

Poster Session | F. From Microstructure to Properties: Mechanisms, Microstructure, Manufacturing

[PO-F1]Poster Session 1

Symposium F

Mon. Oct 29, 2018 5:45 PM - 8:00 PM Poster Hall

[P1-50]Understanding the effect of Residual Stresses in 3D Printed Metals

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We present phase field and atomistically informed simulations of 3D printed CP-Ti. In the simulations, the microstructure can be controlled as a function of heat intensity, source velocity and powder size. Also, these process parameters are shown to have direct effect on the preferred crystallographic texture, porosity fraction and residual stresses in the additively created microstructure. This synthetic microstructure is then used as input for crystal plasticity model. In the crystal plasticity model the effect of voids coupled with crystallographic texture is studied as a function of various boundary conditions.