

3D-printing from mechanical characterization to practical application

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3D printing has opened the floodgates of novel applications and ways to design and produce goods; new printers are being developed every day to print all sorts of materials from plastics, composites, metals, and concrete, to organic materials, paper, and even food. Such exciting opportunities should be supported by a rigorous analysis of both materials for 3D printing and 3D printed components in order to turn a preliminary attempt into a reliable manufacturing process. Unfortunately, standards of designing and testing materials for 3D printing and the resulting 3D printed components are not present and many of the reported experiences are based on trial and error approaches. Moving from such considerations, the present symposium welcomes contributions highlighting the experiences in design and testing new materials for 3D printing, as well as innovative applications with particular emphasis on the biomedical field. Discussions will cover a variety of topics, however the focus will be upon application-oriented problems through which recent progress and remaining issues in the modeling, design optimization, and fabrication of these materials are highlighted.

Key topics of discussion will include, but are not limited to:

- Design of novel materials for 3D printing processes
- Mechanical characterization of materials for 3D printing and 3D printed components
- Standard definition of mechanical tests for 3D printing materials and components
- Testing techniques for characterization of 3D printed parts and materials
- Application of 3D printing to bio-engineering field and medical solutions