Net-shape ambient temperature metal additive manufacturing using acoustic energy

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Abstract

Recently, metal additive manufacturing is being widely adopted in the manufacturing industry. It has also become the preferred method for manufacturing in some cases. Despite having several advantages, the process physics, of using a high power heat energy source to melt and fuse material, used by current commercial metal additive manufacturing technologies prevents them from being flexible, accessible and affordable. Direct Acoustic Energy Deposition (DAED) is a novel process which uses acoustic energy to manipulate material at a voxel level. Efficient absorption of acoustic energy at the material defects leads to athermal deformation and bonding of each voxel allowing formation of a 3D component at room temperature and ambient conditions with spatial control over material, shape and property control. In this talk, the DAED process will be introduced highlighting the process capabilities and future prospects.

Biography of Presenter

Anagh Deshpande is a PhD student in Mechanical Engineering at University of Louisville. He obtained his Masters' degree in Manufacturing Engineering from Arizona State University in 2016. His research focuses on developing a new disruptive additive manufacturing process and on additive manufacturing of nickel-based superalloys with powder bed fusion processes. His areas of special interest are additive manufacturing, material science, electron microscopy and solid mechanics.