CURRICULUM VITAE

Indrajit Charit, Ph.D., P.E.

NAME: Charit, Indrajit **DATE:** Aug. 20, 2020

RANK OR TITLE: Professor

YEAR OF TENURE: 2013

DEPARTMENT/PROGRAM: Materials Science and Engineering

OFFICE LOCATION AND CAMPUS ZIP: McClure 405D, 1021 **OFFICE PHONE:** (208) 885-5964
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EDUCATION BEYOND HIGH SCHOOL:

Degrees:

Ph.D. in Metallurgical Engineering, University of Missouri-Rolla (currently known as Missouri University of Science & Technology), Rolla, Missouri, USA, 2004
Dissertation: Microstructural and Superplastic Characteristics of Friction Stir Processed Aluminum Alloys
Major Advisor: Professor Rajiv S. Mishra

M.E. in Metallurgy, Indian Institute of Science, Bangalore, India, 2000
Thesis: High Temperature Deformation Characteristics of a Low Purity 3 Mol% Yttria Stabilized Zirconia
Major Advisor: Professor Atul H. Chokshi

B.E. in Metallurgical Engineering, Bengal Engineering College (currently known as Indian Institute of Engineering Science & Technology), Sibpur, India, 1997

EXPERIENCE:

Teaching, Extension and Research Appointments:

Professor and Director, Materials Science and Engineering, University of Idaho (UI), July 2020 – Present
Professor, Chemical and Materials Engineering, UI, July 2019 – June 2020
Associate Professor, Chemical and Materials Engineering, UI, July 2013 – June 2019
Director of Graduate Studies, Materials Science & Engineering, June 2015 – June 2020
Assistant Professor, Chemical and Materials Engineering, UI, July 2007 – June 2013
Affiliate Faculty Member, Materials Science & Engineering, Boise State University, 2009 – Present
Center for Advanced Energy Studies (CAES) Affiliate, 2010 – Present
Postdoctoral Fellow, Nuclear Engineering, North Carolina State University, Jan. 2005 – June 2007
Postdoctoral Research Associate, Materials Science and Engineering, Missouri University of Science & Technology, June 2004 – Dec. 2004
Graduate Research Assistant, Metallurgical Engineering, University of Missouri-Rolla, Aug. 2000 – May 2004

Non-Academic Employment:

Visiting Faculty, Materials and Fuels Complex, Idaho National Laboratory, Summer 2008
Project Engineer, TVS Suzuki Limited, Hosur, India, Feb. 2000 - June 2000
Quality Control Engineer, Electrosteel Castings Limited, Calcutta, India, Aug. 1997 – July 1998

TEACHING ACCOMPLISHMENTS:

Areas of Specialization:

Mechanical Behavior of Materials, Nuclear Materials, Advanced Manufacturing and Characterization

Regular Courses Taught:

MSE 101 (2 cr.), Introduction to Metallurgy and Materials Science, Team-Taught (since Fall 2013)
MSE 201 (3 cr.), Elements of Materials Science (Fall 2013)
MSE 507 (3 cr.), Microstructures and Defects, Fall 2013 / 2015 / 2017 / 2018 / 2019
MSE/NE 504 (3 cr.), Nuclear Degradation Mechanisms, Spring 2013 (Team-Taught)
MSE/NE J438/J538 (3 cr.), Fundamentals of Nuclear Materials, Spring 2008 / 2009 / 2010 / 2011 / 2012 / 2014 / 2015 / 2017
MSE/NE J437/J537 (3 cr.), Radiation Effects on Materials, Fall 2008 / 2009 / 2010 / 2011, Spring 2016, Fall 2018, Spring 2020
MSE 313 (4 cr.), Physical Metallurgy, Fall 2010 to 2018; MSE 313 (3 cr.), Fall 2019
MSE 313L (1 cr.), Physical Metallurgy Laboratory (1 cr.), Spring 2019/2020
MSE 412 (3 cr.), Mechanical Behavior of Materials, Spring 2011 to Present (except Spring 2018)
MET/MSE 407 (3 cr.), Materials Fabrication, Spring 2008, Fall 2008 / 2009
MET/MSE 417 (3 cr.), Instrumental Analysis, Fall 2007 / 2009 / 2010
MET/MSE J421/J521 (3 cr.), Light Metals, Spring 2008/ Fall 2016 / Fall 2017
MSE J404/J504 (3 cr.), Microstructural Design of Advanced Materials, Spring 2009
MSE/NE J404/J504 (1 cr.), Special Topics in Materials Science & Engineering, Summer 2008

Directed Studies Taught to Graduate Students:

MSE 502 (3 cr.), Light Nonferrous Alloys, Summer 2020
MSE 502 (3 cr.), Atomic Transport in Materials, Spring 2019
MSE 502 (3 cr.), Nuclear Reactor Materials, Fall 2015
MSE 502 (3 cr.), Neutron Diffraction Studies, Spring 2012
MSE 502 (3 cr.), Texture Characterization and Analysis, Spring 2012
MSE 502 (3 cr.), High Temperature Deformation and Failure Mechanisms / Diffusion Theories, Fall 2011
MSE 502 (3 cr.), Mechanical Alloying, Summer 2011
MSE 502 (3 cr.), Advanced Phase Transformation, Summer 2009

Postdoctoral Fellow(s) Advising/Advised:

Madhumanti Bhattacharyya, Postdoctoral fellow (May 2019 – May 2020))

Students Advised:

Undergraduate Student Academic Advisees (on average): 6-8 per year
Mentored in various research projects: 29
Tariq Al Tobi (Fall 2019)
Jadzia A. Graves (Spring 2019), won a UI Undergraduate Research Office Grant ($1,000), "Microstructural and Mechanical Properties Evaluation of Friction Stir Welded High Entropy Alloys."
Jadzia A. Graves (Fall 2018), won a UI Undergraduate Research Office Grant ($1,000), "Microstructural and Mechanical Properties Evaluation of High Entropy Alloys."
Alexander Trench (Spring 2018); won an Undergraduate Research Office Grant ($1,000), *"Electrochemical deposition of NiCrFeCoMn: High Entropy Alloy Manufacturing."*
Jack Armstrong (Fall 2016, Spring 2018); won an Undergraduate Research Office Grant ($1,000), *"Characterization of Nickel Based Alloy 718 Processed via Electron Beam Melting."*
James Zillinger (partial summer 2017)
Martin Taylor (Summer 2016, Fall 2016)
Sean Instasi (Summer 2016, Spring 2017); won UI Undergraduate Research Office Grant ($1,000), *"Pressure Resistance Welding of Molybdenum: Microstructure and Hardness."*
Barbara Correa (Brazilian exchange student, Fall 2015)

Joao Quintino Palhares (Brazilian exchange student), Spring 2015
Samuel Madeira Bessa (Brazilian exchange student), Spring 2015
Brandon Cisco (Summer & Fall 2014)
Maxwell Bowdon (Fall 2013 / Spring 2014)
Dallas Roberts (Summer 2013)
Nikunja Shrestha (Spring 2013)
Sweta Khanal (Summer 2010, Fall 2010 / 2011, Spring 2012, Summer 2012, Fall 2012)
Brad Burroughs (Spring 2012)
Tshering Sherpa (Spring 2012 / 2013)
Zachary Wuthrich (MSE minor), Spring 2012
Brady McNall (Summer 2011)
Mary O'brien (Spring 2011, Fall 2011)
Robert Meine (Fall 2011, Spring 2012, Fall 2012)
Mark Aikey (Spring 2010, Spring 2011, Fall 2015)
Lindsay Barnett (Fall 2009, Fall 2010)
Grace Newhouse (Spring 2009, Fall 2009)
Anup Khatri (Fall 2009)
Adam Anderson (Summer 2009)
Maneel Bhardwaj (Spring 2009)
Triratna Shrestha (Fall 2007, Spring 2008, Fall 2008)

Graduate Students:

*Advised to completion of degree as major professor: **17** (thesis/dissertation), **2** (non-thesis)*

Dallas Roberts, "A Preliminary Assessment of Microstructure and Mechanical Properties of 15-5 PH Stainless Steel Processed via Direct Metal Laser Sintering," **MS in MSE** (graduated Fall 2019).

Arnab Kundu, "A Study on Microstructure and Properties of Fe-xCr Alloys and Fe-9Cr ODS Alloys Processed via Spark Plasma Sintering," **PhD in MSE** (Graduated in Spring 2019); joined Jindal Stainless, Hissar, India.

Martin Taylor, "Creep and Microstructure of Advanced Austenitic Stainless Steel Alloy 709," **MS in MSE** (Graduated in Summer 2018); joined NavAir, Ridgecrest, CA.

Sean Instasi, "Solid-State Joining of Molybdenum Based Materials via Pressure Resistance Welding," **MS in MSE** (Graduated in May 2018); accepted a job offer at Hewlett Packard (HP), Corvallis, OR.

Anumat Sittiho, "Friction Stir Processing of an Aluminum-Bearing, High-Chromium Ferritic Steel: Microstructure and Mechanical Properties," **MS in Met. Eng.** (Graduated in Spring 2017); now a PhD student in the UI MSE program.

Francine Rice, "Fuel Plate Failure Experiments and Analyses in Irradiated U-10Mo Alloy," **MS in NE** (Graduated in Spring 2017); working at the Idaho National Laboratory.

Ankan Guria, "Mechanical Behavior of Aluminum-Bearing Ferritic Alloys for Accident-Tolerant Fuel Cladding Applications," **MS in MSE** (Graduated in Fall 2015); joined Sandvik India.

Cody Hill, "Processing and Characterization of HfB_2 and ZrB_2 Solid Solution Composites for Magnetohydrodynamic (MHD) Power Generation Applications, **MS in MSE** (Graduated in Fall 2015); works at Wagstaff, Spokane.

Somayeh Pasebani, "Processing of Oxide Dispersion Strengthened Alloys via Mechanical Alloying and Spark Plasma Sintering," **PhD in MSE** (Graduated in Summer 2014); currently Assistant Professor, Oregon State University.

Sultan Alsagabi, "High Temperature Deformation Behavior, Thermal Stability and Irradiation Performance in Grade 92 Steel," **PhD in MSE** (Graduated in Spring 2014); works as Nuclear Sciences Research Institute Director, King Abdulaziz City for Science and Technology (KACST), Riyadh, Saudi Arabia.

Triratna Shrestha, "Creep deformation, Rupture Analysis, Heat Treatment and Residual Stress Measurement of Monolithic and Welded Grade 91 Steel for Power Plant Components," **PhD in MSE** (Graduated in Spring 2013); working as Metallography Laboratory Manager, MetCut Research Inc., Cincinnati, OH, USA.

