Announcing the Final Examination of August Mark for the degree of Master of Science

Time & Location: November 13, 2015 at 2:15 PM in ENGR 2 202A
Title: Deposition Thickness Modeling and Parameter Identification for Spray Assisted Vacuum Filtration Process in Additive Manufacturing

To enhance mechanical and/or electrical properties of composite materials used in additive manufacturing, nanoparticles are often time deposited to form nanocomposite layers. The thickness of such nanocomposite layers needs to be precisely controlled. A thickness model of filter cakes created through a spray assisted vacuum filtration is presented in this paper. The mass transfer dynamics in the spray atomization and vacuum filtration are studied for the mass of solid particles and mass of water in differential areas, and then the thickness of a filter cake is derived. A two-loop nonlinear constrained optimization is used to identify the unknown parameters in the model. Experiments involving depositing carbon nanofibers in a sheet of paper are used to measure the ability of the model to mimic actual filter dynamics.

Major: Aerospace Engineering

Educational Career:
Bachelor's of Aerospace Engineering, BS, 2013, University of Central Florida

Committee in Charge:
Yunjun Xu, Chair, MAE
Jihua Gou, MAE
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Approved for distribution by Yunjun Xu, Committee Chair, on October 29, 2015.

The public is welcome to attend.