Probe Mechanical, Radiation, and Corrosive Response of Materials*; 2014 CINT User Meeting & 6th International Workshop on Electromagnetic Metamaterials in Santa Fe, NM, USA from 09/22/2014 - 09/23/2014

32. K. Hattar; *Development of Advanced Ion Beam End Stations
& Their Potential for Informing Models*; NE-SC Information Exchange Meeting in Washington, DC, USA from 09/17/2014 - 09/17/2014

31. K. Hattar; *Sandia’s In-situ Ion Irradiation TEM Facility; Stony Brook University Materials Science Colloquium in Stony Brook, NY, USA from 11/20/2014 - 11/21/2014*

30. K. Hattar, T. Buchheit, B. Clark, B. Boyce, R. Cheaito, C. Chisholm, S. Rajaskehara, A.M. Minor, A. Misra, L.N. Brewer, P.E., Hopkins, ; *Small-Scale Thermal and Mechanical Characterization of Ion Beam Induced Damage*; International Conference on the Application of Accelerators in Research and Industry (CAARI) Location; May 2014; San Antonio, TX

29. K. Hattar, O. El-Atwani, J.A. Hinks, S.S. Harilal, A. Hassanein; *Helium-induced bubble formation in ultrafine and nanocrystalline tungsten under different extreme conditions*; International Conference on the Application of Accelerators in Research and Industry (CAARI); May 2014; San Antonio, TX

28. K. Hattar, D.C. Bufford, S.H. Pratt, T. Boyle; *Physical Response of Gold Nanoparticles to Ion Beam Modification*; Spring Materials Research Society Meeting; April 2014; San Francisco, CA

27. K. Hattar; *Evaluating the Radiation Stability of Advanced Scintillators and Structural Metals*; Colloquium at the Nuclear Engineering Department at University of Michigan; April 2014; Ann Arbor, MI;

26. K. Hattar; *Diverse Electron Microscopy Capabilities and Research Opportunities at Sandia National Laboratories*; Materials Advantage Seminar at the University of Arkansas; April 2014; Fayetteville, AR

25. K. Hattar; *Ion, Electron, and Photon Optics within a Multi-beam Facility*; Ion beam Simulation of High Dose Neutron Irradiation Workshop; March 2014; Ann Arbor, MI

24. K. Hattar, P. Hosemann; *Challenges in Mechanical Property Determination from Ion Irradiated Samples*; Ion Beam Simulation of High Dose Neutron Irradiation Workshop; March 2014; Ann Arbor, MI

23. K. Hattar, J.A. Sharon, B.L. Boyce, C. Chisholm, A.M. Minor; *In situ Ion Irradiation and Cyclic Indentation TEM Experiments of Nanocrystalline Metals*; TMS 2014 meeting; February 2014; San Diego, CA

22. K. Hattar, O.J. El-Atwani, M. Efe, T.J. Nivakowsko, A. Suslova, J.P. Allain; *In situ Ion Irradiation TEM Study of Nanostructured Tungsten*; Fall MRS 2013; December 2013; Boston, MA

21. K. Hattar, S.H. Pratt, T.M. Nenoff; *Recent Advancements in In situ TEM Capabilities Applied to Extreme Environments Including the Synthesis of Surrogate Nuclear Fuel Nanosystems*; TherMec 2013; December 2013; Las Vegas, NV

20. K. Hattar; *Tailoring Nanostructures via Ion Beam Modification*; Material Science Colloquium at Drexel University; November 2013; Philadelphia, PA

19. K. Hattar, J.A. Sharon, H.A. Padilla, B.L. Boyce, C. Battaile, J. Brons, G. Thompson; *Structural Stability of Nanocrystalline Cu Films during Various In-situ TEM Indentation Conditions;* Materials Science & Technology 2013, Conference & Exhibition; October 2013; Montreal, QU Canada

18. K. Hattar, B.A. Hernandez-Sanchez, E.P. George, S. Hoppe, O.J. El-Atwani, P. Hosemann, C. Chisholm, H. Bei, A.M. Minor; *Recent Developments in Sandia’s In situ Ion Irradiation TEM;* Microscopy & Microanalysis 2013; August 2013; Indianapolis, IN

17. K. Hattar; *Instillation and Development of a Concurrent In situ Ion Irradiation TEM at Sandia National Laboratories*; The Third Workshop On TEM With In Situ Irradiation (WOTWISI-3); June 2013; Sapporo, Japan

16. K. Hattar; *In situ TEM Studies of Ion Beam Radiation Effects*; Materials in Extreme Environments – MatX; May 2013; East Lansing, MI

15. K. Hattar; *In situ Ion Irradiation Investigation of Materials for Extreme Environments*; Colloquium lecture at Nuclear Engineering Department at Purdue University; April 2013; West Lafayette, IN

14. K. Hattar, B. Clark, J.A. Fenske, I.M. Robertson; *An In situ TEM Study into the Deformation and Failure of Pure ECAP Al*; International Symposium on Plasticity and Its Current Applications; January 2013; Nassau, Bahamas

13. K. Hattar; *Investigating Materials for Nuclear and Related Industries at the Nanoscale*; Oxford University; September 2012 – Oxford, UK

12. K. Hattar; Sandia’s New Ion Beam Laboratory and Her Capabilities; University of Huddersfield; September 2012 – Huddersfield, UK

11. K. Hattar; *Understanding Abnormal Grain Growth in Nanograined Nickel through the Combination of In Situ TEM and Precession Microscopy*; The 15th European Microscopy Congress; September 2012 – Manchester, UK

10. K. Hattar, B.G. Clark, L.N. Brewer; *Rapid First-order Screening and Detailed In-situ Microstructural Characterization of Advanced Cladding Materials*; IAEA Technical Meeting on Advanced Materials for Energy Storage and Conversion; September 2012 – Vienna, Austria

9. J.S. Custer, S.M. Hoppe, S. Rajasekhara, P.J. Ferreira, K. Hattar; *Ion Beam Modification of Nanomaterials via In Situ Ion Irradiation TEM*; Ion Beam Modification of Materials 2012; September 2012 – Qingdao, China

8. K. Hattar, S. Rajasekhara, P.J. Ferreira; *Microstructural Evolution of Nanocrystalline Nickel Thin Films due to High-Energy, Heavy-Ion Irradiation;* 22nd International Conference on the Application of Accelerators in Research and Industry; August 2012 – Ft. Worth, TX

7. K. Hattar; *Investigating Radiation at the Nanoscale*; UC-Berkeley; February 13, 2012 – Berkeley, CA

6. K. Hattar, J.V. Branson, C.J. Powell, G. Vizkelethy, P. Rossi, B.L. Doyle, *Imaging Penetrating Radiation through Ion Photon Emission Microscopy*, SPIE Optics and Photonics, August 1-5, 2010 - San Diego, CA,

5. K. Hattar, A. Misra, P. Dickerson, I.M. Robertson, R. Hoagland; *In situ straining of Copper-Niobium Multilayers in TEM*; May 24-25, 2010 - Los Alamos, NM.

4. B.G. Clark, K. Hattar, A. Misra, J.A. Knapp; *In situ straining of nanomaterials and thin films in TEM*; May 24-25, 2010 - Los Alamos, NM.

3. K. Hattar, L. N. Brewer, B. Boyce, D. M. Follstaedt, J. A. Knapp, E. Bielejec and B. L. Doyle; *The Blending of Ion Accelerators and Electron Microscopes at Sandia National Laboratories*; Electron Microscopy Workshop at LANL; January 14-15, 2010 Los Alamos, NM.

2. K. Hattar, J.V. Branson, L.N. Brewer, E. S. Bielejec, G. Vizkelethy, *Ion Beam Techniques Applied for Advanced Materials Fabrication and Characterization*, Rio Grande Symposium; October 5, 2009 - Albuquerque, NM.

1. I.M. Robertson, T. Saif, K. Hattar, J. Han*;* Microscopy & Microanalysis, Visualizing and Measuring Mechanical Behavioral Length Scales Symposium, Chicago, IL September 6, 2006

**Contributed Presentations**

40. Clark, Trevor, Ethan Scott, Ping Lu, David Adams, and Khalid Hattar. "In-situ TEM irradiation induced amorphization of Ge2Sb2Te5." Microscopy & Microanalysis 2021; August 1-5 2021; Virtual

39. Khalid Hattar, C.M. Barr, G. Jawaharram, N. Heckman, B.L. Boyce, S. Dillon; “Exploring the Extremes of Mechanical Behavior Through In-situ Electron Microscopy” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

38. K. Hattar, N. Heckman, S.A. Briggs, C.M. Barr, A.M. Monterrosa, C. Chisholm, L. Treadwell, and B.L. Boyce; “Development of an In-situ Ion Irradiation and Nanomechanics Scanning Electron Microscope” 46th International Conference on Metallurgical Coatings and thin Films; May 19-24, 2019; san Diego, CA.

37. C.M. Barr and K. Hattar; “Exploring Nanocrystalline Deformation Mechanisms Active During In-situ TEM High Cycle Fatigue” Society of Engineering Science 55th Annual Technical Meeting; October 10-12, 2018; Madrid, Spain.

36. S.A. Briggs, C.A. Taylor, B.R. Muntifering, and K. Hattar; “Advanced In-situ Electron Microscopy Techniques to Elucidate Structural Evolution of Tritiated, Hydrogen Exposed, and Ion Implanted Materials” 40th Tritium Focus Group; October 23-25, 2018; Albuquerque, NM.

35. K. Hattar, S.A. Briggs, T.J. Boyle, D.C. Bufford, S.J. Blair, C.M. Barr, and B.R. Muntifering; “Imaging Radiating Damage in Nanoparticles for Radiation Therapies” SPIE Optics + Photonics; August 19-23, 2018; San Diego, CA.

34. K. Hattar, S.A. Briggs, D.C. Bufford, S.J. Blair, C.M. Barr, and B.R. Muntifering “Varied Nanoparticle Response to Ion Beam Modification” Ion Beam Modification of Materials (IBMM) 2018 June 24-29, 2018; San Antonio, TX.