Michael Glazoff, "Advanced High Temperature Reactor: Computational Thermodynamics Study of Materials, Their Diffusion Welding and Corrosion," **MS in NE** (Graduated in Spring 2013); currently working at the Idaho National Laboratory

Jonathan A. Webb, "Analysis and Fabrication of Tungsten Cermet Materials for Ultra-High Temperature Reactor Applications via Pulsed Electric Current Sintering (PECS)," **PhD in NE** (Graduated Summer 2012); currently senior manager at TASC/Engility, Laytoon, UT.

Nathan Jerred, "Solid State Joining of High Temperature Metallic Materials via Pressure Resistance Welding for Advanced Nuclear Reactor Applications," **MS in NE** (Graduated Summer 2011, working at the Center for Space Nuclear Research)

Kalyan Chitrada, "Thermal Stability Studies in MA956 and MA754 Alloys," **MS in MSE** (Graduated Fall 2010); currently at Intel

Sultan Alsagabi, "A Fundamental Study on the Thermal Stability, Mechanical and Corrosion Properties of AZ31 Mg Alloy," **MS in Met. Eng.** (Graduated Fall 2009)

Sean McCormick, "The Effect of Heat Treatment and Creep Deformation on the Microstructural Characteristics of ATI 20+25 Nb^{TM} Alloy," **MS in MSE** (Graduated Summer 2009, joined NavAir)

Ramprashad Prabhakaran, **MEngr. in NE** (graduated 2014, currently at PNNL)

Lucas Fowler, **MS Non-thesis in MSE** (graduated 2008, joined ATI Wah Chang, Albany, OR)

Advising as major professor: 6 (as thesis/dissertation students) + 1 (non-thesis)

Anumat Sittiho, "FCC Based TRIP and TWIP High Entropy Alloys," **PhD in MSE** (graduation expected Spring 2021)

Nathan Jerred, "Use of Dopants to Counter Fuel-Cladding-Chemical-Interactions (FCCI) for Fast Reactor Metallic Fuels," **PhD in MSE** (expected Spring 2020)

Norah Alsairy, "Microstructure and Mechanical Properties of 304L Stainless Steel for Spent Fuel Storage Canister Applications," **PhD in MSE** (expected Fall 2022)

Ramprashad Prabhakaran*, "Small Volume Mechanical Test Techniques for Characterizing Structural and Fuel Materials," **PhD in MSE** (expected Fall 2020)
(* Full-Time employee at the Pacific Northwest National Laboratory)

Hussam Ali, "Microstructural and Mechanical Characterization of IN 718 Alloy Fabricated by Laser Powder Bed Fusion," **MS in MSE** (expected Fall 2020)

Calvin Downey♦, "Exploration of the Design and Manufacturing of Multi-purpose Experimental Vehicles Using Additively Manufactured HT9 Steel," **MS in MSE** (expected Fall 2022)
(♦ Full-time employee at the Idaho National Laboratory)

Kyle Lutz, **MS non-thesis in MSE** (expected Spring 2021), full-time employee at the Naval Reactor Facility (Idaho Falls)

Served/serving on graduate committees: **66** (including Dr. Charit's thesis/dissertation graduate students shown above)

Anirban Naskar, PhD in MSE (advisor: Dr. Krishnan Raja)
Nathan Manwaring, PhD in NE (advisor: Dr. Rich Christensen)
Jacob Miller, MS in MechE (advisor: Dr. Michael Maughan)
Saheed Adisa, Ph.D. in MSE (advisor: Dr. Matthew Swenson)
Mohammad Z. Khan, Ph.D. in Physics (advisor: Dr. You Qiang)
Anirban Naskar, M.S. in MSE (advisor: Dr. Samrat Choudhury)
Andre Corpus, M.S. in MechE (advisor: Dr. Michael Maughan)
Kelley Verner, Ph.D. in Nuclear Engineering (advisor: Dr. Bob Borrelli)
Jason Schulthess, M.S. in MechE (advisor: Dr. Rich Christensen)
Nikunja Shrestha, M.S./Ph.D. in MSE (advisor: Dr. Krishnan Raja)
Brandon Day, M.S./Ph.D. in MSE (advisor: Dr. Krishnan Raja)

Isaac Curtis, M.S. in MSE (advisor: Dr. Samrat Choudhury)
Ian Ehrsham, M.S. in MSE (advisor: Dr. Batric Pesic)
Mehdi Basirat, Ph.D. in MechE (advisor: Dr. Gabriel Potirniche)
Lokendra Khanal, Ph.D. in Physics (advisor: Dr. You Qiang)
Jose Ramirez, Ph.D. in MechE (advisor: Dr. Gabriel Potirniche)
Juan Carlos, Ph.D. in MechE (advisor: Dr. John Crepeau)
Jakraphan Ninlachart, MS in Metallurgical Engineering (advisor: Dr. Krishnan Raja)
Benjamin Andrews, MS in ME (advisor: Dr. Gabriel Potirniche)
Michael Opoku, MS in MSE (advisor: Dr. Raghunath Kanakala)
Stuart Whitman, MS in MSE (advisor: Dr. Krishnan S. Raja)
Kalyan Chitrada, PhD in MSE (advisor: Dr. Krishnan Raja)
Steven Sitler, MS in MSE & PhD in MSE (advisor: Dr. Krishnan S. Raja)
Dominic Nwoke, MS in MSE (advisor: Dr. Daniel Choi)
Clemente J. Parga, MS in NE (advisor: Dr. Akira Tokuhiro)
Keshav R. Pokharel, MS MSE (advisor: Dr. Batric Pesic)
Ke Xue, MS MSE (advisor: Dr. Daniel Choi)
Toni Gutknecht, MS NE (advisor: Dr. Vivek Utgikar)
Jon Carmack, PhD NE (advisor: Dr. Fred Gunnerson)
Ken Marsden, PhD MSE (advisor: Dr. Supathorn Phongikaroon)
Bryan Riga, MS ME (advisor: Dr. Karl Rink)
Natalie Gese, MS MSE (advisor: Dr. Batric Pesic)
Cory Sparks, MS MSE, Boise State University (advisor: Dr. Darryl P. Butt)
Jennifer A. Sundarajan, MS Physics (advisor: Dr. You Qiang)
Frank Battick, MS NE (advisor: Dr. Batric Pesic)
Zhikan Zhang, MS MSE (advisor: Dr. Daniel Choi)
Fahad Khalid, MS MSE (advisor: Dr. Daniel Choi)
Matt Luke, MS MSE, Boise State University (advisor: Dr. Megan Frary)
Jamie Jabal, PhD ChE (advisor: Dr. Eric Aston)
Alberto Castro, MS ME (advisor: Dr. Gabriel Potirniche)
Kurt Hall, MS ME (advisor: Dr. Gabriel Potirniche)
Yuxia Zheng, MS MSE (advisor: Dr. Keith Prisbrey)
Mohammad Faheem, PhD MSE (advisor: Dr. Keith Prisbrey)

Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:

Served as one of the instructors for the Metallurgical and Materials Engineering Professional Engineer (PE) Licensing Exam Review Course held in Kimpton Hotel Monaco, Pittsburgh, PA, Aug. 1 – 4, 2018.

Invited Speaker, "Nuclear Materials Research at the University of Idaho," Mechanical Engineering Seminar, Indiana University – Purdue University Indianapolis, Indianapolis, IN, March 26, 2018.

Presented in the Advanced Fuel Cycle Integration Meeting, Albuquerque, NM, USA, Dec. 12 – 14, 2017 (invited).

Served as one of the instructors for the Metallurgical and Materials Engineering Professional Engineer (PE) Licensing Exam Review Course held in Westin Convention Center, Pittsburgh, PA, Aug. 16 – 19, 2017.

Invited Speaker, "Spark Plasma Sintering for High Performance Energy Applications," Materials Initiative CAES Meeting, August 8, 2017, Boise, ID.

Served as one of the instructors for the Metallurgical and Materials Engineering Professional Engineer (PE) Licensing Exam Review Course held at the TMS Headquarters in Warrendale, PA, Aug. 24-27, 2016.

Invited Speaker, "Nanostructured Ferritic Steels via Spark Plasma Sintering," Department of Chemical

and Materials Engineering, University of Nevada-Reno, March 18, 2016.

Served as one of the instructors for the Metallurgical and Materials Engineering Professional Engineer (PE) Licensing Exam Review Course held at the TMS Headquarters in Warrendale, PA, Aug. 20-22, 2015.

Invited Speaker: "Spark Plasma Sintering: A Processing Route for Nanostructured Ferritic Steels," ASM-IIM Visiting Lectureship, Mar. 18 (Indian Institute of Engineering Science & Technology) and Mar. 19 (Indian Institute of Technology – Kharagpur), India, 2015.

Invited Speaker: "Spark Plasma Sintering: A Processing Route for Nanostructured Ferritic Steels," Interdisciplinary Materials Science & Engineering Seminar, Washington State University, Jan. 24, 2014.

Invited Speaker: "Oxide Dispersion Strengthened Alloys for Advanced Nuclear Reactors," Mechanical Engineering Seminar Series, Virginia Tech, VA, May 10, 2011.

Invited Speaker: "Solid State Welding Characteristics of Oxide Dispersion Strengthened Alloys," School of Mechanical and Materials Engineering," School of Mechanical and Materials Engineering, Washington State University, Dec. 3, 2009.

Invited Researcher/Speaker: "Weldability in ODS Alloys for AFCI/GNEP," Transmutation Fuel Campaign Meeting, Salt Lake City, Utah, Oct. 27-28, 2008.

Honors and Awards:

Honors (Nuclear Materials Committee Chair) bestowed by TMS for Dr. Charit's dedicated service to the TMS Structural Materials Division, on Feb. 28, 2017 in San Diego
University of Idaho Presidential Mid-Career Faculty Award, 2016-2018
ASM-IIM Visiting Lectureship Award, 2014-2015
Outstanding Faculty Award, College of Engineering, University of Idaho, 2013-2014
Alumni Award for Excellence in Mentoring, University of Idaho Alumni Association, 2013
Outstanding Young Faculty Award, College of Engineering, University of Idaho, 2008-2009
Winner of Vidyabharati Prize and Indranil Award for being the first class first in the undergraduate class of 1997

SCHOLARSHIP ACCOMPLISHMENTS:

Publications (*Dr. Charit's student or postdoc):
(**3,989** citations, h-index **24** as per Google Scholar)

Peer Reviewed Journal Papers: 84

N.D. Jerred*, R. Khanal, M.T. Benson, R.D. Mariani, S. Choudhury, and **I. Charit**, "Nd, SbNd, and Sb_3Nd_4, and their interactions with the cladding alloy HT9," *Journal of Nuclear Materials*, 541 (2020) 152387.

R. Khanal, N. Jerred*, Michael T. Benson, Y. Xie, R.D. Mariani, **I. Charit**, and S. Choudhury, "Interactions and Immobilization of Lanthanides with Dopants in Uranium-based Metallic Fuels," *Journal of Nuclear Materials*, 540 (2020) 152372.

