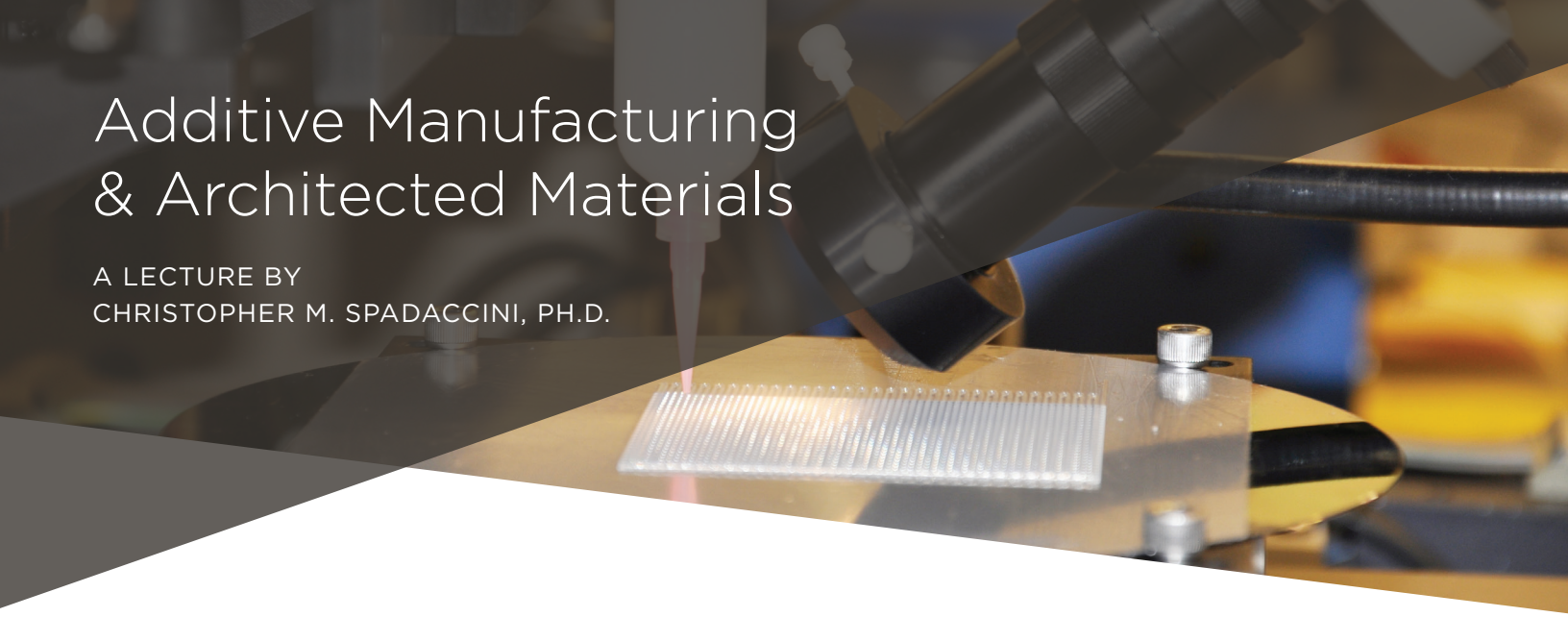


Additive Manufacturing & Architected Materials

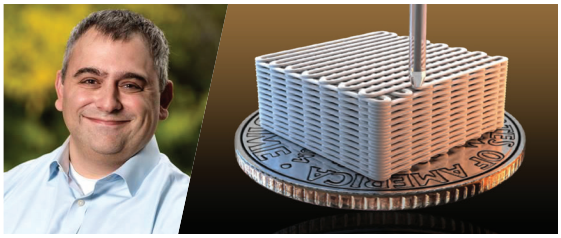
A LECTURE BY
CHRISTOPHER M. SPADACCINI, PH.D.

JOIN US FOR THIS ENGAGING LECTURE AND TOUR OF THE STATE-OF-THE-ART UTAH NANOFAB FACILITY.

Monday, September 18th
1:00pm

Sorenson Molecular
Biotechnology Building
Auditorium (SMBB 2650)

University of Utah
36 S Wasatch Drive
Salt Lake City, UT 84112



About Additive Manufacturing & Architected Materials
Material properties are governed by the chemical composition and spatial arrangement of constituent elements at multiple length-scales. This fundamentally limits material properties with respect to each other creating trade-offs when selecting materials for specific applications. For example, strength and density are inherently linked so that, in general, the more dense the material, the stronger it is in bulk form. We are combining advanced microstructural design, using flexure and screw theory as well as inverse methods, such as topology optimization, with advanced additive micro- and nanomanufacturing techniques to create new material systems with previously unachievable property combinations — mechanical metamaterials. Their performance is fundamentally controlled by geometry at multiple length-scales rather than chemical composition alone. We have demonstrated designer properties of these mechanical metamaterials in polymers, metals, ceramics and combinations thereof. Their creation has utilized custom developed techniques including Projection Microstereolithography, Direct Ink Writing, and Electrophoretic Deposition as well as some new advanced concepts such as volumetric additive manufacturing.

Christopher M. Spadaccini, Ph.D., is currently the Director of the Additive Manufacturing Initiative at the Lawrence Livermore National Laboratory (LLNL) as well as the leader of the Center for Engineered Materials and Manufacturing. Dr. Spadaccini founded several new fabrication laboratories at LLNL for process development focused on micro and nano-scale features and mixed material printing. He received his B.S., M.S., and Ph.D. degrees from the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT) and has been a member of the LLNL technical staff for over 13 years. He has also been a lecturer in the Chemical, Materials, and Biomedical Engineering Department at the San Jose State University where he taught graduate courses in heat, mass, and momentum transfer.

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