33. C.A. Taylor, G.S. Jawaharram, P.M. Price, D.C. Bufford, C.M. Barr, S.A. Briggs, B.R. Muntifering, S.J. Dillon, and K. Hattar; “The Limits of Simultaneous In Situ TEM” 5th Workshop On TEM With In Situ Irradiation (WOTWISI-5) at the University of Huddersfield, April 11-13, 2018; Huddersfield, UK

32. Patrick Price, Adam Cook, LaRico Treadwell, and Khalid Hattar; “Development of an In-situ TEM with Laser Sintering Capabilities at Sandia National Laboratories” TMS 147th Annual Meeting; March 11-15, 2017; Phoenix, AZ

31. C. Taylor, B. Muntifering, D. Senor, C. Snow, K. Hattar, “Studying Synergistic Radiation Effects in TPBAR Materials with In-situ Triple Beam Irradiation TEM” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

30. C. Taylor, B. Muntifering, D. Bufford, D. Senor, and K. Hattar “Exploring Hydrogen and Helium Isotope Evolution in a Simulated Reactor Environment via In-situ Electron Microscopy Techniques” 2nd Asia-Pacific Symposium on Tritium Science (APSOT-2) September 5-8, 2017; Pleasanton, CA

29. K. Hattar, C. Barr, B. Muntifering, C. Taylor, P. Price, J. Kolar, S. Pratt, B.A. Hernandez-Sanchez, and T.J. Boyle, “Exploring the Radiation Tolerance of Ceramic Nanoparticles
via In-situ Ion Irradiation TEM” 12th Pacific Rim Conference on Ceramic and Glass Technology (PACRIM 12), including Glass & Optical Materials Division Meeting (GOMD 2017) May 21-26, 2017; Waikoloa, HI

28. C.A. Taylor, M.K. Patel, J.A. Aguiar, X. Hu, Y. Zhang, M.J. Crespillo, J. Wen, H. Xue, Y. Wang, W.J. Weber, and K. Hattar; “Helium Behavior in Pyrochlore Type Nuclear Waste Form Materials” 12th Pacific Rim Conference on Ceramic and Glass Technology (PACRIM 12), including Glass & Optical Materials Division Meeting (GOMD 2017) May 21-26, 2017; Waikoloa, HI

27. B.R. Muntifering, C. Snow, D. Senor, and K. Hattar; “Exploring the Stability of TPBAR Liner with In Situ, Triple-Beam, Ion Irradiation TEM” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

26. P.M. Price, R. Sisson, M. Abere, S.T. Park, B. Reed, D. Masiel, D. Adams, and K. Hattar; “Development of Sandia National Laboratories’ In-situ Ion Irradiation Dynamic TEM” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

25. K. Hattar, D.C. Bufford, W. Mook, C. O’Brien, F. Abdeljawad, T. Furnish, B. Boyce, and S. Foiles; “In-situ TEM Observations of Grain Growth during High-cycle Fatigue and Notch Fatigue” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

24. D.C. Bufford, B.R. Muntifering, C.S. Snow, D. Robinson, and K. Hattar; *Revealing the Behavior of Gas Species in Materials with In situ TEM*; Tritium 2016; April 17-22, 2016; Charleston, SC;

23. B. Muntifering, S. Blair, C. Gong, J. Qu, K. Hattar; *Utilizing Sandia’s In-situ Ion Irradiation TEM to Elucidate Governing Mechanisms in Complex Environments*; TMS 145th Annual Meeting; February 2016 – Nashville, TN

22. M. Steckbeck, D. C. Bufford, J. Davis, B. L. Doyle, D. L. Buller, K. Hattar; *Theory & Development of Sandia National Laboratories’ In-Situ Triple Beam Facility*; Society for North East accelerator Personnel (SNEAP) 2015, Albuquerque, NM 9/29/2015

21. D.C. Bufford, R.P.M. Dingreville, K. Hattar; *In Situ Observation of Single Ion Damage in Electronic Materials*; Microscopy & Microanalysis 2015 in Portland, OR, USA from 08/02/2015 - 08/06/2015

20. K. Hattar; *Tailoring the Properties of Metals through Ion beam Modification;* 27th Rio Grande Symposium on Advanced Materials; October 2015 – Albuquerque, NM

19. K. Hattar, D.C. Bufford, M. Marshall, B.L. Doyle, D. Buller; *Development of a Concurrent In situ Ion Irradiation TEM*; Spring MRS 2014; April 2014; San Francisco, CA

18. K. Hattar, H. Padilla, B. Clark, J.A. Sharon, B.L. Boyce; *High-cycle fatigue behavior of nanocrystalline and ultrafine grained Ni alloys*; Thermec 2013; December 2013; Las Vegas, NV

17. K. Hattar, M. Marshall, D. Buller; *Development of a Concurrent In-situ Ion Irradiation Transmission Electron Microscope*; Materials Research Society; December 2013; Boston, MA

16. K. Hattar, J. Carroll, J. Madison, J. Michael, B. Boyce, A. Kinghorn; *In-situ Observation and Multiscale Three-dimensional Characterization Ta Tensile Samples*; Materials Science & Technology 2013, Conference & Exhibition; October 2013; Montreal, QU, Canada

15. K. Hattar; *Proposed Addition of Ultra-fast Imaging Capabilities to Sandia’s In situ Ion Irradiation TEM*; Workshop on Ultrafast Electron Sources for Diffraction and Microscopy applications; December 2012; Los Angeles, CA

14. K. Hattar; *The True Limit to Physical Recycling*; Rio Grande Symposium for Advanced Materials; October 2012; Albuquerque, NM

13. S.M. Hoppe, K. Hattar, B.A. Hernandez-Sanchez, T.J. Boyle, J. Villone, P. Yang, F.P. Doty; *Application of In-Situ Ion Irradiation TEM and 4D Tomography to Advanced Scintillator Materials*; SPIE Optics and Photonics 2012; August 2012 – San Diego, CA

12. K. Hattar, L.N. Brewer, B. Boyce, T.E. Buchheit, S. Goods, P.G. Kotula, J.D. Puskar; *Rapid Screening of Cladding Materials for Generation IV Nuclear Reactors*; MS&T external review; March 2012 – Livermore, CA

11. K. Hattar, A. McGinnis, T. Buchheit, L. Brewer; *In-Situ Ion Irradiation TEM and Nanoindentation Studies of 31L and HT9*; TMS 141st Annual Meeting; March 2012 – Orlando, FL

10. K. Hattar, S. Rajasekhara, B.G. Clark; *In situ TEM Ion Irradiation and Atmospheric Heating of Cladding Materials*; Fall MRS; December 2011- Boston, MA

9. K. Hattar, L.N. Brewer, S.M. Foiles, P. Lu, B.L. Boyce and J.R. Michael, *Neutron simulated damage in structural metals be ion beam irradiation*, Conference on Application of Accelerators in Research and Industry, August 8-13, 2010 - Fort Worth, TX

8. K.M. Hattar, D. M. Follstaedt, J. A. Knapp, B. G. Clark and I. M. Robertson; *In situ TEM Straining of Nanograined Free-Standing Thin Films Reveals Various and Unexpected Deformation Mechanisms*; Spring MRS meeting; April 5-9, 2010, San Francisco, CA.

7. K. Hattar, D.M. Follstaedt, S.J. Hearne, I.M. Robertson; *Fracture of Free-Standing Ultra-fine and Nanograined FCC Thin Films*; MRS Spring 2008 Meeting, Mechanics of Nanoscale Materials Symposium, March 26, 2008 – San Francisco, CA

6. D. Follstaedt, K. Hattar, J.A. Knapp, I.M. Robertson; *In situ* *TEM investigation of Abnormal Grain Growth in Nanocrystalline Ni*; MRS Fall 2005 Meeting, *In-Situ* Electron Microscopy of Materials Symposium; November 29, 2005- Boston, MA

5. K. Hattar, J. Han, I. Robertson, T. Saif, S. Hearne, D. Follstaedt; *Mechanical Behavior and Deformation Mechanisms of Nano Grained Thin Metal Films*. MRS Fall 2005 Meeting, *In situ* Microscopy Symposium, November 28, 2005 – Boston, MA

4. J.A. Gregg, K. Hattar, I.M. Robertson; *Mechanisms of Grain Growth in Nanograined Metallic Structures*; MRS Fall 2005 Meeting*, In Situ* Electron Microscopy of Materials Symposium; November 29, 2005 – Boston, MA

3. K. Hattar, J.H. Han, D. Follstaedt, S.J. Hearne, T.A. Saif, I.M. Robertson; *Length Scale Effect on Deformation and Failure Mechanisms of Ultra-Fine and Nanograined Metals*. MRS Fall 2005 Meeting, *In situ* Microscopy Symposium; November 28, 2005 – Boston, MA

2. K. Hattar, J.H. Han, J.A. Gregg, T.A. Saif, I.M. Robertson; *In-Situ TEM Observation of Grain Growth of Nanograined Thin Films*. MRS Fall 2004 Meeting, Size Stability of Thin Films and Nanostructures Symposium; December 1, 2004 – Boston, MA

1. K. Hattar, J. H. Han, T.A. Saif, I.M. Robertson. *Study of Deformation and Failure Mechanisms of Nanograined Thin Films Using In-situ TEM*. MRS Fall 2004 Meeting, Size Effect in Plasticity Symposium; December 1, 2004 – Boston, MA

**Coauthored Presentation List**

238. Lang, Eric, Caitlin Taylor, Sarah Pratt, Tina Nenoff, and Khalid Hattar. "Automated Crystal Orientation Mapping with a Liquid-Cell TEM." Microscopy & Microanalysis 2021; August 1-5 2021; Virtual

237. Lang, Eric, Khalid Hattar, Torsten Richter, Achim Nadzeyka, and Kultaransingh Hooghan. "Deciphering Liquid Metal Embrittlement and Altered FIB Damage Microstructures on Aluminum." Microscopy & Microanalysis 2021; August 1-5 2021; Virtual

236. Matthews, Bethany, Kayla Yano, Sandra Taylor, Michel Sassi, Yingge Du, Le Wang, Khalid Hattar, and Steven Spurgeon. "Evolution of Defect States from Different Starting States in La1-xSrxFeO3 Thin Films." Microscopy & Microanalysis 2021; August 1-5 2021; Virtual

235. Victoriea Bird, Khalid Hattar, David LaVan, Izak McGieson, Joseph McKeown, Bryan W. Reed, Feng Yi and Melissa K. Santala; “Crystallization Kinetics of Phase Change Materials Using Complementary In Situ Microscopic Techniques” Materials Research Society (MRS) Spring 2021 Meeting, April 17-23, 2021; Virtual

234. Z. Milne, K. Jungjohann, and K. Hattar; “Combined-Extreme In-Situ Experiments by Redesign of a Transmission Electron Microscope Pole-Piece Gap” APS March Meeting 2021; March 15–19, 2021; Virtual

233. X. Zhang, F. Wang, X. Yan, X. Li, K. Hattar, B. Cui; “Nanostructured Oxide-dispersion-strengthened High-entropy Alloys” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

232. P. Hopkins, T. Pfeifer, E. Scott, J. Gaskins, D. Olson, K. Hattar, M. Goorsky; “Thermal Conductivity and Heat Transport Processes of Ion Irradiated and Laser Heated Solids” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