A. Kundu*, A. Bateman, B. Jaques, **I. Charit**, and C. Jiang, "A Preliminary Study on Helium and Sulfur Ion Irradiated BCC Iron: In Situ Tensile Testing Using a Push-to-Pull Device," *JOM* (TMS), 72 (2020) 2398-2407.

R. Khanal, N. Jerred*, M.T. Benson, D.A. Andersson, R.D. Mariani, **I. Charit**, and S. Choudhury, "A Novel Approach to Selection of Dopant to Immobilize Neodymium in Uranium-Based Metallic Fuels," *Journal of Nuclear Materials*, 529 (2020) 151922.

N. Jerred*, R. Khanal, M.T. Benson, E.E. Perez, J.A. King, M. Dubey, J. Burns, **I. Charit**, S.

Choudhury, and Robert D. Mariani, "Evaluation of Tellurium as a Fuel Additive in Neodymium-Containing U-Zr Metallic Fuel," *Scientific Reports* (Nature Publishing Group), 9 (2019) 16403.

N. Shaber, R. Stephens, J. Ramirez, G.P. Potirniche, M. Taylor*, **I. Charit**, and H. Pugesek, "Fatigue and Creep-Fatigue Crack Growth in Alloy 709 at Elevated Temperatures," *Materials at High Temperatures*, 36 (6) (2019) 562-574.

A. Kundu*, N. Shrestha, A. Korjenic, K.S. Raja and **I. Charit**, "A Study on Microstructural Evolution and Corrosion Behavior of Spark Plasma Sintered Fe-Cr Alloy System," *Journal of Materials Science*, 54 (2019) 14171-14188. https://doi.org/10.1007/s10853-019-03861-6.

M. Taylor*, J. Ramirez, **I. Charit**, G. Potirniche, B. Stephens, and M. Glazoff, "Creep Behavior of Alloy 709 at 700 ^{o}C," *Materials Science & Engineering A*, 762 (2019) 138083.

A. Kundu*, A. Sittiho, **I. Charit**, B. Jaques, and C. Jiang, "Development of Fe-9Cr Alloy via High Energy Ball Milling and Spark Plasma Sintering," *JOM*, 71 (2019) 2846-2855.

S. Goel, A. Sittiho*, U. Klement, S. Joshi, and **I. Charit**, "Effect of Post-Treatments under Hot Isostatic Pressure on Microstructural Characteristics of EBM-built Alloy 718," *Additive Manufacturing*, 28 (2019) 727-737.

J. Webb*, S. Gollapudi and **I. Charit**, "An Overview of Creep in Tungsten and Its Alloys," *International Journal of Refractory Metals and Hard Materials*, 82 (2019) 69-80.

M. Morrison, J. Gould, **I. Charit** and T. Hassan, "Performance Evaluation of Surface Activated Solid-State Welding for ASTM A992 Structural Steel," *Journal of Materials in Civil Engineering*, 31 (8) (2019) 04019168. (Editor's choice article for August issue of 2019)

J. Ramirez, G.P. Potirniche, N. Shaber, M. Taylor*, H. Pugesek, R. Stephens, and **I. Charit**, "The Influence of Plasticity-induced Crack Closure on Creep-Fatigue Crack Growth in Two Heat-Resistant Steels," *International Journal of Fatigue*, 125 (2019) 291-298.

M.T. Benson, Y. Xie, J.A. King, K.T. Tolman, R.D. Mariani, **I. Charit**, J. Zhang, M.P. Short, S. Choudhury, R. Khanal, and N. Jerred*, "Characterization of U-10Zr-2Sn-2Sb and U-10Zr-2Sn-4Ln to Assess Sn+Sb as a Mixed Additive System to Bind Lanthanides," *Journal of Nuclear Materials*, 510 (2018) 210-218.

D. Roberts*, Y. Zhang, **I. Charit** and J. Zhang, "A Comparative Study of Microstructure and High Temperature Mechanical Properties of 15-5 PH Stainless Steel Processed via Additive Manufacturing and Traditional Manufacturing," *Progress in Additive Manufacturing*, 3 (3) (2018) 183-190.

A. Sittiho*, V. Tungala, **I. Charit** and R.S. Mishra, "Microstructure, Mechanical Properties and Strengthening Mechanisms of Friction Stir Welded Kanthal APMT^{TM} Steel," *Journal of Nuclear Materials*, 509 (2018) 435-444.

N. Jerred*, **I. Charit**, L. Zirker and J. Cole, "Pressure Resistance Welding of MA-957 to HT-9 for Advanced Reactor Applications," *Journal of Nuclear Materials*, 508 (2018) 265-277.

W. Mohamed, S. Gollapudi, **I. Charit** and K.L. Murty, "Formability of a Wrought Mg Alloy Evaluated by Impression Testing," *Materials Science & Engineering A*, A712 (2018) 140-145.

I. Charit and R.S. Mishra, "Effect of Friction Stir Processed Microstructure on Tensile Properties of an Al-Zn-Mg-Sc Alloy upon Subsequent Aging Heat Treatment," *Journal of Materials Science & Technology*, 34 (2018) 214-218.

S. Sitler, K.S. Raja and **I. Charit**, "Hot Corrosion Behavior of ZrB_2-HfB_2 solid solutions in KCl and K_2SO_4 at 1500 ºC, *Ceramics International*, 43 (2017) 17071-17085.

S. Pasebani*, **I. Charit**, A. Guria*, J. Burns, D.P. Butt, J.I. Cole, and L. Shao, "A Preliminary Investigation of High Dose Ion Irradiation Response of a Lanthana-Bearing Nanostructured Ferritic Steel Processed via Spark Plasma Sintering," *Journal of Nuclear Materials*, 495 (2017) 78-84.

S. Sitler, K.S. Raja and **I. Charit**, "Room Temperature Corrosion Behavior of ZrB_2-HfB_2 Solid Solutions in Acidic and Basic Aqueous Environments," *Electrochimica Acta*, 246 (2017) 173-189.

J. Akram, P.R. Kalvala, M. Misra and **I. Charit**, "Creep Behavior of Dissimilar Metal Weld Joints between P91 and AISI 304," *Materials Science & Engineering A*, 688 (2017) 396-406.

T. Stan, D.J. Sprouster, A. Ofan, G.R. Odette, L.E. Ecker, and **I. Charit**, "X-Ray Absorption Spectroscopy Characterization of Embedded and Extracted Nano-Oxides," *Journal of Alloys and Compounds*, 699 (2017) 1030-1035.

A. Dutt, S. Pasebani*, **I. Charit** and R.S. Mishra, "On the Creep Behavior of Dual-Scale Particle Strengthened Nickel Based Alloy," *Materials Science & Engineering A*, 676 (2017) 406-410.

S. Sitler, K.S. Raja and **I. Charit**, "ZrB_2-HfB_2 Solid Solutions as Electrode Materials for Hydrogen Reaction in Acidic and Basic Solutions," *Materials Letters*, 188 (2017) 239-243.

A. Guria* and **I. Charit**, "Tensile Properties of Accident-Tolerant Aluminum-Bearing Ferritic Steels," *Annals of Nuclear Energy*, 100 (2017) 82-88.

S. Sitler, K.S. Raja and **I. Charit**, "Metal Rich Transition Metal Diborides as Electrocatalysts for Hydrogen Evolution Reactions in a Wide Range of pH," *Journal of the Electrochemical Society*, 163 (13) (2016) H1069-H1075.

T. Shrestha*, M. Basirat, S. Alsagabi*, A. Sittiho*, **I. Charit** and G.P. Potirniche, "Creep Rupture Behavior of Welded Grade 91 Steel," *Materials Science & Engineering A*, 669 (2016) 75-86.

S. Alsagabi*, J. Ninlachart, K.S. Raja and **I. Charit**, "Passivity and Localized Corrosion of AZ31 Magnesium Alloy in High pH Electrolytes," *Journal of Materials Engineering & Performance*, 25 (6) (2016) 2364-2374.

S. Sitler, C. Hill*, K.S. Raja and **I. Charit**, "Transition Metal Diborides as Electrode Material for MHD Direct Power Extraction: High Temperature Oxidation of ZrB_2-HfB_2 Solid Solution with LaB_6 Addition," *Metallurgical and Materials Transactions – Energy*, 3E (2016) 90-99.

S. Pasebani*, **I. Charit**, Y. Wu, J. Burns, K.N. Allahar, D.P. Butt, J.I. Cole, and S.F. Alsagabi, "Lanthana-Bearing Nanostructured Ferritic Steels via Spark Plasma Sintering," *Journal of Nuclear Materials*, 470 (2016) 297-306.

S. Pasebani*, **I. Charit**, D.P. Butt, J.I. Cole, Y.Q. Wu, J. Burns, "Sintering Behavior of Lanthana-Bearing Nanostructured Ferritic Steel Consolidated via Spark Plasma Sintering," *Advanced Engineering Materials*, 18 (2) (2016) 324-332.

S. Alsagabi*, **I. Charit** and S. Pasebani*, "The Irradiation Performance and Microstructural Evolution in 9Cr-2W Steel under Ion Irradiation, *Journal of Materials Engineering and Performance*, 25 (2) (2016) 401-408.

T. Shrestha*, **I. Charit** and G.P. Potirniche, "In-situ Tensile Deformation and Residual Stress Measurement by Neutron Diffraction in Modified 9Cr-1Mo Steel," *Journal of Materials Engineering and Performance*, 24 (2015) 4710-4720.

M. Basirat, T. Shrestha*, L. Barannyk, G.P. Potirniche, and **I. Charit**, "A Creep-Damage Model for High-Temperature Deformation and Failure of 9Cr-1Mo Steel Weldments," *Metals*, 5 (3) (2015) 1487-1506.

A. Guria* and **I. Charit**, "Observation of Serrated Flow in APMT™ Alloy," *Materials Letters*, 160 (2015) 55-57.

S. Pasebani*, **I. Charit** and R.S. Mishra, "Effect of Tool Rotation Rate on Constituent Particles in a Friction Stir Processed 2024Al Alloy," *Materials Letters*, 160 (2015) 64-67.

S. Pasebani*, **I. Charit**, J. Burns, S. Alsagabi, D.P. Butt, J.I. Cole, L.M. Price and L. Shao, "Microstructural Stability of a Self-Ion Irradiated Lanthana-Bearing Nanostructured Ferritic Steel," *Journal of Nuclear Materials*, 462 (2015) 191-204.

J. Webb* and **I. Charit**, "Neutronic Effects of Rhenium, Gadolinia and Uranium Dioxide Addition to a Tungsten Based Fast Spectrum Space Reactor," *Annals of Nuclear Energy*, 79 (2015) 9-17.

