

Industrial and Manufacturing Engineering Seminar
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Design for Additive Manufacturing



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ABSTRACT

Additive Manufacturing (AM) technologies enable the fabrication of parts and devices that are geometrically complex and can have complex material compositions. Broadly speaking, the idea of design for additive manufacturing is to explore new design spaces to take advantage of the unique capabilities of AM. To set the stage to discuss Design For Additive Manufacturing (DFAM), a brief survey of AM processes will be presented. A survey of some DFAM principles and methods will be covered that demonstrate the breadth of design objectives that can be achieved with AM. Examples include high complexity, low production volume designs in the aerospace industry, customized biomedical devices, functionally gradient materials, lightweight design concepts, and hybrid processes for electro-mechanical device fabrication. The research frontier in AM will be presented that emerged from the NSF/ONR Roadmap for Additive Manufacturing Workshop.

BIOSKETCH

David Rosen is Morris M. Bryan, Jr. Professor and Associate Chair for Administration in the School of Mechanical Engineering at the Georgia Institute of Technology. He is Director of the Rapid Prototyping & Manufacturing Institute at Georgia Tech. He received his Ph.D. at the University of Massachusetts in 1992 in mechanical engineering. His research interests lie at the intersection of design, manufacturing, and computing with specific focus on computer-aided design, additive manufacturing, and design methodology. He has industry experience, working as a software engineer at Computervision Corp. and a Visiting Research Scientist at Ford Research Laboratories. He is a Fellow of ASME and has served on the ASME Computers and Information in Engineering Division Executive Committee. He is the recipient of the 2013 Solid Freeform Fabrication Symposium, International Freeform and Additive Manufacturing Excellence (FAME) Award and the co-author of a leading textbook in the area.