Exponent®
Engineering & Scientific Consulting

Casey Davis, Ph.D., P.E.

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Professional Profile

Dr. Davis is a metallurgical engineer who specializes in material processing, microstructural development, and materials characterization of both conventional and nanostructured metal alloys. She has extensive expertise in a variety of characterization techniques including metallography, optical microscopy, scanning electron microscopy (SEM), focused ion beam (FIB), transmission electron microscopy (TEM), x-ray techniques (XRD, SAXS, WAXS, XRF), and a variety of mechanical testing techniques.

Before joining Exponent, Dr. Davis completed her graduate studies at the Colorado School of Mines, where her dissertation focused on controlling microstructural evolution of magnesium alloys for bioabsorbable cardiovascular stents by inducing high shear deformation via equal channel angular pressing – Conform (ECAP-C). Her work included high shear processing of magnesium, energy dispersive spectroscopy (EDS), electron backscatter diffraction (EBSD), transmission Kikuchi diffraction (TKD), and x-ray diffraction (XRD) with x-ray line profile analysis (XLPA).

During her graduate research, she also gained experience in failure analysis and characterization of a wide range of different metals and applications. Examples of the projects she collaborated on include: nanostructured titanium bone screws, stainless steel cannula, nanostructured aluminum for conductors, and nanostructured copper.

Academic Credentials & Professional Honors

Ph.D., Material Science, Colorado School of Mines, 2019

B.S., Metallurgical and Materials Engineering, Colorado School of Mines, 2014

Licenses and Certifications

Professional Engineer Metallurgical, California, #2029

Prior Experience

Senior Research Assistant, Colorado School of Mines, 2014-2019

Publications

"Scientific and Technological Foundations for Scaling Production of Nanostructured Metals" T.C. Lowe, C.F. Davis, P.M. Rovira, M.L. Hayne, G.S. Campbell, J.E. Grzenia, P.J. Stock, R.C. Meagher, H.J. Rack, IOP Conf. Series, Mater Sci Eng. 2017.

"Deformation behavior of multilayered Al-Cu clad composite during cold-swaging," R. Kocich, L. Kunčická, Casey F. Davis, T.C. Lowe, I. Szurman, A.Macháčková Materials & Design, Volume 90, 15 January 2016, 379-388 (2016).

"Synthesis of an Al/Al2O3 composite by severe plastic deformation," L. Kunčická, T.C. Lowe, C.F. Davis, R. Kocich, M. Pohludka, Matls Sci & Eng A, 646, 234-241 (2015). Oct. 2015

"Intensive plastic deformation of pre-sintered Al powder," L. Kuncicka, M. Pohludka, T.C. Lowe, C.F. Davis, J. Jurica, L. Hlavac, Metal 2015, 24th Intl Conf on Metallurgy and Materials, 3-5 June 2015, Brno, Czech Republic, Tanger Ltd., 2015, 247-252

"The influence of consolidation procedure parameters on compaction of Al powder," T.C, Lowe, L. Kuncicka, R. Kocich, C.F. Davis, L. Hlavac, J. Dvorak, Metal 2015, 24th Intl Conf on Metallurgy and Materials, 3-5 June 2015, Brno, Czech Republic, 1352-1357