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N. Jerred*, R. Khanal, **I. Charit**, S. Choudhury, M. Benson and R. Mariani, "Mitigating Fuel-Cladding Chemical Interactions Using Tellurium and Antimony as Dopants in Metallic Fuel Systems," Symposium: Actinide and Lanthanide Materials II, Materials Science & Technology 2017 Conference and Exhibition, Oct. 8-12, 2017, Pittsburgh, PA, USA.

A. Kundu* and **I. Charit**, "A Study on High Energy Ball Milling and Spark Plasma Sintering of Fe-9Cr Model Alloys," Symposium: Mechanochemical Synthesis and Reactions in Materials Science II, Materials Science & Technology 2017 Conference and Exhibition, Oct. 8-12, 2017, Pittsburgh, PA, USA.

A. Dutt, S. Pasebani*, **I. Charit**, and R.S. Mishra, "On the Creep Behavior of Dual-Scale Particle Strengthened Nickel Based Alloy", Mechanical and Creep Behavior of Advanced Materials, TMS 2017 Conference, Feb. 26 - Mar. 2, 2017, San Diego, CA.

S. Pasebani*, **I. Charit**, Y. Wu, J. Burns, J. Cole, and D. Butt, "Nanostructured Ferritic Steels: Synthesis, Microstructure and Mechanical Properties," *Mechanical Behavior of Nanostructured Materials*, TMS 2017 Conference, Feb. 26 - Mar. 2, 2017, San Diego, CA.

S. Pasebani* and **I. Charit**, "Advanced Manufacturing of Nanostructured Ferritic Steels with Enhanced Irradiation Performance for Nuclear Applications," *Nanostructured Materials for Nuclear Applications II*, TMS 2017 Conference, Feb. 26-Mar. 2, 2017, San Diego, CA.

A. Sittiho*, V. Tungala, **I. Charit** and R.S. Mishra, "Microstructure and Mechanical Properties of Friction Stir Processed APMT^{TM} Alloy," Solid State Processing, Materials Science & Technology Conference, Oct. 23-27, 2016, Salt Lake City, UT.

S. Sitler, K. Raja and **I. Charit**, "Eletrochemical Corrosion of Various HfB_2-ZrB_2 Solid Solutions: A Predictive Study," *Advanced Coatings for Wear and Corrosion Protection*," Oct. 23-27, 2016, Salt Lake City, UT.

C. Hill*, S. Sitler, K.S. Raja and **I. Charit**, "Development of HfB_2-ZrB_2 Based Ceramics as High Temperature Electrode Materials for MHD Direct Power Extraction System," *Materials in Clean Power Systems IX*, TMS Annual Meeting, Feb. 14-18, 2016, Nashville, TN.

S. Pasebani*, A. Guria*, J. Burns, Y. Wu, **I. Charit**, D. Butt, J. Cole, L. Shao and L. Price, "Microstructural and Nanomechanical Characteristics of an Ion-Irradiated Lanthana-Bearing Nanostructured Ferritic Steel," *Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, Ion Beam Facilities and Integrated Modeling*, TMS Annual Meeting, Feb. 14-18, 2016, Nashville, TN.

A. Dutt, S. Pasebani*, **I. Charit**, and R.S. Mishra, "Microstructural Evolution of High Temperature Ni-Cr ODS Alloy: Genetic Algorithm Approach," *Computational Materials Discovery and*

Optimization: From 2D to Bulk Materials, TMS Annual Meeting, Feb. 14-18, 2016, Nashville, TN.

A. Guria* and **I. Charit**, "Dynamic strain aging in accident-tolerant ferritic steels," *Creep, Deformation, Texture, Nano and Nuclear Materials* (in honor of Prof. K.L. Murty)," Plasticity 2016, Jan. 2-9, 2016, Kona, Hawaii.

A. Guria* and **I. Charit**, "Mechanical Properties of an Accident-Tolerant Ferritic Steel," *Materials for Nuclear Applications and Extreme Environments*, Materials Science & Technology 2015 Conference, Columbus, October 4-8, 2015.

S. Sitler, C. Hill*, K. Raja, and **I. Charit**, "Processing of Transition Metal Borides for Advanced Energy Applications," *Advanced Powder Processing for Energy Applications*, Materials Science & Technology 2015 Conference, Columbus, October 4-8, 2015.

A.K. Dutt, S. Pasebani*, **I. Charit** and R.S. Mishra, "Microstructural Optimization of High Temperature Ni-Cr ODS Alloy Using Genetic Algorithm," *Computational Modeling and Stochastic Methods for Materials Discovery and Properties*, TMS Annual Meeting & Exhibition, Orlando, FL, Mar. 15-19, 2015.

S. Pasebani, **I. Charit**, K. Allahar, Y. Wu, J. Burns, J. Cole, D.P. Butt, "Development of Nanostructured Ferritic Alloys Containing Lanthana-Based Nanoparticles via Spark Plasma Sintering," *Materials and Fuels for the Current and Advanced Nuclear Reactors III*, 2014 TMS Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

S. Pasebani, A. Dutt, **I. Charit**, and R.S. Mishra, "Development of Ni-Cr Based Alloys via Spark Plasma Sintering for High Temperature Applications," *Materials for High Temperature Applications – Next Generation Superalloys and Beyond*, TMS 2014 Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

I. Charit and J.A. Webb*, "Metal Matrix Composites via Spark Plasma Sintering for Nuclear Applications," (Invited) *Metal and Polymer Matrix Composites Symposium*, Materials Science & Technology 2013 Conference, Oct. 27-31, 2013, Montreal, Canada.

S. Pasebani*, **I. Charit**, D.P. Butt and J.I. Cole, "Effect of Alloying Elements and Pulsed Electric Current Sintering Parameters on Nano-Dispersion Formation in Nanostructured Ferritic Steels," *Novel Synthesis and Consolidation of Powder Materials*," TMS Annual Meeting, Mar. 3-7, 2013, San Antonio, TX.

K.N. Allahar, J. Burns, B. Jaques, Y.Q. Wu, D.P. Butt, **I. Charit** and J. Cole, "Annealing of Oxide Dispersion Strengthened Alloys Consolidated by Spark Plasma Sintering," *Materials Processing Fundamentals*, TMS Annual Meeting, Mar. 3-7, 2013, San Antonio, TX.

Y. Wu, K. Allahar, J. Burns, **I. Charit**, D.P. Butt and J. Cole, "Combinational TEM and APT Characterization of ODS Alloys by SPS," Characterization of Minerals, Metals and Materials, TMS Annual Meeting, Mar. 3-7, 2013, San Antonio, TX.

S. Pasebani*, **I. Charit**, K. Allahar, D.P. Butt, and J. Cole, "Mechanical and Microstructural Characteristics of Nanostructured Ferritic Alloys Produced by Pulsed Electric Current Sintering of Mechanically Alloyed Powders," *Powder Metallurgy Processing and Products*, Materials Science & Technology Conference (MST 2012), Pittsburgh, PA, USA, Oct. 7-11, 2012.

J.A. Webb* and **I. Charit**, "Fabrication of Tungsten, Tungsten-Rhenium and Tungsten-CeO_2 Materials via Pulsed Electric Current Sintering," *Functional and Innovative Composites Symposium*, Materials Science & Technology Conference (MS&T2012), Pittsburgh, PA, USA, Oct. 7-11, 2012.

K. Allahar, J. Burns, B. Jaques, S. Tamrakar, Y. Wu, D. Butt, **I. Charit**, and J. Cole, "Shear Punch Testing of Spark Plasma Sintered Ferritic Oxide Dispersion Strengthened Alloys," *Powder Metallurgy Processing and Products*, Materials Science & Technology Conference (MST 2012), Pittsburgh, PA, USA, Oct. 7-11, 2012.

R. Prabhakaran*, B. Rabin, R. Lloyd, D. Keiser, D. Wachs, and **I. Charit**, "An Update on the Mechanical Properties of U-Mo Fuels," *Materials Development for Nuclear Applications and Extreme Environments*, Materials Science & Technology Conference (MST 2012), Pittsburgh, PA, USA, Oct. 7-11, 2012.

T. Shrestha*, M. Basirat, **I. Charit**, G. Potirniche, K. Rink, and U. Sahaym, "Creep Deformation Mechanisms in Grade 91 Steel," *Mechanical Performance of Materials for Current and Advanced Nuclear Reactors*, TMS Annual Meeting, Orlando, Florida, March 11-15, 2012.

S. Pasebani*, **I. Charit**, K. Allahar, J. Cole, and D. Butt, "Oxide Dispersion Strengthened Steels via Mechanical Alloying and Spark Plasma Sintering," *Materials and Fuels for the Current and Advanced Reactors*, TMS Annual Meeting, Orlando, Florida, March 11-15, 2012.

K. Allahar, J. Burns, B. Jaques, **I. Charit**, D.P. Butt, J. Cole, "Consolidation of Ferritic Oxide Dispersion Strengthened Alloys by Spark Plasma Sintering," *Randall German Honorary Symposium on Sintering and Powder Based Materials*, TMS Annual Meeting, Orlando, Florida, March 11-15, 2012.

J. Webb*, C. Sparks, M. O'brien, **I. Charit**, D. Butt, M. Frary, and M. Carroll, "Fabrication of Tungsten and Tungsten-Rhenium Alloys via Pulsed Electric Current Sintering," *Refractory Metals 2012*, TMS Annual Meeting, Orlando, Florida, March 11-15, 2012.

R. Prabhakaran*, J. Wang, B. Miller, J. Cole, **I. Charit**, R. Mishra and K.L. Murty, "Irradiation Studies on Friction Stir Welded MA956 and MA754," *Materials and Fuels for the Current and Advanced Nuclear Reactors*, TMS Annual Meeting, Orlando, Florida, March 11-15, 2012.

S. Pasebani*, **I. Charit**, K. Allahar, B. Jaques, D.P. Butt and J. Cole, "Development of Oxide Dispersion Strengthened Steels via Mechanical Alloying and Spark Plasma Sintering," Energy Materials Symposium, *Thermec 2011*, Aug. 1-5, 2011, Quebec City, Canada (*invited*).

