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Mengying Liu

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EDUCATION

Texas A&M University, College Station, TX
Doctor of Philosophy, Department of Materials Science and Engineering, May 2021
Dissertation: In situ investigation of the role of slip in crack initiation in hydrogen embrittled Inconel 725 (Committee: Michael Demkowicz (chair), Alan Needleman, George Pharr, Alan Freed)
Concept, Creation and Commercialization Certificate, College of Engineering, May 2021
Business Immersion Program for Engineers, Mays Business School, May 2019
Academy for Future Faculty, Oct. 2017 – Dec. 2018

Virginia Polytechnic Institute and State University, Blacksburg, VA
Senior research design, Department of Materials Science and Engineering, Jan. 2015 – June 2015
Thesis: Size Controllable High Temperature Electrical Conductive SiOC/TiO2 Ceramics Composite (Advisor: Kathy Lu)

Tianjin University, Tianjin, China
Bachelor of Engineering, Materials Science and Engineering, July 2015

Tohoku University, Sendai, Japan
Tohoku University Science Summer Program, June 2014 – July 2014

PROFESSIONAL APPOINTMENTS

Physics and Engineering Department, Washington and Lee University, Lexington, VA
Assistant Professor, July 2021 – present

Materials Design Lab, Department of Materials Science and Engineering, Texas A&M University, College Station, TX
Graduate Research Assistant (PI: Michael Demkowicz), Mar. 2016 – June 2021

- Mitigated hydrogen- induced damage and characterized the mechanical response
- 3D structural analysis of corrosion behavior of Ni under cathodic charging
- Developed novel testing method for materials mechanical behavior

Department of Materials Science and Engineering, Texas A&M University, College Station, TX
Graduate Teaching Fellow, Jan. 2020 – Feb. 2020

- Created a student-centered active-learning course for non-materials major undergraduate students

Teaching Assistant, Jan. 2018 – May 2018

- Facilitated weekly recitation and offices hours and covered lectures during the instructor's absences

STARTALK, College Station, TX
STEM program coordinator, Science Teacher, May 2017 – June 2017

- Designed courses integrating robotics and physics program with immersive Chinese language learning for elementary school students

HONORS

Texas A&M Engineering Project Showcase, 1st place in entrepreneurship, 2nd place in overall non-capstone design, May 2020

Texas A&M University Academic Excellence Award, Association of Former Students Scholarship, May 2020

2019 iDICs Conference student travel award, Oct. 2019

George Bush Presidential Library Foundation top level travel award, Sept. 2018

Finalist of the 2018 SEM International Student Paper Competition, May 2018

Outstanding teacher award of Materials Science & Engineering Department (2017-2018)

2016 IIMEC Summer School – Multiscale Modeling of Materials, July 2016

Charles Crawford 19' Fellowship, Sept. 2015

Chinese Government Scholarship, Dec. 2014

TJU Nobel Prize (10/31519), Dec. 2014

Japanese Student Services Organization Scholarship, May. 2014

The 3rd prize of Tianjin University Innovation & Entrepreneurship Competition, Mar. 2014

National 2nd place for Unilever case competition, May 2012

City of Baoji Public Figure of Environmental Protection (5 people per year), May 2011

PUBLICATIONS & PRESENTATIONS

Peer reviewed journal papers

(8) **M. Liu**, L. Jiang, and M.J. Demkowicz. Role of intergranular slip in crack initiation of hydrogen embrittled Inconel 725 (in preparation)

(7) J. Song, **M. Liu**, X. Ma, T. Guo, M.Yao , W. Ding, Y. Li, F. Bei, X. Zhang, J. Huang, and F. Duan. Thermal decomposition behavior and computational analysis of alpha and beta manganese dioxide nanorods (in preparation)

(6) V. Tucker, C. Montgomery, T. Vermeij, **M. Liu**, J. Stinville, N. Sottos, J. Hoefnagels, T. Pollock, and W. LePage. Interlaboratory Round Robin Study of Errors and Best Practices for Scanning Electron Microscope Digital Image Correlation (in preparation)

(5) P.L. Reu, B. Blaysat, E.M.C. Jones, M.A. Iadicola, S.S. Fayad, E. Toussaint, P. Lava, J. Réthoré, J. Yang, K. Bhattacharya, L.K. Luan, D. Deb, C.S.R. Vemulapati, M. Klein, E. Andò, E. Roubin, O. Slamati, C. Couture, A. Landauer, **M. Liu**, D.T. Seidl, S. Jaminion, T Siebert, and A.N. Olufsen. DIC Challenge 2.0: Developing Images and Guidelines for Evaluating Accuracy and Resolution of 2D Analyses - Focus on the Metrological Efficiency Indicator. Experimental Mechanics (submitted)

(4) **M. Liu**, I. McCue, M.J. Demkowicz, Quantifying surface deformation around small-scale indents by digital image correlation. Journal of Materials Research 36, 2277–2290 (2021)

(3) **M. Liu**, M. Seita, M.J. Demkowicz, Preferential corrosion of coherent twin boundaries in pure nickel under cathodic charging. Physical Review Materials 3(6), 063606 (2019)

(2) K. Lu, D. Erb, **M. Liu**, Thermal stability and electrical conductivity of carbon-enriched silicon oxycarbide. Journal of Materials Chemistry C 4, 1829-1837 (2016)

(1) K. Lu, D. Erb, **M. Liu**, Phase transformation, oxidation stability, and electrical conductivity of TiO2-polysiloxane derived ceramics. Journal of Materials Science 51, 10166-10177 (2016)

Conference proceedings

(1) **M. Y. Liu**, Y. L. Li, S. X. Qu, S. S. Han, S. H. Wang, Fabrication of Carbon Nanofiber and Silicon Carbonitride Ceramic Nanomposites by In Situ Growth during Ceramic Formation. Key Eng. Mater. 602, 221-225 (2014)

