Exponent®
Engineering & Scientific Consulting

Cory Cline, Ph.D., P.E.

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Professional Profile

Dr. Cline is a materials scientist and engineer with expertise in materials processing and characterization of metallic, ceramic, and polymeric systems. He specializes in thermal & electrical properties of solid-state materials and microstructural evolution of high-temperature materials.

Dr. Cline has extensive experience with a wide range of characterization and analysis techniques including scanning electron microscopy (SEM), focused ion beam (FIB) milling, transmission electron microscopy (TEM), atom probe tomography (APT), laser flash analysis (LFA) and differential scanning calorimetry (DSC) for thermal conductivity determination, X-ray diffraction (including synchrotron), electrical resistivity measurements of metals and semiconductors, rapid thermal cycling of metallic materials, metallography, and mechanical testing.

Prior to joining Exponent, Dr. Cline earned his Ph.D. at Dartmouth College investigating methods to enhance the performance of metallic thermoelectric materials. His thesis work investigated material processing routes for bulk metallic materials including extrusion, metal power sintering, directional solidification, and rapid quenching. While at Dartmouth, Dr. Cline also investigated the effects of modulating the phase transition temperature of water using 2D graphene which included in-depth study using Raman spectroscopy, water contact angle (WCA) measurements, and atomic force microscopy (AFM).

In addition to his research experience, Dr. Cline served as a teaching assistant for numerous undergraduate courses (including Mechanics of Materials, Thermodynamics, and Introduction to Materials Science) and graduate-level courses (including Solid-State Materials and Numerical Methods). During this time, he assisted in developing new labs for the courses focused on introducing students to hands-on solid state physics demonstrations.

Academic Credentials & Professional Honors

Ph.D., Engineering Sciences, Dartmouth College, 2023

B.S., Metallurgical and Materials Engineering, Colorado School of Mines, 2016

Tau Beta Pi, Colorado School of Mines, 2015.

Licenses and Certifications

Professional Engineer Metallurgical, California, #2071

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Professional Affiliations

Materials Research Society (member)

Publications

Slone C, Mostaed E, Cline C, Kaplowitz D, Ganot G, James B, Aguiar D. Copper contamination cracking in a pipeline repair weld. Journal of Failure Analysis and Prevention 2024; 24:794—804.

- **Selected as Best Paper of 2024 in Journal of Failure Analysis and Prevention**

Cline C, Wang H, Kong J, Li T, Liu J, Wegst UG. Heterogeneous ice nucleation studied with single-layer graphene. Langmuir 2022; 38(49):15121—15131.

Liu S, Covian AC, Wang X, Cline CT, Akey A, Dong W, ... Liu J. 3D Nanoscale mapping of short□range order in GeSn alloys. Small Methods 2022; 6(5):2200029.

Presentations

Cline C, Dong W, Baker I, Liu J. Enhancing zT performance in Heusler alloys engineering order-disorder transitions. Poster Presentation, MRS 2021, Boston, MA.

Cline C, Li T, Liu J, Wegst U. Heterogeneous ice nucleation on graphene and plasma-oxidized silicon—effects of surface energy and topography. MRS 2019, Phoenix, AZ.