E. Young, J. Carillo, B. Jaques, J. Burns, L. Zirker, **I. Charit**, D.P. Butt, and M. Frary, "Mechanical Properties and Microstructural Evolution of ODS Alloys Joined by Solid State Welding," *Materials for the Nuclear Renaissance II*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

N. Jerred*, L. Zirker, **I. Charit**, J. Cole, B. Jaques, T. Bradshaw, J. Carillo, E. Young, M. Frary, D.P. Butt, M. Meyer, and K.L. Murty, "Pressure Resistance Welding for Advanced Reactor Applications," *Materials for the Nuclear Renaissance II*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

R. Prabhakaran*, D. Burkes, A. Robinson, J.F. Jue, A. Demint, J. Gooch, D. Kesier, D. Wachs, and **I. Charit**, "Mechanical Properties of Fresh and Neutron Irradiated U-Mo Fuels for the RERTR Applications," *Materials for the Nuclear Renaissance II*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

R. Prabhakaran*, J. Wang, **I. Charit**, J. Cole, K.L. Murty, and R.S. Mishra, "Microstructure and Mechanical Properties of Irradiated Friction Stir Welded ODS Alloys," *Materials for the Nuclear Renaissance II*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

C. Sparks, J. Youngsman, J. Webb, S. Howe, **I. Charit**, M. Frary, and D. Butt, "Spark Plasma Sintering of Tungsten-Rhenium Alloys for Very High Temperature Nuclear Reactor

Applications," *Refractory Metals 2011*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

J. Webb*, **I. Charit**, C. Sparks, D. Butt, M. Frary, and M. Carroll, "Physical and Mechanical Properties of Tungsten-Rhenium Produced via Spark Plasma Sintering," *Refractory Metals 2011*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

T. Shrestha*, M. Basirat, Z. Wuthrich, **I. Charit**, and G. Potirniche, "Creep Characteristics of a Grade 91 Steel," *Materials for the Nuclear Renaissance II*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

S. Pasebani*, **I. Charit**, K. Allahar, B. Jaques, D.P. Butt, J. Cole, "Microstructural Characterization of Mechanically Alloyed Lanthana Bearing Oxide Dispersion Strengthened Steels," *Processing and Properties of Powder-Based Materials*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

K. Allahar, J. Burns, B. Jaques, **I. Charit**, D. Butt, and J. Cole, "Spark Plasma Sintering of Ferritic Oxide Dispersion Strengthened Alloys," *Processing and Properties of Powder-Based Materials*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

S. Pasebani*, **I. Charit** and R.S. Mishra, "Effect of Friction Stir Processing on Constituent Particles in a Commercial 2024 Al," *Friction Stir Welding and Processing VI*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

M. Basirat, G. Potirniche, T. Shrestha*, **I. Charit**, and K. Rink, "A Rate-Independent Polycrystal Model for Evaluation of the Creep Deformation in the Heat Affected Zone of the Modified 9Cr-1Mo Steels," *Computational Plasticity*, TMS Annual Meeting, Feb. 28 - Mar. 3, 2011, San Diego, USA.

K.L. Murty, S. Gollapudi, and **I. Charit**, "Transitional Creep Mechanisms in Internally Pressurized Ti3Al2.5V Tubing Depicting Dislocation, GBS and Viscous Deformation modes," *International Plasticity Conference*, Jan. 3-8, 2011, Puerto Vallarta, Mexico.

R. Prabhakaran*, D. Burkes, A. Robinson, A. Demint, J. Gooch, J.F. Jue, D. Keiser, D. Wachs, and **I. Charit**, "Mechanical Characteristics of Fresh and Irradiated U-10Mo Fuel Materials," *Materials Solutions for Nuclear Renaissance*, MS&T2010, Oct. 17-21, 2010, Houston, TX.

T. Shrestha*, K. Chitrada*, **I. Charit** and U. Sahaym, "Fabrication of Nanotube-Reinforced Aluminum Composites," *Nanotube Reinforced Metal Matrix Composites II*, Materials Science and Technology 2010, Oct. 17-21, Houston, TX.

R. Prabhakaran*, D. Burkes, D. Keiser, D. Wachs, A. Robinson, J.-F. Jue, and **I. Charit**, "Mechanical Properties of Fresh and Irradiated Monolithic U-Mo Fuels," *Mechanical Performance for Current and Next Generation Nuclear Reactors*, TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

K.L. Murty and **I. Charit**, "Effect of Neutron Radiation Exposure on Low Cycle Fatigue of 304SS," *Mechanical Performance for Current and Next Generation Nuclear Reactors***,** TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

R. Prabhakaran*, J. Wang, K. Chitrada*, W. Yuan, **I. Charit**, J. Cole, R. Mishra, "Microstructural and Mechanical Characteristics of Friction Stir Welded ODS Alloys," *Mechanical Performance for Current and Next Generation Nuclear Reactors*, TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

I. Charit and J. Webb*, "Tungsten-Rhenium Super Alloy Development for Ultra High Temperature Space Fission and Fusion Reactors," *Advanced Materials and Fuels Enabling Future Fusion, Fission and Hybrid Reactor Systems*, TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

K. Chitrada*, R. Prabhakaran*, J. Wang, L. Zirker, M. Meyer, J. Cole, K.L. Murty, R. Mishra, D. Butt, M. Frary, and **I. Charit**, "Weldability Characteristics of Oxide Dispersion Strengthened Alloys: An Overview," *Nuclear Energy: Processes and Policies*, TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

J. Wang, W. Yuan, R. Mishra and **I. Charit**, "Friction Stir Welding of Dispersion-Strengthened Alloy MA754," *Nuclear Energy Processes and Policies*, TMS Annual Meeting, Seattle, Feb. 14-18, 2010.

R. Prabhakaran*, D.E. Burkes, J.I. Cole, D.M. Wachs, and **I. Charit**, "Miniaturized Specimen Testing of U-Mo Monolithic Fuels," *Materials Solutions for the Nuclear Renaissance*, Materials Science and Technology 2009, Pittsburgh, Oct. 25-29, 2009.

R. Prabhakaran*, J. Wang, W. Yuan, K. Chitrada*, **I. Charit**, and R. S. Mishra, "Microstructure and Mechanical Properties of Friction Stir Welded MA956 and MA754 Alloys," *Materials Solutions for the Nuclear Renaissance*, Materials Science and Technology 2009, Pittsburgh, Oct. 25-29, 2009.

I. Charit, R.S. Mishra, D. Butt, K.L. Murty, J.I. Cole, M. Meyer, and L. Zirker, "Solid State Joining of Oxide Dispersion Strengthened Alloys," *Joining of Advanced and Specialty Materials 2009 (JASM XI)***,** Materials Science and Technology 2009, Pittsburgh, Oct. 25-29, 2009.

K. Chitrada*, G. Newhouse*, and **I. Charit**, "Fabrication and Properties of Carbon Nanotube Reinforced Aluminum Matrix Composites," *Characterization of Metal Matrix Composite Materials*, Materials Science and Technology 2009, Pittsburgh, Oct. 25-29, 2009.

R. Prabhakaran*, W. Yuan, J.I. Cole, R.S. Mishra, and **I. Charit**, "Microstructure and Mechanical Properties of Friction Stir Welded MA956," ***Friction Stir Welding and Processing Symposium***, TMS Annual Meeting, San Francisco, Feb. 15-19, 2009.

I. Charit, C.S. Seok and K.L. Murty, "Effects of Dynamic Strain Aging and Cyclic Loading on Fracture Behavior of A516 Grade 70 and Other Steels," *Microstructural Processes in Irradiated Materials, ibid*.

R. Prabhakaran*, D.E. Burkes, D.M. Wachs, J.I. Cole, and **I. Charit**, "Small-Scale Specimen Testing on Monolithic U-Mo Fuel Foils," *RERTR (Reduced Enrichment for Research and Test Reactors) Annual Meeting*, Oct. 5-9, 2008, Washington DC.

R. Prabhakaran*, J.I. Cole, D.E. Burkes, J. Gan, and **I. Charit**, "Small-Scale Specimen Testing of Irradiated MA754 and MA957 Alloys," Materials Science and Technology 2008, Pittsburgh, PA, Oct. 5-9, 2008.

T. Shrestha* and **I. Charit**, "Multi-Walled Carbon Nanotube Reinforced Metal Matrix Composites," *Nanotube-Reinforced Metal Matrix Composites, ibid*.

G. Srikant, K.V. Rajulapati, K.M. Youssef, **I. Charit**, C.C. Koch, R.O. Scattergood, K.L. Murty, "Impression Creep Behavior of Nanocrystalline Materials," Materials Science & Technology 2007, 17-20 September, 2007, Detroit, USA.

S. Gollapudi, **I. Charit** and K.L. Murty, "Newtonian Viscous Creep Mechanisms in a Titanium Based Alloy," *ibid*.

C. Fletcher, P.Y. Cheng, **I. Charit**, T. Hassan, and K.L. Murty, "Low-Cycle Fatigue Failure Mechanisms of Welded Piping Joints," *McMAT 2007*, ASME Applied Mechanics and Materials Conference, June 2007, Austin, TX, USA.

S. Gollapudi, **I. Charit** and K. L. Murty, "The Effect of Stress State on Dislocation Substructure Formation during the Creep of Ti-3Al-2.5V Alloy Tubing," *Deformation Mechanisms in Complex Materials*, Materials Science and Technology 2006, October 2006, Cincinnati, OH, USA.

W.M. Mohamed, **I. Charit**, S. Gollapudi and K. L. Murty, "Texture and Mechanical Anisotropy in Wrought Magnesium Alloys," *Microstructural and Texture Requirements for Functional Materials, ibid.*

G. Srikant, B. Marple, **I. Charit** and K. L. Murty, "Characterization of Stress Rupture Behavior of Zr and Ti Alloys via Burst Testing," *Processing and Mechanical Response of Engineering Materials*, TMS Annual Meeting, March 2006, San Antonio, TX, USA.

T. Hassan, J. Patrick, **I. Charit** and K. L. Murty, "Fatigue Failure Mechanisms of Austenitic and Ferritic Welded Piping Joints," ASME Congress, Nov. 2005, Orlando, FL, USA.

Poster Presentations: 27

A. Sittiho*, J. Graves, M. Bhattacharyya, **I. Charit**, and R. Mishra, "Friction Stir Processing: A Microstructural Modification Technique for Complex Concentrated Alloys," High Entropy Alloys VIII, TMS 2020 Annual Meeting, Feb. 23-27, 2020, San Diego, CA, USA.

M. Bhattacharyya*, A. Kundu*, K. Raja, **I. Charit**, S. Jana, and J. Darsell, "Structure-Property Correlation of Iosthermal Friction Stir Welding of 304L SS," Materials Science & Technology 2019, Sep. 29 - Oct. 3, 2019, Portland, OR, USA.

A. Kundu*, N. Jerred and **I. Charit**, "Development of Fe-9Cr ODS Alloy via High Energy Ball Milling and Spark Plasma Sintering for Fast Reactor Cladding," 2019 Technical Division Graduate Students Poster Contest – Structural Materials Division (SMD), TMS 2019 Annual Meeting, March 10-14, 2019, San Antonio, TX.

J. Graves*, A. Sittiho*, **I. Charit** and R. Mishra, "Microstructure and Mechanical Properties of $Al_{0.4}$CoCrFeNi High Entropy Alloy," 2019 Technical Division Undergraduate Student Poster Contest, TMS 2019 Annual Meeting, March 10-14, 2019, San Antonio, TX.

