Available Positions:

(a) Additive Fabrication of embedded devices (UG and MS): We seek highly motivated Undergraduates and MS candidates with Mechanical Engineering or MatSci background. The project involves fabrication and testing of working prototypes that combining inkjet printing, flash light sintering and conventional 3D printing into a single manufacturing platform. The goal is to microscale functional structures inside solid objects, during 3D printing of the solid object, using the above platform. An example of such a structure is electrically conductive interconnects. Candidates with experience in building mechanical prototypes and mechatronics will be considered. Experience in 3D printing of polymers will be a plus.

(b) High-speed 3D Printing of large metal structures (MS and PhD): We seek highly motivated MS and PhD candidates with Mechanical Engineering or MatSci backgrounds for analysis, design and testing of a next-generation metals 3D printing process. This process will combine our recent work on flash sintering with our knowledge of nanoparticle and microparticle sintering to enable potentially >10x increase in speed of 3D printing meter-sized Titanium and Aluminum structures. The project involves computational work in analyzing coupled optical-thermal-mechanical problems (for PhD), and fabrication and testing of a working prototype for this process (MS and PhD). PhD candidates with a strong background in additive manufacturing and computational methods will be considered.

Applicants should send a full CV via email to Professor Rajiv Malhotra (rajiv.malhotra@rutgers.edu).

About AMSL: The AMSL lab focusses on understanding the multi-physical behavior of materials during manufacturing processes, to enhance and create new processes that make fabrication cheaper, faster and better. This research has three main thrusts, i.e.,

(1) Scalable roll-to-roll fabrication of functional devices on polymer sheets and fabrics using pulsed light sintering and near-field microwave sintering of nanomaterials;

(2) Functional device fabrication inside and on the surface of objects;

(3) Scalable additive manufacturing of large metallic structures using pulsed light sintering.

This research will enable high-throughput, low-cost and material-insensitive additive fabrication of sensors, energy harvesters, interconnects and other next generation devices on a variety of platform (flat surfaces, curved surfaces and inside 3D objects). It will also enable the next generation of metals additive manufacturing processes for large metal structures.

List of Publications:

https://scholar.google.com/citations?hl=en&user=qzo-I28AAAAJ&view_op=list_works&sortby=pubdate