

Optimization of Digital Light Processing (DLP) 3D Printed Ceramic Parts

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Digital Light Processing (DLP) 3D printing allows for the creation of parts with advanced engineering materials and geometries difficult to produce through conventional manufacturing techniques. Photosensitive resin monomers are activated with a UV-producing LCD screen to polymerize, layer by layer, forming the desired part. With the right mixture of photosensitive resin and advanced engineering powder material, useful engineering-grade parts can be produced. The Bison 1000 is a research-grade DLP printer that permits the user to change many parameters, in order to discover an optimal method for producing 3D parts of any material of interest. In this presentation, the process parameter optimization and their influence on the 3D printed parts through DLP technique will be discussed. The presentation is focused on developing 3D printable slurry, printing of complex ceramic lattice structures, as well as post heat treatment of these DLP-produced parts.