N. Ayers, R. Khanal, N. Jerred*, **I. Charit**, M. Benson, R. Mariani, and S. Choudhury, "Study of Dopants in U-Zr Metallic Fuels for Limiting Fuel-Cladding-Chemical-Interaction," 2019 Technical Division Undergraduate Student Poster Contest, TMS 2019 Annual Meeting, March 10-14, 2019, San Antonio, TX.

R. Khanal, N. Jerred*, M. Benson, R. Mariani, **I. Charit**, S. Choudhury, "The Guiding Principles of the Dopants Selection to Immobilize Lanthanide Fission Products in Uranium Based Metallic Fuels," 2019 Technical Division Young Professional Poster Contest – Structural Materials Division (SMD), TMS 2019 Annual Meeting, March 10-14, 2019, San Antonio, TX.

R. Khanal, N. Jerred*, **I. Charit**, M. Benson, R. Mariani, and S. Choudhury, "A Novel Approach of Dopant Selection to Immobilize Lanthanides in Uranium-Based Metallic Fuels," MRS Fall Meeting & Exhibit, Boston, MA, USA, Nov. 25-30, 2018.

R. Khanal, N. Jerred*, **I. Charit**, M. Benson, R. Mariani and S. Choudhury, "An Ab-initio Study in Selecting dopants to Arrest Lanthandies within Uranium-Based Metallic Fuels," The Nuclear Materials Conference (NuMat), Seattle, WA, USA, Oct. 14-18, 2018.

N. Ayers, R. Khanal, N. Jerred*, **I. Charit**, M. Benson, R. Mariani, S. Choudhury, "Effectiveness of Sn and Sb to mitigate fuel-cladding-chemical-interactions in U-based metallic fuels," The Nuclear Materials Conference (NuMat), Seattle, WA, USA, Oct. 14-18, 2018.

R. Prabhakaran*, Y. Wu, J. Burns, J. Cole, **I. Charit**, R.S. Mishra, K.L. Murty, and T.S. Byun, "Effect of Neutron Irradiation on Friction Stir Processed ODS Alloys (MA956 and MA754)," 2017 Technical Division Young Professional Poster Competition — Structural Materials Division (SMD), TMS 2017, Feb. 26-Mar. 2, 2017, San Diego, CA (Prabhakaran won the first place in the poster competition).

S. Alsagabi*, S. Pasebani*, and **I. Charit**, "High Temperature Tensile Properties and Related Microstructural Evolution of Grade 92 Steel," Mechanical and Creep Behavior of Advanced Materials, TMS 2017, Feb. 26-Mar. 2, 2017, San Diego, CA.

A. Sittiho*, V. Tungala, **I. Charit**, and R.S. Mishra, "Understanding of Microstructure and Mechanical Properties of Friction Stir Processed Al-Bearing, High-Cr Ferritic Stainless Steel," Mechanical and Creep Behavior of Advanced Materials, TMS 2017, Feb. 26-Mar. 2, 2017, San Diego, CA.

A. Guria* and **I. Charit**, "Mechanical Properties and Serrated Flow in Al-Bearing, High-Cr Accident Tolerant Ferritic Steel, Mechanical and Creep Behavior of Advanced Materials, TMS 2017, Feb. 26-Mar. 2, 2017, San Diego, CA.

S. Sitler, K. Raja and **I. Charit**, "High Temperature Oxidation Study of Hafnium and Zirconium Diborides: MHD Electrode Coatings," MS&T16 Poster Session – Processing and Manufacturing, Oct. 25, 2016, Salt Lake City, UT, USA.

C.D. Hill*, S. Sitler, **I. Charit** and K.S. Raja, "Processing and Characterization of ZrB_2-HfB_2 Solid Solutions for Magnetohydrodynamic (MHD) Applications," 11th International Conference on Ceramic Materials and Components for Energy and Environmental Applications," Vancouver, Canada, June 14-19, 2015 (the corresponding paper to be published in *Ceramics Transactions*).

S. Pasebani*, A. Dutt, **I. Charit** and R.S. Mishra, "A Novel Route to Process Ni-20Cr Based Alloys for High Temperature Applications," SMD 2014 Technical Division Student Poster Contest, TMS Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

I. Charit, M. Bowdon*, S. Pasebani* and S. Alsagabi*, "Accident-Tolernat Fuel Cladding Materials for Advanced Light Water Reactors," SMD 2014 Technical Division Young Professional Poster, TMS Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

R. Prabhakaran*, Y. Wu, J. Burns, J. Cole, **I. Charit**, R. Mishra, K.L. Murty, "Irradiation Studies on Friction Stir Welded Oxide Dispersion Strengthened Alloys," Accelerated Materials Evaluation for Nuclear Application Utilizing Test Reactors, TMS Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

K.N. Allahar, Y.Q. Wu, J. Burns, B. Jaques, **I. Charit**, D.P. Butt, J. Cole, "Spark Plasma Sintering of Oxide Dispersion Strengthened Alloys," International Workshop on Structural Materials for Innovative Nuclear Systems (SMINS-3), Idaho Falls, Idaho, Oct. 7-10, 2013.

Y.Q. Wu, K.N. Allahar, J. Burns, B. Jaques, **I. Charit**, Darryl P. Butt, and J. Cole, "Microstructure Characterization of SPS-fabricated ODS alloys by TEM and APT techniques," *ibid*.

S. Pasebani*, **I. Charit**, Y. Wu, J. Burns, J.I. Cole and D.P. Butt, "Spark Plasma Sintering of Lanthana-Bearing Nanostructured Ferritic Steels," Poster PD-42, Microscopy and Microanalysis 2013 Conference, Aug. 4-8, 2013, Indianapolis, IN.

S. Pasebani*, **I. Charit**, D.P. Butt and J.I. Cole, "Effect of Alloying Elements and Spark Plasma

Sintering Parameters on Nano-Dispersion Formation in Nanostructured Ferritic Steels," TMS Annual Meeting, Student Poster Contest, Mar. 3-7, 2013, San Antonio, TX (winner of graduate student competition in the TMS Structural Materials Division).

N.D. Jerred*, L. Zirker, **I. Charit**, J. Burns, Y.Q. Wu and J.I. Cole, "Pressure Resistance Welding of HT-9 End-Plugs to Fast Reactor Oxide Dispersion Stregthened Cladding Tubes," NuMat 2012 (The Nuclear Materials Conference), Oct. 22-25, 2012, Osaka, Japan.

C. Sparks, L. Ward, J. Youngsman, J. Webb*, S. Howe, N. Jerred*, M. Frary, **I. Charit** and D. Butt, "Spark Plasma Sintering of Tungsten-Rhenium Alloys for Very High Temperature Reactor Applications," Poster Presentation under the track '*Environmental and Energy Issues*,' Materials Science and Technology 2010, Oct. 17-21, Houston, TX.

R. Prabhakaran*, D. Burkes, A. Robinson, J.-F. Jue, A. Demint, J. Gooch, D. Keiser, D. Wachs, J. Cole, and **I. Charit**, "An Investigation of the Mechanical Properties of Fresh and Irradiated U-Mo Fuels," *ANS Annual Meeting*, San Diego, CA, June 13-17, 2010.

R. Prabhakaran*, J. Wang, W. Yuan, K. Chitrada*, J. Cole, **I. Charit**, and R.S. Mishra, "Friction Stir Welding of Oxide Dispersion Strengthened Alloys," *ANS Annual Meeting*, San Diego, CA, June 13-17, 2010.

T. Shrestha*, S. Gollapudi, **I. Charit** and K.L. Murty, "Creep Behavior of Sn-Zn Solder Alloys," *Lead-Free Solders and Emerging Interconnect and Packaging Technologies*, *ANS Annual Meeting*, San Diego, CA, June 13-17, 2010.

Grants and Contracts Awarded:

Extramural Grants and Contracts: $5.360 million as PI and co-PI

INL-LDRD: "Nanostructuring of Uranium-Based Metallic Fuels via Spark Plasma Sintering," Total funding: $760,000, a subcontract co-PI ($36,000), 10/01/2020 - 09/30/2023 (recommended for funding by Idaho National Laboratory, final DOE approval pending).

"Mitigating Stress Corrosion Cracking in Austenitic Stainless-Steel Canister Welds Using Peening Techniques," Nuclear Energy University Programs DOE Office of Nuclear Energy, PI: M. Misra (University of Nevada-Reno), co-PIs: **I. Charit**, K. Hollis (Los Alamos National Laboratory); Project Period: 10/1/2020 to 9/30/2023; Total Funding: $799,950 (Charit portion: $199,412).

"Optimizing Manufacturing of High Value Components Using Direct Metal Laser Melting Techniques under Reduced Atmospheric Conditions for Industrial Sectors," Idaho Global Entrepreneurial Mission (IGEM), Idaho Department of Commerce, PI: **I. Charit**, Co-PIs: K.S. Raja, M. Maughan (University of Idaho), Brian Jaques (Boise State University), Michael McMurtrey (INL), Mark Jaster (Element7 / Consultant to Premier Technology), and Catherine Cantley (University of Idaho TechHelp); Project Period: 5/31/2019 to 6/30/2021; Total Funding: $274,167.

"Friction Stir Based Repair Welding of Dry Storage Canisters and Mitigation Strategies: Effect of Engineered Barrier Layer on Environmental Degradation," Nuclear Energy University Programs DOE Office of Nuclear Energy, PI: **I. Charit**, Co-PIs: K.S. Raja (University of Idaho), Saumyadeep Jana (Pacific Northwest National Laboratory); Project Period: 10/1/2018 to 9/30/2021; Total Funding: $800,000 (Charit portion: $332,000).

"A Science Based Approach for Selecting Dopants in FCCI-Resistant Metallic Fuel Systems," Nuclear Energy University Programs (NEUP), DOE Office of Nuclear Energy; **I. Charit** (PI), S. Choudhury (Co-PI); R. Mariani and M. Benson, Idaho National Laboratory (Co-PIs); Project Period: Oct. 1, 2016 to Sep. 30, 2019 (extended to Sep. 30, 2020); Total Funding: $800,000 (Charit portion: $340,000).

"General Scientific Infrastructure Support for Innovative Nuclear Research at the University of Idaho," Nuclear Energy University Programs Infrastructure Program, DOE Office of Nuclear Energy; PI: V. Utgikar, Co-PIs: R.N. Christensen, H. Zhao, G. Potirniche, R.S. Stephens, **I. Charit** and K.S. Raja; Project Period: 10/1/2017 to 9/30/2018; Total Funding: $247,471 (Charit portion: $35,353)

"Microscale Technique to Evaluate Grain Boundary Cohesion of Irradiated Alloys," Idaho National Laboratory LDRD; PI: Chao Jiang (INL), Co-PIs: J. Wharry / B. Jaques (Boise State University), R. Fertig (University of Wyoming), **I. Charit** (University of Idaho), W. Jiang (INL); Project Period: 5/1/2016 to 9/30/2018; Total Funding: $150,000 (Charit portion).