231. E. Jossou, M. Topsakal, X. Huang, K. Hattar, H. Yan, Y. Chu, C. Sun, L. He, J. Gan, L. Ecker, S. Gill; “X-ray Based Nanodiffraction to Study Strain in Materials for Nuclear Energy” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

230. E. Scott, K. Hattar, J. Braun, S. King, M. Goorsky, P. Hopkins; “Phase-dictated Thermal Conductivity Response in Carbon Systems Exposed to Ion Irradiation” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

229. A. Hinojos, D. Hong, N. Li, K. Hattar, P. Anderson, M. Mills; “Interaction between Martensite Transformation and Ion-induced Damage in Shape Memory Alloys” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

228. H. Salvador, E. Ramos, S. Shahrezaei, T. Clark, K. Hattar, S. Mathaudhu; “Exploring the Grain Size Stability of Heterogeneous Copper in Thermal, Mechanical and Radiation Environments” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

227. B. Boyce, D. Adams, K. Hattar, R. Dingreville, R. Parrish, F. Abdeljawad; “Chemical Gradients to Control Stability and Mechanical Behavior in Nanostructured Pt-Au” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

226. D. Hong, H. Paranjape, P. Anderson, A. Hinojos, M. Mills, K. Hattar, N. Li, J. Schaffer; “Pseudoelastic Response of Ion-implanted Nickel-titanium Shape Memory Alloy: Combining Experimentation and Forward Modeling” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

225. T. Ajantiwalay, S. Maloy, K. Hattar, A. Aitkaliyeva1; “In-situ Micro-tensile Testing of Proton-irradiated HT-9 Steels” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

224. A. Barnett, M. Cox, D. Moore, M. Alghalayini, C. Barr, K. Hattar, B. Boyce, F. Abdeljawad; “Grain Boundary Segregation in Immiscible Alloys: Anisotropy and Trijunction Effects” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

223. T. Clark, D. Adams, K. Hattar; “*In Situ* Investigation of the Effect of Ion Irradiation and Carbon

Addition in GST on Crystallization and Amorphization Thresholds” TMS 150th Annual Meeting; March 15-18th 2021; Virtual

222. R. Schoell, C. Zheng, K. Hattar, D. Kaoumi; “In Situ Micropillar Compression of Irradiated HT9” Microscopy & Microanalysis; August 3-7, 2020; Virtual

221. S Meher, I. van Rooyen, K. Hattar; “In-situ High Temperature Ion Irradiation Transmission Electron Microscopy to Understand Fission Product Transport in Silicon Carbide of TRISO Fuel; Microscopy & Microanalysis; August 3-7, 2020; Virtual

220. H. Salvador, Y. Sun, T. Clark, K. Hattar, S. Shahrezaei, and S. Mathaudhu; “Radiation Tolerance of Gradient Grain-structured Copper” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

219. T. Clark, S. Mathaudhu, S.A. Briggs, R. Dowding, J. Trelewicz, and K. Hattar; “Irradiation Induced Damage Evolution in Tungsten” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

218. C.M. Barr, P. Price, N. Heckman, B.L. Boyce, and K. Hattar; “Exploring Stability of Nanocrystalline Metals with Competing Solute Effects under High Temperature Irradiation” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

217. N. Madden, E. Lang, S. Murray, J.P. Allain, D. Shoemaker, K. Hattar, and J. Krogstad; “Defect Ordering in Yttria Stabilized Zirconia under 45 MeV Ion Irradiation” TMS 19th Annual Meeting; February 23-27, 2020; San Diego, CA

216. N. Madden, K. Hattar, and J.A. Krogstad; “Evidence of Radiation Enhanced Diffusion via In-situ Ion Irradiation of Yttria Stabilized Zirconia Nanoparticles” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

215. R. Schoell, C. Zheng, K. Hattar, and D. Kaoumi; “Mechanical Properties of Ion Irradiated and Helium Implanted HT9 Micropillars” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

214. W.S. Cunningham, K. Hattar, and J. Trelewicz; “Coupled Irradiation Induced Grain Growth and Damage Evolution in Solute Stabilized Nanocrystalline Tungsten” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

213. C. Barr, T. Duong, D. Bufford, N. Heckman, M. Demkowicz, K. Hattar, and B.L. Boyce; “Fatigue-crack Healing in Pure Nanocrystalline Pt Enabled by Boundary Evolution” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

212. A. Yu, C. Roach, K. Hattar, K. Solanki, and S. Mathaudhu; “Fundamental Investigation of Fatigue Behavior in Microstructurally Stable Nanocrystalline Cu-Ta Alloys” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

211. N. Heckman, C.M. Barr, K. Hattar, D. Adams, T. Furnish, and B.L. Boyce; “Watching High-cycle Fatigue in Nanocrystalline Pt and Pt-Au” TMS 149th Annual Meeting; February 23-27, 2020; San Diego, CA

210. T. Duong, A. Molkeri, C.M. Barr, A. Srivastava, K. Hattar, B.L. Boyce and M.J. Demkowicz; “Healing of Nano-Cracks in Metals Due to Stresses Induced by Mechanically-Driven Grain Boundary Migration” Materials Research Society (MRS) Fall 2019 Meeting, December 2-6, 2019; Boston, MA, USA.

209. E.A. Scott, K. Hattar, C.A. Taylor, J. Gaskins, T. Bai, Y. Wang, C. Ganski, M.S. Goorsky and P. Hopkins; “Phonon Scattering Effects in the Thermal Conductivity Reduction of Ion Irradiated Diamond” Materials Research Society (MRS) Fall 2019 Meeting, December 2-6, 2019; Boston, MA, USA.

208. T. Clark, C. Taylor, D. Robinson, J. Sugar, and K. Hattar; “Nanobubbles and Nanocavities in Palladium as a Function of He” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

207. C. Taylor, B. Muntifering, R. Goeke, Y. Wang, A. Monterrosa, B. Matthews, K. Hattar, B. Arey, and D. Zschiesche; “Helium Bubble Evolution in Implanted Erbium Deuteride Bulk and “Multilayered Structures” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

206. S. Briggs, A. Monterrosa, C. Taylor, G. Greaves, J. Hinks, and K. Hattar; “In-situ Observations of Bubble Evolution in Pd during He Implantation at Cryogenic Temperatures in a H2 Environment” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

205. C. Dennett, K. Hattar, M. Short; “Non-destructive Multi-property Determination under Extreme Conditions with Transient Grating Spectroscopy” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

204. C. Barr, V. Bird, G. Campbell, K. Hattar, I. McGieson, A. Monterrosa, B. Reed, A. Rise, S. Tripathi, and M. Santala; “Pushing Direct Experimental Measurement of Crystallization Kinetics in Phase Change Materials using Multiple Microscopic Techniques” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

203. B.L. Boyce, N. Heckman, K. Hattar, C. Barr, F. Abdeljawad, and S. Foiles; “The Elusive Toughness of Nanocrystalline Alloys” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

202. K. Hattar, C. Barr, B. Muntifering, D. Bufford, C. Taylor, S. Foiles, F. Abdeljawad, and S. Briggs; “Complex Interactions of Grain Boundaries and Radiation Damage” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

201. K. Hattar, C. Barr, N. Heckman, B.L. Boyce, S. Foiles, and F. Abdeljawad; “Decoupling Thermal, Mechanical, and Irradiation Stability Mechanisms in Nanocrystalline Pt Alloys” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

200. T. Clark, A. Devaraj, S. Mathaudhu, and K. Hattar; “Effect of Irradiation on Microstructure and Mechanical Properties of Metal Matrix Nanocomposite” Materials Science & Technology 2019 September 29 – October 3, 2019. Portland, OR

199. B.W. Reed, A.A. Moghadam, R.S. Bloom, S.T. Park, A.M. Monterrosa, P.M. Price, C.M. Barr, S.A. Briggs, K. Hattar, and D.J. Masiel; “Electrostatic Subframing and Compressive Sensing

Video in in situ Transmission Electron Microscopy” Microscopy & Microanalysis 2019, August 4-8, 2019, Portland, OR, USA

198. J.A. Aguiar, A. Monterrosa, B. Reed, D. Masiel, S. Kwon, M. Gong, T. Tasdizen, B. Coryell, K. Jungjohann, K. Hattar, E. Luther, and H.T. Hartman; “In situ Ion Irradiation and recrystallization in Highly Structured Materials” Microscopy & Microanalysis 2019, August 4-8, 2019, Portland, OR, USA

197. C.A. Taylor, K. Hattar, B. Arey, B.E. Matthews, D. Zschiesche, and R. Goeke; “Investigation of Helium Behavior in Multilayered Hydride Structures Through in situ TEM Ion Implantation” Microscopy & Microanalysis 2019, August 4-8, 2019, Portland, OR, USA

196. S.J. Dillon, G. Jawaharram, C.M. Barr, P.M. Price, and K. Hattar; “In situ TEM Measurements of Ion Irradiation Induced Creep” Microscopy & Microanalysis 2019, August 4-8, 2019, Portland, OR, USA

195. M. Gong, B. Miller, R.R. Unocic, K. Hattar, B. Reed, D. Masiel, T. Tasdizen, and J.A. Aguiar; “ Merging Deep Learning, Chemistry, and Diffraction for High-Throughput Material Structure Prediction” Microscopy & Microanalysis 2019, August 4-8, 2019, Portland, OR, USA

194. E.A. Scott, K. Hattar, C. Taylor, J. Gaskins, T. Bai, Y. Wang, C. Ganski, M.S. Goorsky, and P. Hopkins; “Phonon Scattering Effects in the Thermal Conductivity Reduction of Ion Irradiated Diamond” Spring Materials Research Society Meeting; April 22-26, 2019. Phoenix, AZ, USA

193. N. Nathan, E. Getto, B. Tobie, S. Briggs, K. Hattar, B. Baker, K. Knipling; “Effect of Friction Stir Welding on Microstructure Evolution of Self-Ion Irradiated MA956” American Nuclear Society Student Meeting; April 4-6, 2019. Richmond, VA, USA

192. C. Dennett, K. Hattar, and M. Short; “Damage Evolution Characterized with In Situ Ion Beam Irradiation Transient Grating Spectroscopy” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

191. J. Schuler, C. Barr, S. Briggs, N. Heckman, K. Hattar, B. Boyce, and T. Rupert; “Irradiation and Mechanical Behavior of Nanocrystalline Alloys with Amorphous Intergaular Films” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

190. T. Rupert, J. Schuler, B. Boyce, and K. Hattar; “Amorphous Intergranular Films for Improved Performance Under Irradiation” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

189. N. Heckman, S. Foiles, C. O’Brien, M. Chandross, C. Barr, N. Argibay, K. Hattar, P. Lu, D. Adams, and B. Boyce “Deformation Mechanisms in Nanocrystalline Pt-Au: Competition of Grain Boundary Embrittlement and Compositional Crack Arrest” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

