

Additive Manufacturing of Ceramics

Additive Manufacturing (AM) includes a wide range of cost-effective fabrication techniques, which are gaining increasing importance in industrial applications of ceramic components. In AM, a solid physical model of the part is made directly from a 3D Computer-Aided

Design (CAD) file, thus offering a new degree of freedom to shape complex (3D) parts without the constraints imposed by having a mold or otherwise limited by forming, machining, or joining. Depending on the specific AM technique, (multi) layered components, membrane-like ceramic structures, and complex shaped bulk parts (dense or porous) can be fabricated by such versatile, client customizable, cost effective and environmentally conscious procedures.

This Special Issue publishes ten papers in the broad field of AM of ceramics, including studies devoted to the application of AM of ceramic components as an integral element of modern technologies in a range of industrial fields involving structural, functional, traditional and biomedical applications. A range of AM techniques is covered, specifically 3D printing, (thermoplastic) filament extrusion, robocasting, inkjet printing, vat photo polymerization (or stereolithography - which one you like best), direct ink writing and laser induced slip casting. The papers address recent achievements in those AM technologies applied to a range of ceramics which include alumina, zirconia (YSZ), alumina toughened zirconia, alkali activated materials, glass-ceramic glazes, sintered glasses and traditional ceramic compositions used in tile manufacturing, among others. Overall, the contributions highlight the different advantages (and potential shortcomings) of the considered AM techniques in relation to the final properties and reliability of products and components. We hope that the special issue will be a valuable contribution to always increasing literature about AM with a specific focus on ceramics.

Guest Editors:

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