"Characterization of Creep-Fatigue Crack Growth in Alloy 709 and Prediction of Service Lives in Nuclear Reactor Components," US DOE Nuclear Energy University Programs (NEUP); PI: G.P. Potirniche, Co-PIs: R. Stephens, **I. Charit**, A. Tokuhiro (Purdue University), M. Glazoff (Idaho National Laboratory); Project Period: 10/1/2015 to 9/30/2018; Total Funding $799,927 (Charit funding: $100,000).

"Acquisition of a FEI Scios Electron Microscope," Murdock Charitable Foundation, PI: S. Ay, Co-PIs: **I. Charit**, T. Williams, G. Potirniche, F, Barlow, D. Mcilroy, H. Saied, M. Gunter; Project Period: 1/1/2015 to 1/1/2018; Total Funding: $444,377 (Charit portion: $55,547).

"Boride-Based Electrode Materials with Enhanced Stability under Extreme Conditions for MHD Direct Power Extraction," University Coal Research Program, National Energy Technology Laboratory (NETL) through US DOE Office of Fossil Energy; PI: **I. Charit**, co-PI: K.S. Raja (University of Idaho); Project Period: 7/1/2014 to 6/30/2017; Total Funding $399,938 (Charit: $199,969).

"Integral Inherently Safe Light Water Reactor (I^2S-LWR)," Integrated Research Program (IRP), Nuclear Energy University Programs; PI: B. Petrovic (Georgia Tech), co-PIs: F. Rahnema (Georgia Tech), A. Manera (University of Michigan), P. Ferroni (Westinghouse), A. Haghighat (Virginia Tech), W. Hines and B. Upadhyaya (University of Tennessee), **I. Charit (University of Idaho)**, L. Muldrow (Morehouse College), A. Ougouag (Idaho National Laboratory), R. Cocherell (Southern Nuclear), G. Parks (University of Cambridge, UK), M. Ricotti (Italy); Project Period: 2/11/2013 to 9/30/2016; Total funding to Charit: $147,910.

"Studying the Microstructural Characteristics of Nuclear Fuels," Battelle Energy Alliance, PI: **I. Charit**, Project Period - 8/18/2012 to 9/30/2013, Total Funding: $92,547.

"TAOI B - Computational Microstructural Optimization Design Tool for High Temperature Structural Materials," University Coal Research Program, National Energy Technology Laboratory (NETL) through US DOE Office of Fossil Energy; PI: R.S. Mishra, University of North Texas; co-PI: **I. Charit**, Project Period: 9/1/2012 to 8/30/2014, Total Funding: $300,000 (Charit portion: $120,000).

"Course Modules on Management of Aging Power Plant Components and Systems for Enhancement of Nuclear Engineering Program," US Nuclear Regulatory Commission (NRC) – Curriculum Development Program; PI: K.S. Raja, co-PIs: **I. Charit**, B. Pesic; Project Period: 4/1/2012 to 8/31/2013; Total Funding: $200,004 (Charit portion: $66,001).

"Undergraduate support by the University of Idaho for Microstructural Characterization of Spark Plasma Sintered Tungsten," Idaho National Laboratory, PI: **I. Charit**, Project Period: 10/17/2011 to 06/15/2012, Total Funding: $6,123.

"Request to enhance the Experimental and Computational Capabilities to Support Nuclear Energy Research and Development," Nuclear Energy University Programs (NE-UP) Infrastructure Grant, Project Period: 8/31/2010 to 8/30/2011; PI: A. Tokuhiro, co-PIs: G. Potirniche, C. Wai and **I. Charit**; Total Funding: $250,000 (Charit portion: $40,000).

"Fabrication of Advanced ODS Alloys Using Field Assisted Sintering," Idaho National Laboratory LDRD Program; PI: J. Cole (Idaho National Laboratory), co-PIs: **I. Charit** and D.P. Butt (Boise State University), Project Period: 3/18/2010 to 9/30/2012, Total Funding to Charit: $234,122.

"Fabrication of Tungsten-Rhenium Cladding Materials via Spark Plasma Sintering for Ultra-High Temperature Reactor Applications," Department of Energy through FY2009 Nuclear Energy University Program (NE-UP); PI/Project Director: **I. Charit**, co-PIs: Darryl P. Butt (Boise State University) and Mark Carroll (Idaho National Laboratory); 10/1/2009 to 9/30/2012, Total Funding: $682,258 (Charit portion: $336,122).

"Prediction and Monitoring Systems of Creep-Fracture Behavior of 9Cr-1Mo Steels for Reactor Pressure Vessels," Department of Energy through FY2009 NE-UP Program, PI: Gabriel Potirniche, co-PIs: **I. Charit**, Karl Rink, Fred Barlow, Project Period - 10/1/2009 to 8/31/2013, Total Funding to UI: $503,188 (Charit portion: $117,242).

"Mechanical Properties of Nuclear Fuels," Battelle Energy Alliance, PI: **I. Charit**, Program Manager: Rory Kennedy (Idaho National Laboratory), Project Period - 8/25/2008 to 8/17/2012, Total Funding to Charit: $319,101.

"Request for Graphite and Related Material Characterization Instrumentation in Support of NGNP and Advanced Reactor System," NE-UP Infrastructure Program, 7/15/2009 to 7/14/2010, PI: A. Tokuhiro, co-PIs: V. Utgikar, **I. Charit**, S. Phongikaroon, Total Funding: $177,000 (Charit portion: $44,250).

"A Comparative Study of Welded ODS Cladding Materials for AFCI/GNEP Applications," US DOE Office of Nuclear Energy (Advanced Fuel Cycle Initiative); PI: **I. Charit**, co-PIs: D.P. Butt (Boise State University), R.S. Mishra (University of Missouri-Rolla), K. Linga Murty (North Carolina State University), J. Cole, M. Meyer, L. Zirker (Idaho National Laboratory) and M. Woltz (Centerline Limited); Project period - 10/1/2008 to 9/30/2010; Total Funding: $458,762 (Charit portion: $166,661).

"Fuel Fabrication Using Friction Bonding Process to Support the RERTR Program," Idaho National Laboratory, PI: **I. Charit**, Technical Monitors: D. Keiser, Jr. and Douglas Burkes (Idaho National Laboratory), Project Period: 5/15/2008 to 5/31/2009, Total Funding to Charit: $11,704.

"Acquisition of a Simultaneous Thermal Analyzer for GNEP (Global Nuclear Energy Partnership) Research and Training at University of Idaho," US DOE Office of Nuclear Energy (GNEP University Readiness Program), PI: **I. Charit**, Project Period: 8/30/2007-2/29/2008, Total Funding: $99,945

"Studying Radiation Effects on Alloys," Idaho National Laboratory, PI: **I. Charit**, Project Period: 8/15/2007 to 8/31/2008, Technical monitor: Douglas Burkes (INL), Total Funding: $70,799.

User-Facility Projects: Dollars assigned to these projects do not come to the university

"Microstructural characterization of neutron irradiated HT-9 heats (ORNL, LANL and EBR II) at LWR and fast reactor relevant temperatures," SUF-RTE Program PI: **I. Charit**, Co-PIs: R. Prabhakaran, et al., Project Duration: July 14, 2020 to April 13, 2021.

"High-Dose Ion Irradiation Testing and Relevant Post-Irradiation Examination of Friction Stir Welded ODS MA956 Alloy," PI: R. Prabhakaran (PNNL); Co-PIs: **I. Charit**, L. Shao (Texas A&M), Y. Wu (Boise State University), G. Grant (PNNL), and K.L. Murty (NCSU); NSUF-DOE, Project Approved: Oct. 1, 2018 to Sep. 30, 2021 (Total project cost: $182,398).

"Microstructural and Nanomechanical Characterization of a Lanthana-Bearing Nanostructured Ferritic Steel Irradiated with High Dose Iron," PI: **I. Charit**; Co-PIs: L. Shao (Texas A&M), J. Burns (Center for Advanced Energy Studies), Project Granted: Nov. 2014.

"Microstructural and Mechanical Characterization of Self-Ion Irradiated Grade 92 Steel," ATR-NSUF-RTE Program, PI: **I. Charit**, Project Granted: Oct. 2013.

"Microstructural and Mechanical Characterization of Self-Ion Irradiated 14LMT Nanostructured Ferritic Steels," ATR-NSUF-RTE Program, PI: **I. Charit**, Project Granted: Oct. 2013.

"Advanced Microstructural Characterization of Spark Plasma Sintered Lanthanum-Bearing Nanostructured Ferritic Steels," ATR National Scientific Users Facility (ATR-NSUF) program, PI: **I. Charit**, Project Granted: April 2013.

"Studying the Role of Alloying Elements on the Microstructure of Nanostructured Ferritic Steels Fabricated via Pulsed Electric Current Sintering," ATR National Scientific User Facility Program, PI: **I. Charit**, co-PI: Darryl P. Butt and Kerry Allahar, Project Period: Sep. 1, 2012 to Feb. 28, 2013.

"Microstructural Study of Ion Irradiated 14LMT Nanostructured Alloys," ATR National Scientific Users Facility Program, PI: **I. Charit**, Project Period: 6/2011-6/2012.

"Small Angle Neutron Scattering Studies of Grade 91 Steel," Lujan Center (the Neutron Scattering Center at the Los Alamos National Laboratory), PI: **I. Charit**, Oct. 2010.

"Influence of Fast Neutron Irradiation on the Mechanical Properties and Microstructure of Nanostructured Metals/Alloys," PI: K.L. Murty, co-PI: **I. Charit**, ATR National Scientific Users Facility (NSUF) grant, Project Period: 4/2008 - Present).

Internal Grants:

CAES Tranche 3 Funding in Advanced Manufacturing, proposal writing support, PI: **I. Charit**, Co-PI: B. Jaques (BSU), Total Funding: $13,909, July 1 to Sep. 30, 2020.

"Greening 'Materials Fabrication' at the University of Idaho," Sustainable Idaho Greening the Curriculum Initiative, Project Period: 4/20/2009 to 5/15/2010, PI: **I. Charit**, Total Funding: $1,995.

"Advanced Nanotube-Reinforced Metal Matrix Composites via Mechanical Milling," NASA-Idaho EPSCoR Collaboration Grant, Project period: 8/1/2008 to 7/31/2009, PI: **I. Charit**, Funding: $3,889.

"Request for a Travel Grant for Initiating a Cold Spray Research Program," PI: **I. Charit**, University of Idaho Small Travel Grant Program, 2007, Total Funding: $900 (PI portion at UI 100%).

