

Symposium 18: Additive Manufacturing and 3d Printing Technologies

Additive manufacturing is expected as novel fabrication processes of ceramic components with functional structures. The processes allow for innovative complex part fabrication, client customization, rapid prototyping, and distributed manufacturing. Three-dimensional models are designed minutely according to theoretical concepts in computer graphic applications, and two-dimensional cross sections are created by slicing operations automatically. High resolution laser beams are scanned on a spread ceramic powder bed with or without resin binders to form solid planes of two-dimensional cross sections. Through layer stacking, ceramic precursors or components with the three-dimensional models are fabricated. In other processes, paste materials with ceramic particles dispersed are fused from nozzles moving freely in three dimensions to create composite precursors. Various functional components of dielectric lattices to control electromagnetic waves, bio-materials components for medical applications and ceramics electrode with large surface area will be newly developed. Large scale structural components for aerospace and other high temperature applications can be fabricated with internal cooling path networks formed. This symposium focuses on superiority of design, efficient processing, and perspicuous evaluations in the additive manufacturing processes.

<PROPOSED SESSION TOPICS>

- Selective laser sintering (SLS)
- Stereolithography
- Direct writing technologies
- Fused deposition modeling (FDM)
- Laminated object manufacturing / green tape stacking
- Ink jet printing technologies
- Powder bed fusion process
- Emerging additive manufacturing technologies

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<INVITED LECTURES>

Tentative invited lecture information is posted in the following URL;
http://www.ceramic.or.jp/pacrim13/list_of_invited_speakers.html#18