



Exponent[®]
Engineering & Scientific Consulting

Emily Brady, Ph.D., P.E.

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Professional Profile

Dr. Brady specializes in mechanical engineering with a focus on mechanical behavior of materials and materials characterization. She has expertise in mechanical testing, failure analysis, and data analysis.

Dr. Brady has extensive experience in mechanical property testing and microstructural characterization techniques including high-temperature tensile testing, scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), electron backscatter diffraction (EBSD), and high resolution EBSD (HR-EBSD). Dr. Brady also has hands-on experience with machine shop tools such as drill presses, lathes, milling machines, and shearing machines; heat treatment of steel using salt pots and box furnaces; and various software applications and programming languages including SolidWorks, MATLAB, R, and Python.

Prior to joining Exponent, Dr. Brady completed her Ph.D. in Materials Science and Engineering at the University of Texas at Austin. Her doctoral work focused on the mechanical behavior and microstructure evolution in unalloyed niobium. Specifically, her work established the first mechanistic explanation with supporting microstructural data for how impurity content affects high-temperature strength in refractory metals. Dr. Brady developed and successfully implemented two new microstructural characterization techniques: one that allows HR-EBSD analysis on heavily deformed materials using open-source software, and one that segments substructure in deformed materials. During her time at UT Austin, Dr. Brady also served as mentor for the Research Experience for Teachers program where she trained high school teachers to use advanced laboratory equipment and helped develop lessons to engage high school girls in engineering.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, University of Texas, Austin, 2021

B.S., Mechanical Engineering, University of Texas, Austin, 2017

Recipient, Center for Integrated Nanotechnologies User Proposal, 2019-2020

Special Commendation for Outstanding Poster, TMS Bladesmithing Competition, 2019

Virginia and Ernest Cockrell, Jr. Fellowship, 2017-2021

Licenses and Certifications

Professional Engineer Mechanical, California, #42455

Prior Experience

R&D Intern, Sandia National Labs, 2016

Longhorn Maker Studio Assistant, The University of Texas at Austin, 2015-2016

AutoCAD Intern, Austin Energy, 2015

Design and Graphics Lab Assistant, 2015

Professional Affiliations

The Minerals, Metals & Materials Society (TMS)

Publications

Brady EAD, Gould M, Kornuta J, Switzner N, Veloo P. A Historical Review and Analysis of the Effect of Tensile Test Sample Orientation on Pipeline Yield Strength. Proceedings of the PRCI Research Exchange REX 2023, PRCI-REX2023-006

Brady EAD, Kornuta J, Anderson J, Steiner A, Veloo P. Improvements to Strain Hardening Exponent and the Implications to Failure Pressure Predictions. Proceedings of the 2022 14th International Pipeline Conference, Vol. 2. Calgary, Alberta, Canada. September 26-30, 2022.

Brady EAD, Taleff EM. The Effects of Impurity Content on Plastic Deformation and Microstructure Evolution in Niobium at Temperatures from 1473 to 1773 K. Metallurgical and Materials Transactions A 2022; 53: 3057-3072.

Brady EAD, Taleff EM. Plastic deformation and microstructure evolution in niobium at temperatures from 1473 to 1823 K. Metallurgical and Materials Transactions A 2021; 52(3): 1095-1105

Brady EAD, Taleff EM. The Effects of Impurity Content on Plastic Deformation and Microstructure Evolution in Niobium at Temperatures from 1473 to 1773 K. Metallurgical and Materials Transactions A 2022; 53: 3057-3072.

Brady EAD, Taleff EM. Plastic deformation and microstructure evolution in niobium at temperatures from 1473 to 1823 K. Metallurgical and Materials Transactions A 2021; 52(3): 1095-1105.

Presentations

Brady EAD, Kornuta J, Anderson J, Steiner A, Veloo P. Improvements to Strain Hardening Exponent and the Implications to Failure Pressure Predictions. The ASME International Pipeline Conference, Calgary, Alberta, Canada, 2022.

Brady EAD, Taleff EM. A Review of Plastic Flow and Microstructure Evolution at Elevated-temperatures in Unalloyed Niobium. Oral Presentation, The Minerals, Metals & Materials Society Annual Meeting, Virtual, 2021.

Brady EAD, Taleff EM. Static and dynamic grain growth in niobium at 1200 to 1500°C. Oral Presentation, The Minerals, Metals & Materials Society Annual Meeting, San Diego, CA, 2020.

Brady EAD, Taleff EM. Elevated-temperature tensile behavior of niobium. Oral Presentation, The Minerals, Metals & Materials Society Annual Meeting, San Antonio, TX, 2019.

Brady EAD, Taleff EM. Static and Dynamic Grain Growth in Niobium. Poster presentation, Center for Integrated Nanotechnologies Annual User Meeting, Santa Fe, NM, 2019.