ADDITIVE MANUFACTURING & DESIGN SEMINAR SERIES

QUESTIONS? Email amdprogram@psu.edu

JOIN LISTSERV: https://tinyurl.com/amdseminars

Tuesday, December 5, 2023

11:00 AM – 12:00 PM (ET) | Zoom

*Must register in advance to receive the Zoom link to join this seminar:
https://psu.zoom.us/webinar/register/WN_fqL5EY3bRJSqji0Z9hqrzQ

Marie Charpagne

Assistant Professor

University of Illinois at Urbana-Champaign

Designing metastable stainless steels for additive manufacturing

ABSTRACT

Metal additive manufacturing (AM) is a disruptive processing technology that enables near-net shape synthesis in a single step. Yet, of over 5,500 engineering alloys commercially available, only a handful are printable. This material-process incompatibility arises from fast heating and cooling cycles associated with AM. In this presentation, I will detail strategies we are pursuing to quickly screen and design new alloys that are adapted to AM. We envision materials as dynamic systems, that are out of equilibrium, and leverage metastable phases to obtain superior mechanical and thermal properties. To reach this goal, we develop new methods in correlative microscopy and uncover fundamental linkages between printing process, microstructure, and properties.

BIOGRAPHY

Marie A. Charpagne is an assistant professor in the Materials Science and Engineering Department at the University of Illinois at Urbana-Champaign. Before joining UIUC in 2021, she was a postdoctoral researcher at the University of California in Santa Barbara where she developed new techniques in correlative and 3D electron microscopy. Her research leverages core concepts in physical metallurgy and micro-mechanics to design new alloys for additive manufacturing. She received her NSF CAREER award as well as the ACS New investigator award in 2023.

PennState | ADDITIVE MANUFACTURING AND DESIGN