SERVICE:

Major Intra-University Committee Assignments:

Member, University of Idaho Sabbatical Committee, 2020-2023

Member, Search Committee for Graduate Admissions Specialist, 2020.

Member, 3rd-year review committee of Dr. Michael Maughan, Fall 2019

Member, Promotion Committee of Dr. Gabriel Potirniche, Spring 2019

Member, Promotion/Tenure committees of Drs. Bryn Martin and Matthew Bernards, Fall 2018

Member, University of Idaho Scientific Misconduct Committee, Aug. 2018 – May 2021

Reviewer and Panelist, NASA Space Grant Consortium, Dec. 2017.

Member of the 3rd year review committee of Dr. Samrat Choudhury, Fall 2017

Member of the Promotion/Tenure Committee of Dr. Mark Roll, 2016-2017

Reviewer and Panelist, University of Idaho Seed Grant Competition, Spring 2016.

Member, Chemical Engineering Faculty Search Committee, August 2015 to April 2016.

Chair, Promotion and Tenure Committee of Dr. Krishnan Raja, Department of Chemical and Materials Engineering (Fall 2015).

Member, Nuclear Engineering Director Search and Faculty Search Committees, and Chemical & Materials Engineering Faculty (Electronic Materials) Search (2014-2015)

Member, University Committee on Committees (Fall 2014 - Spring 2017)

Member, 'Mech. Engr./Nuc. Engr. Faculty Search' and 'Chemical and Materials Engineering Faculty Search – Energy Materials' committees (2011-2012)

Chair, MSE ABET committee of the UI Chemical and Materials Engineering Dept. (since Fall 2010)

Member, College of Engineering Bylaws committee (since Fall 2010)

Member, University Library Affairs Committee (since Fall 2010 – Spring 2014)

MSE Representative of the College Curriculum Committee, College of Engineering, University of Idaho, Fall 2007 - Summer 2009

Member of the Graduate Faculty, University of Idaho, 2007 - Present

Member of Faculty Tenure Review Committee for Daniel Choi, MSE, Fall 2011

Membership in Professional and Scholarly Organizations:

Member, American Association of University Professors, April 2020 – Present

Member, TMS Additive Manufacturing Committee, March 2017 - Present

Professional Engineer (# P-15773, licensed in Idaho), Dec. 2013 - Present

Member, ASM International, 2001 – Present

Advisor to JOM (TMS journal), TMS Nuclear Materials Committee, March 2017 – March 2019 (Topic 2018: Accident Tolerant Nuclear Fuels and Cladding Materials; Topic 2019: Advanced Manufacturing for Nuclear Energy)

Member, The Minerals, Materials and Metals Society (TMS); 2001- Present; Vice Chair (2013-2015) and Chair (2015-2017) of the TMS Nuclear Materials Committee; also a member of TMS Mechanical Behavior of Materials committee (until 2015)

Member, American Nuclear Society (ANS), 2006 - Present

Member, Association for Iron and Steel Technology (AIST); 2007 - 2013

Member, American Ceramic Society (ACerS), 2001 - 2013

Other Professional Services:

Technical Symposium Organization / Chairing Sessions:

Co-organizer of the TMS 2020 symposium, "Additive Manufacturing for Energy Applications II," Feb. 23-27, 2020, San Diego, CA. Also, served as chair for two sessions in this symposium.

Co-organizer of the TMS 2019 symposium, "Additive Manufacturing for Energy Applications," March 10-14, 2019, San Antonio, TX. Also, served as chair for three sessions in this symposium.

Lead organizer of the TMS 2017 symposium, "Mechanical and Creep Behavior of Advanced Materials: A SMD Symposium Honoring Prof. K. Linga Murty," Feb. 26-Mar. 2, 2017, San Diego, CA.

Co-organizer of the Hume-Rothery Award Symposium in TMS 2017, "Alloy Phase Chemistry at the Atomic Level – Opportunities and Challenges," Feb. 26-Mar. 2, 2017, San Diego, CA.

Session Chair at the TMS 2017 symposium, "Materials and Fuels for the Current and Advanced Nuclear Reactors VI," Feb. 26-Mar. 2, 2017, San Diego, CA.

Plasticity-2016 advisory committee member and the lead organizer of the mini-symposium, "Creep, Deformation, Texture, Nano and Nuclear Materials IV (in honor of K.L. Murty)," Jan. 2-9, 2016, Kona, Hawaii.

Lead organizer of the symposium, "Advanced Powder Processing for Energy Applications," held during the Materials Science & Technology Conference (MS&T2015) in Columbus, Ohio, Oct. 7-8, 2015. A few papers of the proceedings were published in the *Metallurgical and Materials Transactions E* journal.

Served as a session chair, Materials and Fuels for the Current and Advanced Nuclear Reactors III – Structural Materials IV, Morning Session, 2014 TMS Annual Meeting & Exhibition, San Diego, CA, Feb. 16-20, 2014.

Member, Technical Executive Committee, Thermec 2013 (Dec. 2-6, 2013), Las Vegas, NV.

Co-organizer of the symposium, "Functional and Innovative Composites," held during the Materials Science and Technology Conference at Pittsburgh in October of 2012.

Lead organizer of the symposium, "Nanotube Reinforced Metal Matrix Composites II," held during the Materials Science and Technology Conference at Houston, October 18-21, 2010.

Lead organizer of the symposium, "Nanotube Reinforced Metal Matrix Composites," to be held during the Materials Science and Technology Conference at Pittsburgh in October 2008.

Lead organizer of the symposia, "Nanoscale Design of Materials for Extreme Radiation Environments," and "Nanotube Reinforced Metal Matrix Composites" held during the Materials Science and Technology Conference at Pittsburgh in October of 2008.

Reviewer Duties:

Journal Reviewer Duties:

Metallurgical and Materials Transactions A, Nuclear Technology, Surface and Coatings Technology, Journal of Nuclear Materials, Journal of Alloys and Compounds, Materials Science & Engineering A, International Journal of Plasticity, Journal of Materials Research, JOM, Nature Communications, Journal of Thermal Spray Technology, Steel Research International, Fusion Engineering & Design, Philosophical Magazine; Materials Characterization; Composites A; Journal of Materials Engineering & Performance; Materials Letters; Journal of Materials Research & Technology, Additive Manufacturing

Joined the Editorial Board of 'Crystals' journal, MDPI, Switzerland, Aug. 18th, 2020

Research Proposal Review:

US Department of Energy - Office of Nuclear Energy (Nuclear Energy University Programs) and ATR Nuclear Science User Facility; US National Science Foundation (including NSF CAREER Panelist – 2018); Georgian National Science Foundation; Indo-US Science and Technology Forum; US Civilian Research and Development Fund (US-CRDF); DOE Office of Science SBIR program; Advanced Research Projects Agency – Energy (ARPA-E)

Book Proposal Review:

Springer (2013); Cambridge University Press (2014, 2016, 2017); John Wiley (2015); Elsevier (2016)

Outreach Service:

MSE Visitation Faculty Coordinator/Participant, University of Idaho, 2007 – Present

Faculty Advisor, Material Advantage Chapter, University of Idaho, 2007-2013

Provided two-week long laboratory internship opportunities to the 'Upper Bound Math & Science' program in 2010 and 2011 and gave lab tours in 2012.

Community Service:

Participated in other events such as 'Envision Idaho' and 'Women in Engineering' events as the MSE representative since 2012.

Participated in the College of Engineering ThinkTank seminars, continuously since Fall 2011.

Honors and Awards:

Elected as a '**key reader**' to serve on the *Board of Review* of the journal from March 2008 to present.

PROFESSIONAL DEVELOPMENT:

Teaching related:

Program Assessment Workshop, Academic Affairs, University of Idaho, Feb. 26, 2013

BbLearn Hands-on Workshop, UI Information Technology Services, May 2, 2012

Best Practices in Teaching Graduate Seminars, Brown Bag Lunch Meeting, College of Graduate Studies, University of Idaho, Oct. 26, 2009

Mentorship Workshop, NC State University, Raleigh, NC, March 20, 2006

Automotive Workshop, Strategic Issues – Research and Development, NC State University, Raleigh, NC, March 6-7, 2006

Scholarship related:

Attended several technical webinars sponsored by TMS and ANS, 2020

Attended CAES Advanced Manufacturing Workshop, Mar. 5-6, 2020, Boise, ID. Led the UofI delegation.

Attended the DARPA visit and talk with Program Manager, Oct. 9, 2019, Uof I, Moscow.

Attended the Materials Initiative Working Meeting, Boise State University, Boise, ID, Aug. 8, 2018. Also, presented an invited talk on "Spark Plasma Sintering for high Performance Energy Materials."

Participated in the CAES Nuclear Collaborative Research Planning Meeting, Idaho Falls, ID, Feb. 12-13, 2018.

Export Control Workshop, UI Office of Research Assurances, University of Idaho, Moscow, April 7, 2016.

Attended CAES Materials, Modeling, Simulation and Visualization Workshop, May 13-14, 2015, McCall, Idaho.

Attended the American Nuclear Society Annual Meeting, Atlanta, Georgia, June 17-20, 2013.

FY2011 Nuclear Energy University Program Workshop, Rockville, Maryland, July 27-28, 2010.

Institute of Science & Technology (INEST) Workshop on Stress Corrosion Cracking, Center for Advanced Energy Studies, Idaho Falls, ID, June 8-9, 2010.

FCRD Advanced Materials Development Working Group Meeting, University of California – Santa Barbara, March 23-25, 2010.

FY2010 Nuclear Energy University Program Workshop, Salt Lake City, Utah, Aug. 13-14, 2009.

Planning Grant Meeting, Radioactive Materials Processing Center (RAMP-C), A National Science Foundation Industry/University Cooperative Research Center (NSF IUCRC), Idaho Falls, ID, June 25-26, 2009 (invited).

Advanced Test Reactor (ATR) National Scientific User Facility Workshop, Idaho Falls, ID, June 1-5, 2009.

FY2009 Nuclear Energy University Program Workshop, Bethesda, MD, Aug. 19-20, 2008

TMS Annual Meeting, New Orleans, LA, March 2008

CAES Integration Meeting, Idaho Falls, ID, October 18, 2007

Global Nuclear Energy Partnership (GNEP) Materials Workshop, Oak Ridge National Laboratory, TN, Oct. 11-13, 2007

Cold Spray Conference, Akron, OH, Oct. 8-9, 2007

Global 2007 Conference, Boise, Idaho, Aug. 9-12, 2007

Second ACE (Academic Center for Excellence) Fuel Cycle Workshop, Boise, ID, May 8-9, 2007

Service Related

Attended Mental Health First Aid Refresher, Feb. 6, 2020, SRC Classroom, UofI, Moscow campus

Attended the University Materials Council Meeting held on March 12, 2018 in Phoenix, AZ

Completed all UI service related online training programs