188. S. Dillon, G. Jawaharram, C. Barr, and K. Hattar; “Irradiation Induced Creep in FCC Alloys Measured Using In Situ TEM” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

187. S. Briggs, P.-A. Juan, B. Muntifering, H. Yang, M. Knezic, R. Dingreville, J. Qu, K. Hattar; “Experimental and Modeling Study of Deformation Mechanisms in Irradiated ZIRLO” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

186. C. Barr and K. Hattar; “Quantitative In-situ TEM Nanomechanical Testing of Model and Nuclear Relevant Engineering alloys” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

185. E. Getto, N. Nathan, S. Briggs, K. Hattar, and B. Baker; “Effect of Friction Stir Welding on Microstructure Evolution on In Situ and Ex Situ Self-ion Irradiated MA956” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

184. N. Madden, K. Hattar, J. Krogstad; “Dynamic Structures Resulting from Ion Radiation Interactions with Porous Ceramics” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

183. C. Barr and K. Hattar; “Exploring Grain boundary-defect Interactions in Pt and Pt-Au using In Situ TEM High Cycle Fatigue” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

182. F. Abdeljawad, S. Foiles, A. Hinkle, A. Moore, C. Barr, N. Heckman, K Hattar, and B. Boyce; “The Role of the Interface Stiffness Tensor on Grain Boundary Dynamics” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

181. E. Reese, L.-J. Yu, N. Almirall, K. Hattar, T. Yamamoto, G.R. Odette, M.G. Burke, and E. Marquis; “Influence of Irradiation Conditions on Precipitation Behavior in Fe-Cr and Ni alloys” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

180. C. Taylor, J. Sugar, D. Robinson, S. Briggs, W. York, B. Muntifering, N. Catarineu, and K. Hattar; “Advanced In Situ Electron Microscopy Characterization of Hydrogen and Helium Evolution in Materials” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

179. C. Dennet, S. Ferry, K. So, K. Hattar, D. Buller, K. Anglin, and M. Short; “Rapid Radiation Damage Characterization with In Situ Dual Heterodyne Transient Grating Spectroscopy” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

178. J. Nathaniel, P. Suri, J. Baldwin, Y. Wang, K. Hattar, N. Li, and M. Taheri; “Irradiation Induced Phase Transformation in Nanocrystalline Au” TMS 2019; March 11-14, 2019. San Antonio, TX, USA

177. N.J. Madden, S.A. Briggs, C.A. Taylor, P. M. Price, T.J. Boyle, B.R. Muntifering, K. Hattar, J.A. Krogstad; “Room temperature sintering of yttria stabilized zirconia and ceria nanoparticles via ion irradiation” 43rd International Conference & Exposition on Advanced Ceramics & Composites (ICACC-2019); January 28-Febuary 1, 2018; Daytona Beach, FL, USA.

176. N.J. Madden, K. Hattar, J.A. Krogstad; “Defect ordering in yittria stabilized zirconia under 45 MeV ion irradiation” 43rd International Conference & Exposition on Advanced Ceramics & Composites (ICACC-2019); January 28-Febuary 1, 2018; Daytona Beach, FL, USA.

175. E. Scott, K. Hattar, J. Braun, J. Gaskins, T. Bai, S.Y. Wang, C. Gansky, M. Goorsky, and Patrick Hopkins; “Phonon scattering effects in the thermal conductivity reduction of ion irradiated diamond” Electronic Materials and applications 2019 (EMA 2019); January 23-25, 2019; Orlando, FL, USA.

174. M.P. Short, C.A. Dennett, S.E. Ferry, A. Kushima, K. So, P. Cao, K. Hattar, and D. Buller; “In situ measurement of radiation damage with transient grating spectroscopy” International Symposium on Plasticity and Its Current Applications; January 3-9, 2018; Panama City, Panama

173. A. Monterrosa, J. Stewart, P. Price, R. Dingreville, and K. Hattar; “In Situ Characterization of Single Ion Strikes in Single Crystal Silicon” Materials Research Society (MRS) Fall 2018 Meeting, November 27-30, 2018; Boston, MA, USA.

172. M. Kosmidou, N.J. Briot, N.J. Madden, R. Dingreville, J.A. Krogstad, K. Hattar, T.J. Balk, and Azin Akbar; “In Situ Studies of Nanoporous Niobium During Dealloying and Irradiation” Materials Research Society (MRS) Fall 2018 Meeting, November 27-30, 2018; Boston, MA, USA.

171. C.A. Taylor, D. Robinson, J. Sugar, N. Catarineu, W. York, B.R. Muntifering, and K. Hattar; “Comparison of Helium Aging in Ion Implanted and Tritium Loaded Metals” 40th Tritium Focus Group; October 23-25, 2018; Albuquerque, NM, USA.

170. M.A. Cusentino, X. Hu, K. Wang, C.A. Taylor, A. Monterrosa, K. Hattar, and B. Wirth; “Modeling of Hydrogen Interactions with Helium Bubbles in Tungsten” 40th Tritium Focus Group; October 23-25, 2018; Albuquerque, NM, USA.

169. F. Abdeljawad, S. Foiles, K. Hattar, B.L. Boyce; “Stiffness Matters: The Role of the Interface Stiffness Tensor on Grain Boundary Dynamical Processes” Materials Science & Technology 2018 October 14 –18, 2018. Columbus, OH, USA

168. C. Barr and K. Hattar; “Exploring Grain Boundary Dependent Deformation Mechanisms in Nanocrystalline Materials Through In-situ TEM High Cycle Fatigue” Materials Science & Technology 2018 October 14 –18, 2018. Columbus, OH, USA

167. C.A. Dennet, K. Hattar, M.P. Short; “Real-time property monitoring during ion beam irradiation using transient grating spectroscopy” 5th Nuclear Materials Conference 2018; October 14-18, 2018; Seattle, WA, USA.

166. C.A. Taylor, B.R. Muntifering, K. Hattar, B. Doyle; “Development of ERD Technique for Quantifying Light Isotope Concentrations in Irradiated TPBAR Materials” 25th International Conference on the Application of Accelerators in Research and Industry (CAARI 2018); August 12 – 17, 2018; Gaylord Texan Resort in Grapevine, Texas, USA

165. S.A. Briggs, N.M. Heckman, D.C. Bufford, T.A. Furnish, B.L. Boyce, and K. Hattar “Coupling a 6 MV Tandem and an Ion Gun to a Scanning Electron Microscope” 25th International Conference on the Application of Accelerators in Research and Industry (CAARI 2018); August 12 – 17, 2018; Gaylord Texan Resort in Grapevine, Texas, USA

164. C.A. Taylor, D. Robinson, B. Muntifering, J. Sugar, C. Snow, N. Catarineu, W. York, and K. Hattar “Direct Comparison of Helium Aging in Ion Implanted and Tritium Loaded Metals” 25th International Conference on the Application of Accelerators in Research and Industry (CAARI 2018); August 12 – 17, 2018; Gaylord Texan Resort in Grapevine, Texas, USA

163. Q. Guo, C.M. Barr, K. Hattar, G.B. and Thompson; “In Situ Single/Cyclic Deformation and Correlated Precession Electron Diffraction Analysis of Nano-Laminate Crystalline/Glassy Metal Composites” Microscopy & Microanalysis 2018, August 5-9, 2018, Baltimore, MD, USA

162. C. Chisholm, A.J. Leenheer, W.M. Mook, M. Shaw, K. Hattar, P.C. Galambos, and K.L. Jungjohann; “Active Mechanical-Electrochemical-Thermal Platform for In-situ Nanoscale Materials Characterization” Microscopy & Microanalysis 2018, August 5-9, 2018, Baltimore, MD, USA

161. S. Gupta, C. Barr, W. Mook, B. Boyce , K. Hattar , O. Pierron , and J. Kacher; “MEMS-based quantitative in-situ TEM nanomechanical testing” Thin Film and Small Scale Mechanical Behavior Gordon Research Conference July 15 - 20, 2018; Lewiston, ME, USA

160. J.A. Hinks F. Hibberd, K. Hattar, A. Ilinov, D.C. Bufford, F. Djurabekova, G. Greaves, A. Kuronen, S.E. Donnelly and K. Nordlund; “Ion channelling effects on sputtering of gold nanorods observed using in situ transmission electron microscopy” Ion Beam Modification of Materials (IBMM) 2018 June 24-29, 2018; San Antonio, TX, USA

159. C. A. Dennett, M. P. Short, K. Hattar; “In situ thermomechanical property monitoring during ion beam irradiation” Ion Beam Modification of Materials (IBMM) 2018 June 24-29, 2018; San Antonio, TX, USA

158. C. Barr, A. Aitkaliyeva, K. Hattar; “Understanding Complex Environmental Effects in Nuclear Reactor Relevant Materials Through In-Situ Transmission Electron Microscopy Ion Irradiation” American Nuclear Society (ANS) Annual Meeting, June 18-22, 2018; Philadelphia, PA, USA

157. N.R. Catarineu, D.B. Robinson, N.C. Bartelt, X. Zhou, D.F. Cowgill, J.D. Sugar, S.Vitale, W.L. York, C.A. Taylor, B.R. Muntifering, K.M,. Hattar, E. Lynn Bouknight, and K.L. Shanahan; “Three-Dimensional Maps of Helium Nanobubbles in a Palladium Alloy” 39th Tritium Focus Group (TFG) meeting, May 15-18, 2018; Oak Ridge, TN, USA

156. C. Taylor, J. Sugar, D. Robinson, C. Barr, B. Muntifering, N. Catarineu, K. Hattar; “Helium Bubble Nucleation and Growth in Palladium” 39th Tritium Focus Group (TFG) meeting, May 15-18, 2018; Oak Ridge, TN, USA

155. S.A. Briggs, D.C. Bufford, S.J. Blair, C. M. Barr, B.R. Muntifering, and K. Hattar; “Exploring Factors Affecting Radiation Response in Nanoparticles” 5th Workshop On TEM With In Situ Irradiation (WOTWISI-5) at the University of Huddersfield, April 11-13, 2018; Huddersfield, UK

154. B. Boyce, N. Argibay, T. Furnish, K. Hattar, C. Barr, M. Chandross, F. Abdeljawad, S. Foiles and B. Clark; “Incipient Damage and Solute Stabilization in Nanocrystalline Alloys” Materials Research Society (MRS) Spring 2018 Meeting, April 3-6, 2018; Phoenix, AZ, USA

153. T. John Balk, Nicholas Briot, Maria Kosmidou, Remi Dingreville, and Khalid Hattar; “In-situ Studies of Nanoporous Metals During Irradiation and Deformation” Materials Research Society (MRS) Spring 2018 Meeting, April 3-6, 2018; Phoenix, AZ, USA