Conference oral presentations

("*" denotes an invited presentation, presenting authors are underlined)

(14) **M. Liu**, L. Jiang, E. Sheu, M.J. Demkowicz, "In Situ Investigation of Crack Initiation in Hydrogen Embrittled Inconel 725", *2021, ASME Pressure Vessels & Piping*, virtual; July 13-15, 2021

(13) **M. Liu**, L. Jiang, E. Sheu, M.J. Demkowicz, "In-situ investigation of intergranular crack initiation in hydrogen embrittled Inconel 725", *2021, TMS Annual Meeting & Exhibition*, virtual; March 15-18, 2021

(12) **M. Liu**, L. Jiang, E. Sheu, M.J. Demkowicz, "In-situ investigation of intergranular crack initiation in hydrogen embrittled Inconel 725", *2020 TMS Annual Meeting & Exhibition*, San Diego, CA; February 23-27, 2020

(11) **M. Liu**, I. McCue, M.J. Demkowicz, "Quantifying surface deformation around small-scale indents by digital image correlation", *2019 iDICs Conference*, Portland, OR; October 14-17, 2019

(10) **M. Liu**, M. Seita, M.J. Demkowicz, "Preferential intergranular corrosion along coherent twin boundaries in pure Ni", *2019 Materials Research Society spring meeting*, Phoenix, AZ; April 22-26, 2019

(9) **M. Liu**, I. McCue, M.J. Demkowicz, "Quantifying in-plane deformation by integrating indentation and digital image correlation", *2019 TMS Annual Meeting & Exhibition*, San Antonio, TX; March 10-14, 2019

(8) **M. Liu**, M. Seita, M.J. Demkowicz, "Analyzing preferential localized corrosion along coherent twin boundaries in pure Nickel via EBSD and micro-CT", *2019 TMS Annual Meeting & Exhibition*, San Antonio, TX; March 10-14, 2019

(7) **M. Liu**, I. McCue, M.J. Demkowicz, "Quantifying in-plane deformation by integrating indentation and digital image correlation", *2018 National Conferences on Solid Mechanic*, Harbin, China; November 23-25, 2018

(6) **M. Liu**, M. Seita, M.J. Demkowicz, "Preferential pitting of coherent twin boundaries of pure Ni under cathodic charging" *2018 Texas A&M Conference on Energy*, College Station, TX; September 24-26, 2018

(5) **M. Liu**, I. McCue, M.J. Demkowicz, "Quantifying plastic flow in small-scale indentation by digital image correlation" 75th Society of Experimental Mechanics Annual Conference, Greensville, SC; June 4-7, 2018

(4) *L.-J. Kuo, S. Lee, H. Kim, **M. Liu,** "Integrating STEM with K-5 language instruction, a project-based and student-centered approach", *2017 National Foreign Language Center STARTALK Fall Conference*, Portland, OR; November 3-4, 2017

(3) **M. Liu**, I. McCue, M.J. Demkowicz, "An indentation-based technique for assessing a material's propensity to strain localization", *2017 Texas A&M Conference on Energy*, College Station, TX; September 25-27, 2017

(2) *I.D. McCue, **M. Liu**, M.J. Demkowicz**, "**Averting flow localization in metal nanocomposites by tailoring microstructure morphology", *2017 Materials Research Society spring meeting*, Phoenix, AZ; April 17-21, 2017

(1) **M. Liu**, Y YL Li, SX Qu *et al, "*Fabrication of carbon nanofibers and ceramics matrix composite by in-situ growth", *CICC-8 (The 8th International Conference on High-Performance Ceramics),* Chongqing, China; November 4-7, 2013

TEACHING AND MENTORING

Courses:

ENGN 301 **Solid Mechanics with Lab**, Sept. 2021 – Dec. 2021 (W&L)

MSEN 222 **Materials Science Engineering Fundamental**, Jan. 2020 – Feb. 2020 **(**TAMU)

- Undergraduate level engineering designated elective course

MSEN 620 **Kinetics Process in Materials Science**, Jan. 2018 – May 2018 (TAMU)

- PhD level materials science and engineering core course

Research students mentored:

Andres Ramirez (TAMU, 2019): Corrosion of pure nickel
Sasha George (TAMU, 2019): High strain rate deformation
Matthew Mason (TAMU, 2018): Processing of pure copper

VOLUNTEERING EXPERIENCE

Yelp, *Elite (Reviewer & Photographer*), March 2017 – present
A&M United Methodist Church, *Chancel Choir Soprano*, Oct. 2015 – Dec. 2019
Materials Research Society 2019 spring meeting, *Symposium Assistant*, Apr. 2019 (Phoenix, AZ)
2018 Texas A&M Conference on Energy, *Session Chair*, Sept. 2018
FIRST robotics competition, *Volunteer*, March 2016 (San Antonio, TX)
Student in Free Enterprise (SIFE)/Enactus, *Project Manager*, Sept. 2011 – Aug. 2013

ORGANIZATIONS & ACTIVITIES

Chinese Student Association, Texas A&M University, *Primary Advisor*, Sept. 2015 – April 2021
Women in Materials Science, Texas A&M University, Department of Materials Science and Engineering, *Vice President*, Jan 2017 – Aug. 2020
Materials Advantage, Texas A&M Chapter, *Treasurer*, May 2017 – Aug. 2020

PROFESSIONAL MEMBERSHIPS & CERTIFICATES

ASM International, Society of Experimental Mechanics (SEM), and International Digital Image Correlation Society (iDICs)
Center for the Integration of Research, Teaching and Learning Associate certificate
Center for the Integration of Research, Teaching and Learning Practitioner certificate