152. D. Perales, T.J. Boyle, S. Briggs, K. Hattar, and R. Dingerville; “Evaluating pellet-clad interactions using cerium oxide simulants and depleted thorium and uranium oxide thin films on zircaloy.” 255th American Chemical Society National Meeting and Exposition; March 19-23, 2018; New Orleans, LA, USA

151. S.C. Hayden, C. Chisholm, R.O. Grudt, W. Mook, A. Ilgen, D. Bufford, K. Hattar, T.J. Kucharski, I. Taie, K. Jungjohann, M. Ostraat; “Real-time, *in situ* observation of aqueous corrosion initiation in nanostructured steel” 255th American Chemical Society National Meeting and Exposition; March 19-23, 2018; New Orleans, LA, USA

150. E. Getto, B. Tobie, K. Hattar, B. Baker, and S. Briggs; “Effect of Friction Stir Welding on Microstructure Evolution on In-situ and Ex-situ Self-ion Irradiated MA956” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

149. P. Noell, J. Carroll, K. Hattar, B. Clark, B. Boyce; “Void Initiation during Ductile Rupture of Pure Metals” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

148. F. Abdeljawad, D. Medlin, J. Zimmerman, K. Hattar, S. Foiles, “Grain Boundary Spinodals: Faceting Instability and the Role of Junction Energetics” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

147. M. Taheri, O. El-Atwani, A. Leff, K. Hattar, J. Nathaniel, and B. Uberuaga; “Grain Boundary Microstates under Irradiation: Which Came First?” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

146. D. Sprouster, K. Hattar, C. Sun, Y. Gao, C. Jiang, L. He, Y. Zhang, J. Gan, and L. Ecker; “Self-Organization of Gas Bubble Superlattices” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

145. N. Heckman, C. Barr, T. Furnish, K. Hattar, S. Foiles, F. Abdeljawad, C. Eberl, A. Hodge, and B. Boyce; “Fatigue Strength Scaling and Deformation at the Nanoscale – Nanotwinned and Nanocrystalline Metals” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

144. B. Boyce, N. Argibay, T. Furnish, K. Hattar, C. Barr, M. Chandross, F. Abdeljawad, S. Foiles, and B. Clark; “Connecting Thermal Stability to Fatigue and Wear Resistance in Nanocrystalline Binary Alloys” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

143. C. Dennett, K. So, K. Hattar, and M. Short; “Towards In-situ Thermo-mechanical Property Monitoring during Ion Irradiation” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

142. D. Bufford, B. Wang, K. Hattar, and A. Haque; “Investigating Irradiation Creep by In Situ TEM” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

141. C. Taylor, C. Barr, S. Briggs, B. Muntifering, and K. Hattar; “Deconvolution of Complex Environmental Effects Active in Nuclear Reactor Materials Through In-situ Ion Irradiation:” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

140. S. Dillon and K. Hattar; “Irradiation Creep in Nanostructures Measured Using In-situ TEM” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

139. G.S. Jawaharram, K. Hattar, R. Averback, and S. Dillon; “In-situ TEM Study of the Effects of W Solutes on Irradiation Induced Detwinning in Cu” TMS 147th Annual Meeting; March 11-15, 2018; Phoenix, AZ

138. P.J. Noell, J.D. Carroll, K. Hattar, B.G. Clark, B.L. Boyce; “Do voids initiate at grain boundaries during ductile rupture?” International Symposium on Plasticity and Its Current Applications; January 3-9, 2018; San Juan, Puerto Rico

137. S.A. Briggs, B.E. Klamm, R.F. Hess and K. Hattar; “Synthesis and Characterization of d-UO2 Nanoparticles for Nuclear Fuel Microanalysis” Materials Research Society (MRS) Fall 2017 Meeting, November 27- December 1, 2017 – Boston, MA

136. S.A. Briggs, D. Zhang, K.G. Field, K. Littrell, S.N. Dryepondt, P.D. Edmondson and K. Hattar; “Microstructural Stability of Irradiated FeCrAl Alloys for Fuel Cladding Applications” Materials Research Society (MRS) Fall 2017 Meeting, November 27- December 1, 2017 – Boston, MA

135. F. Abdeljawad, D. Medlin, J.A. Zimmerman, K. Hattar and S. Foiles; “A Mesoscale Model of Grain Boundary Faceting—The Role of Facet Junction Energetics” Materials Research Society (MRS) Fall 2017 Meeting, November 27- December 1, 2017 – Boston, MA

134. P. Price, M.J. Abere, C.M. Barr, S.T. Park, B. Reed, D. Masiel, D.P. Adams, K. Hattar and S.A. Briggs; “Development of and Initial Results from the First In Situ Ion Irradiation Dynamic TEM” Materials Research Society (MRS) Fall 2017 Meeting, November 27- December 1, 2017 – Boston, MA

133. S.A. Briggs, C.M. Barr, P.M. Price, C.A. Taylor, B.R. Muntifering, D.C. Bufford and K. Hattar; “In Situ Ion-Beam Microscopy Capabilities at the Sandia Ion-Beam Laboratory” Materials Research Society (MRS) Fall 2017 Meeting, November 27- December 1, 2017 – Boston, MA

132. C. Dennett, K. So, A. Kushima, K. Hattar, M.P. Short; “Irradiation-induced void swelling in pure copper characterized using transient grating spectroscopy” ANS Winter meeting, October 29-November 2, 2017 – Washington, D.C.

131. P. Price, S. Briggs, K. Hattar, L. Treadwell, T. Boyle, “In-situ Laser Modification and Characterization of Materials in the TEM” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

130. Q. Guo, C. Barr, K. Hattar, G. Thompson, “Single and Cyclic Deformation Responses in Nano-laminate Crystalline/Glassy Metal Composites” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

129. P. Noell, B. Boyce, J. Carroll, K. Hattar, B. Clark, “Do Voids Initiate at Grain Boundaries?” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

128. S. Briggs, J. Ihlefeld, B. Muntifering, K. Hattar, P. Hosemann, “Nanodispersed Cu-Nb for Enhanced Radiation Tolerance” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

127. O. Donaldson, K. Hattar, J. Trelewicz, “*In Situ* Analysis of Ion Irradiation Damage in Nanocrystalline Tungsten Alloys” Materials Science & Technology 2017 October 9 –13, 2017. Pittsburgh, PA

126. C. Taylor, B. Muntifering, D. Senor, and K. Hattar “Simulations of damage and gas accumulation in TPBAR materials with in-situ triple ion beam irradiation TEM” 2nd Asia-Pacific Symposium on Tritium Science (APSOT-2) September 5-8, 2017; Pleasanton, CA

125. C.M. Barr, D.C. Bufford, K. Hattar; “Investigation of Grain Growth and Deformation in Nanocrystalline Metals Through In Situ TEM Mechanical Testing and Crystallographic Orientation Mapping” Microscopy & Microanalysis 2017, August 6-10, 2017, St. Louis, MO

124. C. Taylor, P. Price, B. Muntifering, C. Snow, D. Senor, K. Hattar; “Using In Situ TEM Triple Ion Beam Irradiations to Study the Effects of Deuterium, Helium, and Radiation Damage on TPBAR Components” Microscopy & Microanalysis 2017, August 6-10, 2017, St. Louis, MO

123. M.L. Taheri, G. Vetterick, A.C. Leff, M. Marshall, J.K. Baldwin, A. Misra, K. Hattar; “Coupling Quantitative Dislocation Analysis with In Situ Loading Techniques: New Insight into Deformation Mechanisms” Microscopy & Microanalysis 2017, August 6-10, 2017, St. Louis, MO

122. P.K. Suri, J.E. Nathaniel, C.M. Barr, J.K. Baldwin, K. Hattar, M.L. Taheri, “Defect Characterization in Irradiated Nanocrystalline Materials via Automated Crystal Orientation Mapping” Microscopy & Microanalysis 2017, August 6-10, 2017, St. Louis, MO

121. E. Scott, K. Hattar, C. Rost-Barber, J. Gaskins, & P. Hopkins, “Vacancy and Mass-Impurity Phonon Scattering in Self-Irradiated Silicon” 59th Electron Materials Conference, June 28-30 2017, South Bend, IN

120. C.A. Taylor, B.R. Muntifering, C. Snow, D. Senor, & K. Hattar; “Examining Synergistic Effects Between Damage and Gas Accumulation with In-situ TEM” 2017 Tritium Focus Group, May 8-12, 2017, Richland, WA

119. O.K. Donaldson, K. Hattar, J.R. Trelewicz; “Microstructural Evolution and Self-Ion Damage in Nanocrystalline Tungsten Alloys” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

118. P.K. Suri, J. Nathaniel, B. Gaskey, I.D. McCue, K. Hattar, J.D. Erlebacher, and M.L. Taheri; “Quantification of the Role of Interfaces and Grain Boundaries in the Development of Radiation Tolerant Nuclear Materials” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

117. B. Wang, R. Pulavarthy, K. Hattar, and Aman Haque; “Self-Ion Irradiation Effects on Mechanical and Thermal Properties of Nanocrystalline Zirconium Films” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

116. C. Saltonstall, A. Allerman, C. Taylor, K. Hattar, and T. Beechem; “Temperature Dependent Thermal Conductivity of Al-Rich AlxGa(1-x)N” Materials Research Society (MRS) Spring 2017 Meeting, April 17- 21, 2017 – Phoenix, AZ

115. B. Klamm, R.F. Hess, T.J. Boyle, K. Hattar, R. Dingreville, and D. Perales; “Synthesis of UO2-Zircaloy thin films to address pellet-cladding debonding” 253rd American Chemical Society National Meeting & Exposition; April 2-6, 2017 – San Francisco, CA

114. A. Schleife, C.-W. Lee, K. Hattar, R. Dingreville, S.M. Foiles; “Multiscale modeling of electron-ion dynamics in silicon under particle radiation” American Physics Society March Meeting in New Orleans, LA, March 13-17, 2017

113. B. Muntifering, K. Hattar, D. Senor, and C. Snow; “In-situ TEM Triple Beam Irradiation of Zirconium Alloys at Elevated Temperature” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

112. T. Furnish, D.C. Bufford, K. Hattar, C. O’Brien, S. Foiles, A. Mehta, D. Van Campen, and B. Boyce; “Evidence that Abnormal Grain Growth Proceeds Fatigue-crack Initiation in Nanocrystalline Metals” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

111. C. Chisholm, W. Mook, S. Hayden, D.C. Bufford, K. Hattar, T. Kucharski, M. Ostraat, K. Jungjohann; “Direct Observation of Corrosion Cracking in a TEM” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

110. R. Karnesky, S. Lawrence, K. Hattar, S. Foiles, and B. Somerday; “Segregation of Lead and Hydrogen Isotopes to Grain Boundaries in Nickel and Their Effect on Fracture” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

109. B. Muntifering, D.C. Bufford, and K. Hattar; “Varying Responses of Nanocrystalline Structures to Assorted Irradiation Conditions” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

108. N. Briot, T.J. Balk, R. Dingreville, and K. Hattar; “Radiation Effects on the Mechanical Properties of Nanoporous Gold” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

107. S. Lawrence, R. Karnesky, K. Hattar, S. Foiles, and B. Somerday; “Effects of Trace Impurities on the Strength and Fracture of Hydrogen Charged Ni-201” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

106. F. Abdeljawad, D. Medlin, J. Zimmerman, K. Hattar, and S. Foiles; “A Mesoscale Model of Grain Boundary Faceting: The Role of Facet Junctions” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA

105. F. Abdeljawad, S. Foiles, B. Boyce, K. Hattar, and B. G. Clark; “Grain Boundary Segregation in Binary Alloys: A Diffuse Interface Model” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA **Invited**

104. M. Taheri, G. Vetterick, A. Leff, M. Marshall, K. Hattar, J.K. Baldwin, and A. Misra; “A Greater Understanding of Deformation in BCC Nanocrystalline Metals Using Quantitative In-situ TEM Techniques” TMS 146th Annual Meeting; February 26th-March 2nd 2017 – San Diego, CA **Invited**

103. A. Ali, Y. Lee, E. Blandford, K. Hattar, H.-Y. Kim, D.-J Park; “Ion Irradiation Effects On Critical Heat Flux of Coated Zircaloy-4” The 17th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-17), Xi’an, China, September 3 - 8, 2017

102. D.C. Bufford, D. Stauffer, C.M. Barr, W.M. Mook, S.A. Syed, B.L. Boyce, and K. Hattar “Nanostructural changes during fatigue and fracture revealed by in-situ transmission electron microscopy”, International Symposium on Plasticity and Its Current Applications; January 3-9, 2017; Puerto Vallarta, Mexico

101. E. Anderson, M. Buchhav, L. Yao, K. Hattar, G.R. Odette, E.A. Marquis, “Irradiation Condition and Dose Rate Effects in Irradiated Fe-Cr Alloys” Materials Research Society (MRS) Fall 2016 Meeting, November 27- December 2, 2016 – Boston, MA

100. D.D. Stauffer, D.C. Bufford, W.M. Mook, S. Asif, B.L. Boyce, and K. Hattar, “In-situ TEM dynamic Testing for Investigation of High-Cycle Fatigue and Failure in nc-Cu” Materials Research Society (MRS) Fall 2016 Meeting, November 27- December 2, 2016 – Boston, MA

99. B.L. Boyce, T.A. Furnish, D.C. Bufford, K. Hattar, C. O’Brien, and S.M. Foiles, “Catching the Embryo of Fatigue Crack Nucleation in Nanocrystalline Metals” Materials Research Society (MRS) Fall 2016 Meeting, November 27- December 2, 2016 – Boston, MA

98. D.C. Bufford, B. Wang, A. Haque, and K. Hattar, “Rapidly screening the structure and properties of irradiated nanocrystalline zirconium with small-scale mechanical testing” 24th International Conference on the Application of Accelerators in Research and Industry (CAARI 2016); Oct 20-Nov. 4, 2016; Fort Worth, TX

97. M. Franco, D.L. Buller, D.C. Bufford, and K. Hattar; “Exploring the Effects of Ion Beam Raster and Dose Rates on Localized Heating”24th International Conference on the Application of Accelerators in Research and Industry (CAARI 2016); Oct 20-Nov. 4, 2016; Fort Worth, TX

96. D.C. Bufford, C. Chisholm, B.R. Muntifering, and K. Hattar; Direct Observations of Structural Changes due to Sequential and Concurrent He Implantation and Heavy Ion Irradiation” 24th International Conference on the Application of Accelerators in Research and Industry (CAARI 2016); Oct 20-Nov. 4, 2016; Fort Worth, TX

95. O. El-Atwani, A. Leff, J. Nathaniel, K. Hattar, M.L. Taheri, “The Role of Grain Size and Grain Boundary Structure on Defect Absorption and Denuded Zone Formation in Irradiated Nanocrystalline Iron” 24th International Conference on the Application of Accelerators in Research and Industry (CAARI 2016); Oct 20-Nov. 4, 2016; Fort Worth, TX

94. S. V. Prasad, J-E Mogonye, K. Hattar, P. G. Kotula, “The Role of He Ion-implantation on the Friction, Wear and Electrical Contact Resistance of Au” 20th International Conference on Ion Beam Modification of Materials; Oct. 30 – Nov. 4, 2016; Wellington, New Zealand

93. J. Nathaniel, M. Taheri, K. Hattar, A. Leff, and O. El-Atwani, “Grain Boundary Dependence of Radiation Induced Damage in Nanocrystalline Nickel and Nickel-chromium Thin Films” Materials Science & Technology 16. OCTOBER 23 – 27, 2016. Salt Lake City, UT

92. S-T Hu, S. Rajasekhara, K. Hattar, and P. Ferreira, “A Study of Texture and Phase Evolution during Grain Growth of Nanocrystalline Ni Thin Films by In-situ and Precession Electron Diffraction Microscopy” Materials Science & Technology 16. OCTOBER 23 – 27, 2016. Salt Lake City, UT

91. D. Medlin, K. Hattar, J. Zimmerman, F. Abdeljawad, and S. Foiles, “Investigating the Interplay between Grain Boundary Facet Junctions and Interfacial Dislocations” Materials Science & Technology 16. OCTOBER 23 – 27, 2016. Salt Lake City, UT

90. J. Kacher, D. Gross, K. Hattar, I.M. Robertson, “In Situ TEM Observations of Corrosion in Nanocrystalline Fe Films” Materials Science & Technology 16. OCTOBER 23 – 27, 2016. Salt Lake City, UT

89. S. Stageby, B. Muntifering, K. Hattar, C. Snow; “Helium Bubble Accelerated Aging”; 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM.

88. C. Stevens, B.A. Hernandez-Sanchez, R.A. Kemp, D.A. Dickie, K. Hattar, T.N. Lambert; “Synthesis of Tin Phosphide and Tin Nanomaterials” 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

87. D. Bufford, C. Chisholm, B. Muntifering, K. Hattar, “Directly Observing Structural Evolution during Sequential and Concurrent Helium Implantation and Heavy Ion Irradiation” 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

86. R. Sisson, B. Muntifering, K. Hattar; “Ion Beam Irradiation for Studying Tritium Based Accelerated Aging” 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

85. C.M. Barr, L. Barnard, K. Hattar, K. Unocic, D. Morgan, M.L.Taheri; “Dependence of Grain Boundary Structure on Radiation Induced Segregation and Void Denuded Zones in a Model Ni-Cr Alloy” 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

84. J. Linder, T. J. Boyle, K. Hattar; “Morphologically Controlled Bi2O3 Nanomaterials” 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

83. D. Perales, T.J. Boyle, K. Hattar, R. Dingerville “Film study of pellet-clad interactions using cerium oxide as a surrogate”, 28th Rio Grande Symposium on Advanced Materials. October 3, 2016. Albuquerque, NM

82. S. Dillon, B. Averback, K. Hattar, S. Bufford, G. Jawaharram, and C. Lear, “Measuring Irradiation Creep via In-situ TEM” Microscopy & Microanalysis 2016. July 24-28, 2016. Columbus, OH

81. P. Sarobol, M..Chandross, W.M. Mook, P.G. Kotula, D.C. Bufford, K. Hattar, B.L. Boyce, J.D. Carroll, A.C. HallDeformation and Consolidation of Alumina Particles- Basis for Aerosol Deposition, a Room Temperature, Solid-State Deposition Process,” contributing oral presentation at the *ICMCTF*. Apr 25-29, 2016. San Diego, CA.

80. P. Sarobol, M. Chandross, W.M. Mook, P.G. Kotula, D.C. Bufford, K. Hattar, B.L. Boyce, J.D. Carroll, and A.C. Hall, “Deformation and Consolidation of Alumina Particles - Basis for Aerosol Deposition, a Room Temperature, Solid-State Deposition Process,&quot; contributing oral presentation at the *CICMT*. Apr 19-21, 2016. Denver, CO.

79. P. Sarobol, M. Chandross, W.M. Mook, P.G. Kotula, D.C. Bufford, K. Hattar, B.L. Boyce, J.D. Carroll, and A.C. Hall, “Deformation of Alumina Particles in Compression – Basis for a Room Temperature Ceramic Coating Deposition,” **Invited** oral presentation at *the National Labs @ Purdue Day Tech Talk*. Oct 6-7, 2015. West Lafayette, IN.

78. P. Sarobol, M. Chandross, W.M. Mook, P.G. Kotula, D.C. Bufford, K. Hattar, B.L. Boyce, J.D. Carroll, and A.C. Hall, “Atomistic simulations and In Situ TEM Compression of Sapphire Particles,” oral presentation at the Rio Grande Symposium on Advanced Materials, Oct 2, 2015, Albuquerque, NM.

77. K. Nordlund, F. Hibberd, A. Ilinov, A. Kuronen, F. Djurabekova, J.A. Hinks, G. Greaves, S.E. Donnelly, K. Hattar, and D.C. Bufford; *Major channeling effect on sputtering of nanowires*; COSIRES 2016; June 19-24, 2016; Loughborough, UK

76. B. Muntifering, J. Qu, K. Hattar; *Concurrent and Sequential Hydrogen Isotope Implantation and Self-Ion Irradiation in Nickel*; Spring MRS; March 29-April 1, 2016; Phoenix, AZ

75. F. Abdeljawad, D.C. Bufford, S.M. Foiles, K. Hattar; *Experimental Investigation and Mesoscale Modeling of Irradiation-Induced Grain Growth*; Spring MRS; March 29-April 1, 2016; Phoenix, AZ

74. B.L. Doyle, K. Hattar, D.C. Bufford, B. Muntifering; *Calculating and Mapping Unintentional Ion Channeling in Polycrystalline Materials;* The Fourth Workshop On TEM With In Situ Irradiation; March 16-18, 2016; Orsay & Gif sur Yvette, France

73. B. Muntifering and K. Hattar; *Insight from in-situ analysis of grain boundary character, radiation sequence, and thermal conditions on defect structure evolution in nickel*; The Fourth Workshop On TEM With In Situ Irradiation; March 16-18, 2016; Orsay & Gif sur Yvette, France

72. F. Abdeljawad, D. Medlin, J. Zimmerman, K. Hattar, and S. Foiles*; A diffuse interface model of grain boundary faceting*; American Physical Society March Meeting 2016 – Baltimore, MD

71. T.J. Boyle, J.M. Sears, D. Perales, P. Lu, K. Hattar, B. Muntifering, R.O. Chan, R. Cramer, and B.A. Hernandez-Sanchez; *Siloxide Derivatives of Early Transition Metal Alkoxides for Production of Nanomaterials*; 251st American Chemical Society National Meeting and Exposition; March 2016– San Diego, CA

70. D. Medlin, K. Hattar, J. Zimmerman, F. Abdeljawad, S. Foiles; *Experimental Observation and Modeling of Interface Defects at an Asymmetric Σ=5 Grain Boundary in Fe*; TMS 145th Annual Meeting; February 2016 – Nashville, TN

69. O. El-Atwani, A. Leff, J. Nathaniel, J.K. Baldwin, B. Muntifering, K. Hattar, and M. Taheri; *In-situ Transmission Electron Microscopy/Irradiation Studies on Nanocrystalline Iron: Defect Density, Denuded Zone Formation and Grain Boundary Structure;* TMS 145th Annual Meeting; February 2016 – Nashville, TN

68. O. Donaldson, K. Hattar, J. Trelewicz; *In Situ Analysis of Microstructural Evolution during the Devitrification of Amorphous Tantalum Films*; TMS 145th Annual Meeting; February 2016 – Nashville, TN

67. J. Nathaniel, O. El-Atwani, A. Leff, M. Taheri, J.K. Baldwin, and K. Hattar; *Grain Boundary Character Effect on Radiation Induced Defect Distribution in Nanocrystalline Nickel and Nickel-Chromium Thin Films;* TMS 145th Annual Meeting; February 2016 – Nashville, TN

66. D.C. Bufford, F. Abdeljawad, S. Foiles, and K. Hattar; *In Situ Characterization and Phase Field Modeling of Irradiation-Induced Grain Growth*; TMS 145th Annual Meeting; February 2016 – Nashville, TN

65. O. El-Atwani, J. Nathaniel, A. Leff, K. Hattar, and M. Taheri; *Ultrafine and nanocrystalline metals under extreme heat loading and irradiation conditions*; International Symposium on Plasticity and Its Current Applications; January 3-9, 2016; Kona, Hi

64. D. Stauffer, E. Hintsala, S.A.S. Asif, D. Bufford, W. Mook, and K. Hattar; *Correlative Nanomechanical Measurements;* International Symposium on Plasticity and Its Current Applications; January 3-9, 2016; Kona, Hi

63. D.L. Medlin, K. Hattar, J. et. al.; *Defect character at grain boundary facet junctions: a combined hrstem and atomistic modeling study*; International Symposium on Plasticity and Its Current Applications; January 3-9, 2016; Kona, Hi

62. B. Wang, R. Pulavarthy, K. Hattar, A. Haque; *Role of Ion Irradiation on the Properties of Nanocrystalline Zirconium Thin Films*; MRS Fall 2015 Meeting, December 4, 2015- Boston, MA

61. O. Donaldson, K. Hattar, J.R. Trelewicz; *In situ analysis of microstructural evolution during the heat treatment of nanocrystalline and amorphous tantalum films*; MRS Fall 2015 Meeting, November 30, 2015- Boston, MA

60. D.C. Bufford, W.M. Mook, M.E. Chandross, J.D. Carroll, B.L. Boyce, P.G. Kotula, K. Hattar, and P. Sarobol; *Direct Quantitative Observation of Plasticity and Fracture of Aluminia Nanoparticles*; SES 2015; October 26, 2015; College Station, TX.

59. J. Zimmerman, D. Medlin, F. Abdeljawad, K. Hattar, S. Foiles; *Modeling and Microscopy of Defects Character at Grain Boundary Facet Junctions in BCC Fe;* MS&T 2015; October 8, 2015; Columbus, OH.

58. A. Leff, A. Nye, C. Barr, K. Hattar, E. Kahl, O. El-Atwani, C. Weinberger, M. Taheri; *Understanding the Role of Localized Strain in Microstructural Evolution Using Correlated Precession Diffraction and In-situ TEM Methods;* MS&T 2015; October 5, 2015; Columbus, OH.

57. D.C. Bufford, F. Abdeljawad, S.M. Foiles, and K. Hattar; *Local Orientation Characterization during Irradiation Induced Grain Growth with Coordinated Phase Field Modeling*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

56. B. Muntifering, Y. Fang, R. Dingreville, J. Qu, and K. Hattar; *Thermal, Mechanical, and Radiation Stability of Stainless Steel*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

55. S. Blair, B. Muntifering, C. Gong, J. Qu, and K. Hattar; *Quantification of Cavity Evolution in PLD Nanocrystalline Ni after He Implantation followed by Self-Ion Irradiation*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

54. S. Coon, O. Donaldson, T. Kaub, G. Thompson, and K. Hattar; *Creating TEM Samples and Evaluating the Thermal Stability of Nanocrystalline Tungsten and Tungsten Alloys*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

53. T.H. Nguyen; BA. Hernandez-Sanchez, A.A. Golembeski, C.T. Stevens, and K. Hattar; *Formation of Tin Chalcogenide Nanomaterials*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

52. C.T. Stevens; B.A. Hernandez-Sanchez, D.A. Dickie, R.A. Kemp, K. Hattar, and T.J. Boyle; *synthesis of Tin Phosphide and Tin Nanomaterials*; 27th Rio Grande Symposium on Advanced Materials; October 2, 2015; Albuquerque, NM

51. S.E. Donnelly, K. Hattar, D.C. Bufford, J.A. Hinks, G. Greaves, I. HanifI; *In-situ Transmission Electron Microscopy Studies of Ion Irradiation Effects in Au Nanorods and Si Nanowires*; 2014 MRS Fall Meeting & Exhibit in Boston, MA, USA; 11/30/2014 - 12/05/2014 Invited

50. C.M Barr, L. Barnard, J. Nathaniel, K. Unocic, K. Hattar, D. Morgan, M.L. Taheri; *Grain Boundary Character and Size Dependence on Radiation Induced Segregation in a Model Ni-Cr Alloy*; 2014 MRS Fall Meeting & Exhibit in Boston, MA, USA 11/30/2014 - 12/05/2014

49. J. Nathaniel, II; C. Barr, K. Hattar, M. Taheri; *Boundary Character Effect on Void Denuded Zones in Nickel-Chromium*; TMS 2015 in Orlando, FL, USA from 03/15/2015 - 03/19/2015 .

48. G.B. Thompson, J.G. Brons, X.X. Hadwick, H.A. Padilla, K. Hattar, R. Ott, B.L. Boyce; *Application of Precession Electron Diffraction in Understanding Indentation-Induced Grain Growth in Nanocrystalline Metals*; TMS 2015 144th Annual Meeting & Exhibition in Orlando, FL, USA from 03/15/2015 - 03/19/2015.

47. P. Sarobol, M. Chandross, J.D. Carroll, W.M. Mook, D.C. Bufford, B.L. Boyce, P.G. Kotula, B.B. McKenzie, K. Hattar, and A.C. Hall; *Room Temperature Deformation Mechanisms of Alumina Particles Observed from in situ Micro-compression and Atomistic Simulations;* Int. Thermal Spray Conf. and Expo.; May 11-14, 2015. Long Beach, CA.

46. B. Muntifering, R. Dingreville, K. Hattar, J. Qu; *Concurrent In-situ Self-ion Irradiation and He Implantation of Nanocrystalline Nickel*; Spring Materials Research Society 2015 in San Francisco, CA, USA from 04/06/2015 - 04/10/2015.

45. B. Muntifering, A. Dunn, R. Dingreville, K. Hattar; *In-Situ TEM He+ Implantation and Thermal Aging of Nanocrystalline Fe*; Microscopy & Microanalysis 2015 in Portland, OR, USA from 08/03/2015 - 08/07/2015

44. O. El-Atwani, K. Hattar, G. Vetterick, M. Taheri; *Effect of Non-equilibrium Grain Boundary Local Strain on Defect Absorption and Denuded Zone Formation in Irradiated Nanocrystalline Iron*; Microscopy & Microanalysis 2015 in Portland, OR, USA from 08/02/2015 - 08/06/2015

43. N. Li, K. Hattar, A. Misra *In Situ Probing of the Evolution of Irradiation-induced Defects in Copper*; Microscopy & Microanalysis 2015 in Portland, OR, USA from 08/02/2015 - 08/06/2015

42. S.-T. Hu, L. Morganti, S. Rajasekhara, K. Hattar, P. Ferreira *Texture and Phase Analysis in Nanocrystalline Ni Thin Films by Precession Electron Diffraction Microscopy*; Microscopy & Microanalysis 2015 in Portland, OR, USA from 08/02/2015 - 08/06/2015

41. O.K. Donaldson, K. Hattar, J. Trelewicz; *Microstructural Evolution during the Heat Treatment of Nanocrystalline and Amorphous Ta Films*; RGSAM in Albuquerque, NM, USA from 10/06/2014 - 10/06/2014

40. B.L. Boyce, H. Padilla, E. Holm, G. Tucker, C. Battaile, S. Foiles, B. Clark, K. Hattar, J. Brons, G. Thompson; *Grain Growth of Nanotwinned Cu in a Liquid Helium Environment*; MRS Fall 2012 Meeting, Materials under Extreme Environments Symposium, November 26, 2012 – Boston, MA.

39. C.M. Barr, G. Vetterick, J. Hsieh, K. Unocic, K. Hattar, M.L. Taheri*; Investigation of the Anisotropic Behavior of Non-equilibrium Thermal Solute Segregation and Irradiation Induced Segregation with Grain Boundary Type*; MRS Fall 2012 Meeting, Advances in Materials for Nuclear Energy Symposium, November 28, 2012 – Boston, MA

38. C.M. Barr, J. Hsieh, G. Vetterick, K. Unocic, K. Hattar, and M.L. Taheri; *Role of the Full Grain Boundary Character Distribution in Radiation Induced Solute Segregation in Model Stainless Steel Alloys*; MRS Fall 2012 Meeting, Atomic Structure and Chemistry of Domain Interfaces and Grain Boundaries Symposium, November 29, 2012 – Boston, MA

37. N. Li, K. Hattar, M. Demkowicz, A. Misra; *In situ Probing of Radiation-induced Defects Evolution at Different Interfaces*; MRS Fall 2012 Meeting, Materials under Extreme Environments Symposium, November 27, 2012 – Boston, MA

36. S. Rajasekhara, K. Hattar, A. Darbal, A.N. Kinghorn, B.G. Clark; *Thermal Stability of Ion Irradiated Nanograined Nickel Films*; MRS Fall 2012 Meeting, Materials under Extreme Environments Symposium, November 26, 2012 – Boston, MA

35. S. Rajasekhara, K. Hattar, J.A. Knapp, A.N. Kinghorn, B.G. Clark, P.J. Ferreira; *Combining in-situ TEM Heating and Precession Electron Microscopy to Study Microstructural Evolution in Nanograined Ni Films*; MRS Fall 2012 Meeting, Quantitative In situ Electron Microscopy, November 27, 2012 – Boston, MA

34. G. Vetterick, J.K. Baldwin, M. Kirk, P. Baldo, K. Hattar, A. Misra, and M.L. Taheri; *Grain Boundary Character Effect on Radiation Induced Defect Cluster Interactions with Grain Boundaries in Nanocrystalline Iron*; MRS Fall 2012 Meeting, Advances in Materials for Nuclear Energy Symposium, November 29, 2012 – Boston, MA

33. B.A. Hernandez-Sanchez, K. Hattar, S.M. Hoppe, M.K. Kinnan, S. Thoma, J. Villone, P. Yang. T.J. Boyle, F.P. Doty; *Size Effects on the Properties of High Z Scintillator Materials*; SPIE Penetrating Radiation Systems & Applications XIII; August 2012 – San Diego, CA

32. L.N. Brewer, A.L. McGinnis, S.K. Menon, K. Hattar, J.D. Puskar, S.H. Goods; *Diffusion Couple Approach for Exploring Refractory Metals Additions to Structural Steels;* Microscopy & Microanalysis 2012; July-August 2012 – Phoenix, AZ

31. S.M. Hoppe, B.A. Hernandez-Sanchez, D.Y. Sasaki, K. Hattar; *Progress Towards In Situ TEM Observation of Biofouling;* Microscopy & Microanalysis 2012; July-August 2012 – Phoenix, AZ

30. P. Landau, Q. Guo, J.R. Greer, K. Hattar; *Investigation Of Radiation Damage Tolerance in Cu/Fe Interface-Containing Nano-pillars*; Microscopy & Microanalysis 2012; July-August 2012 – Phoenix, AZ

29. S. Rajasekhara, K. Hattar, V. Tikare, R. Dingreville, B.G. Clark; *Hydride Formation in Cladding materials Studied via In-Situ Environmental Heating Transmission Electron Microscopy;* Microscopy & Microanalysis 2012; July-August 2012 – Phoenix, AZ

28. G. Vetterick, C. Barr, M.L. Taheri, J.K. Baldwin, A. Misra, K. Hattar, M. Kirk, R. Unocic; *In-Situ TEM Observation of the Grain Size Effect on Radiation Induced Defect Distribution in Iron*; Microscopy & Microanalysis 2012; July-August 2012 – Phoenix, AZ

27. S.M. Hoppe, K. Hattar; *In-Situ Ion Irradiation and Tomography of Gold Nanoparticles;* 22nd International Conference on the Application of Accelerators in Research and Industry; August 2012 – Ft. Worth, TX

26. M.L. Taheri, G.A. Vetterick, C.M. Barr, J.K. Baldwin, K. Hattar, M.A. Kirk, P. Baldo, A. Misra; P. Baldo, *In-situ Observation of Point Defect Cluster Formation in Irradiated Nanocrystalline Iron*; 22nd International Conference on the Application of Accelerators in Research and Industry; August 2012 – Ft. Worth, TX

25. K. Hattar, S.M. Hoppe, B.A. Hernandez-Sanchez, T.J. Boyle, J. Villone, P. Yang, P.L. Feng, F.P. Doty; *Ion Beam Induced Luminescence and In situ Ion Irradiation TEM of Advanced Scintillators*; SORMA West 2012; May 2012 – Oakland, CA

24. P. Yang, H. Deng, M.A. Rodriguez, K.M. Hattar, J. Villone, D.R. Tallant, F.P. Doty, X. Zhou; *Synthesis and Characterization of Cs3Gd2Br9:Ce3+ Scintillator*; SORMA West 2012; May 2012 – Oakland, CA

23. R. Cheaito, J.C. Duda, T.E. Beechem, K. Hattar, J.F. Ihlefeld, D.L. Medlin, E.S. Piekos, P.E. Hopkins; *Thermal Conductivity and Thermal Boundary Conductance Measurements of Silicon Germanium and Alloy Nanometer Films*; MRS Spring Meeting and Exhibit 2012; April 2012 – San Francisco, CA

22. J.R. Greer, Q. Guo, K.M. Hattar, P. Landau; *Investigation of radiation damage tolerance in interface-containing nano-pillars*; Spring MRS; April 2012 – San Francisco, CA

21. S.M. Hoppe, D.Y. Sasaki, K. Hattar; *A New TEM Imaging Technique for Liposomes*; 2012 Materials Research Society Spring Meeting and Exhibit; April 2012 – San Francisco, CA

20. G. Vetterick, C.M. Barr, J.K. Baldwin, K. Hattar, M.A. Kirk, P. Balod, A. Misra, M.L. Taheri, G. Vetterick; *In-situ Observation of Point Defect Cluster Formation in Irradiated Nanocrystalline Iron*; 2012 Spring MRS; April 2012 – San Francisco, CA.

19. C.M. Barr, G. Vetterick, K. Hattar, M.A. Kirk, A. Misra, M.L. Taheri; *Insight into Grain-Boundary Specific Damage Using a Multiscale In Situ Microscopy Approach*; Plasticity 2012; January 2012 – San Juan, Puerto Rico.

18. C.M. Barr, G.A. Vetterick, J. Hsieh, K. Hattar, M.L. Taheri,; *Effect of Grain Boundary Character Distribution in Austenitic Stainless Steel under Ion Irradiation*; Fall MRS; December 2011- Boston, MA

17. T. Beechem, K. Hattar, P. Hopkins, J. Duda, J. Ihlefeld, D. Medlin, E. Piekos; *Alteration of Thermal Boundary Conductance in SiGe/Si Boundaries Using Ion Beam Irradiation*; IMECE Conference; November 2011 - Denver, CO

16. S. Hoppe, D. Sasaki, R. Polsky, B. Clark, K. Hattar; *Recent Developments in the Use of a Microfluidic Stage for in situ TEM Studies;* 23rd Rio Grande Symposium on Advanced Materials; October 2011 – Albuquerque, NM

15. S. Rajasekhara, K. Ganesh, K. Hattar, J. Knapp, P. Ferreira; *Characterization of Nanoscale hcp Phase Nickel in a fcc Phase Nickel Thin Film*; Materials Science and Technology Conference and Exhibition; October 2011 – Columbus, OH

14. S. Rajasekhara, K. Hattar, J.A. Knapp, K.J. Ganesh, P.J. Ferreira; *Understanding Texture Evolution in Nanocrystalline Nickel Films;* 23rdRio Grande Symposium on Advanced Materials; October 2011 – Albuquerque, NM

13. J.V. Branson, K. Hattar, G. Vizkelethy, C.J. Powel, P. Rossi, and B.L. Doyle, *Optical Properties of Ion Beam Induced Materials*, Conference on Application of Accelerators in Research and Industry, August 8-13, 2010 -Fort Worth, TX,

12. J.V. Branson, K. Hattar, G. Vizkelethy, C.J. Powel, P. Rossi, and B.L. Doyle, *Heavy Ion Radiation Effects Studies with Ion Emission Microscope*, Conference on Application of Accelerators in Research and Industry, August 8-13, 2010 - Fort Worth, TX

11. B.G. Clark, K. M. Hattar, J. A. Knapp, H.A. Padilla and B. Boyce; *In situ TEM Studies of Deformation Mechanisms in Nanograined Al Strengthened with Al2O3 Particles*, Microscopy and Microanalysis 2010; Aug. 1-5, 2010 - Portland, OR.

10. L.N. Brewer, P. Lu, P.G. Kotula, and K. Hattar; *Microstructural Evolution in Austenitic and Martensitic Steels Irradiated to High Damage Levels*, Microscopy and Microanalysis 2010; Aug. 1-5, 2010, Portland, OR.

9. J.V. Branson., B.L. Doyle, G. Vizkelethy, P. Rossi, K. Hattar., *Ion Beam Characterization of Advanced Luminescent Materials for Application in Radiation Effects Microscopy*, International Conference on Nuclear Microbeam Technology and Applications 2010; July 26-30, 2010 - Leipzig, Germany.

8. P.L. Feng, J. Branson, K. Hattar, G. Vizkelethy, M.D. Allendorf, F.P. Doty; *Designing Metal-Organic Frameworks for Radiation Detection*, 2010 Symposium on Radiation Measurements and Applications, May 24-28, 2010 - Ann Arbor, MI,

7. J. Kacher, I.M. Robertson, M. Nowell, K. Hattar; *Abnormal Grain Growth in Pulse-Laser Deposited Nickel*; Electron Back Scattered Diffraction 2010 An MAS Topical Conference; May 24-26, 2010 Madison, WI.

6. C.J. Powell; J.V. Branson; K. Hattar; P. Rossi; G. Vizkelethy; B.L. Doyle*; Developments in Advanced Ionoluminescent Materials*; Rio Grande Symposium, October 5, 2009, Albuquerque, NM

5. J. V. Branson, B. L. Doyle, K. Hattar, M. B. Johnson, M. A. McMahan, L. W. Phair, P. Rossi, G. Vizkelethy; *A radiation microscope for SEE testing using >10 GeV ions;* LDRD Day Symposium and Awards 2009; September 14, 2009 Albuquerque, NM.

4. J. V. Branson, B. L. Doyle, K. Hattar, M. B. Johnson, M. A. McMahan, L. W. Phair, P. Rossi, G. Vizkelethy; *Radiation effects studies with ion photon emission microscopy;* SERRI 2009 Student Presentation; September 12, 2009 Albuquerque, NM.

3. J. V. Branson, B. L. Doyle, K. Hattar, M. A. McMahan, G. Vizkelethy; *Radiation effects studies with ion photon emission microscopy;* IBA 2009 Conference; September 6-11, 2009 Cambridge, UK.

2. J. V. Branson, B. L. Doyle, K. Hattar, M. B. Johnson, M. A. McMahan, L. W. Phair, P. Rossi, G. Vizkelethy; *Radiation effects studies with ion photon emission microscopy;* 2009 IEEE Nuclear and Space Radiation Effects Conference; August 20-24, 2009 Quebec City, Canada.

1. T. Hoechbauer, A. Misra, K. Hattar, R.G. Hoagland; *Radiation Damage Evolution in Helium Implanted Cu-Nb Multilayered Thin Films*. MRS Fall 2005 Meeting, Amorphous and Nanocrystalline Metals for Structural Applications Symposium; November 28, 2005 – Boston, MA