

Laser 3D Manufacturing VI

This conference is no longer accepting submissions.

Late submissions may be considered subject to chair approval. For more information, please contact [Jen Lowell](#).

Important Dates

[SHOW](#) | [HIDE](#)

Abstract Due:
25 July 2018

Author Notification:
1 October 2018

Manuscript Due Date:
9 January 2019

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Call for Papers

Additive manufacturing and 3D printing are revolutionizing the way objects can be fabricated. Leading this revolution are laser-based digital fabrication techniques and processes, which offer the greatest versatility and range in terms of feature size (nano to macro), material type (from metals and ceramics to organics), phase (bulk to porous, homogenous to graded compositions), and processing options (from ablative to sintering and physical to chemical modification).

This conference will provide a common forum for various laser-based disciplines that promise to yield advances in manufacturing that will accelerate the mass-customization of products. Examples of these disciplines include laser free-form fabrication which involve additive and subtractive techniques to permit the development of solid objects that cannot be manufactured using traditional approaches. Also considered are laser-based materials processing techniques that rely on light-matter interaction phenomena to achieve transformative effects. Another example includes the interaction of lasers with functional or advanced materials to yield structures with a desired functional property and very high specificity. Many of these materials also have protean (mutable, changeable) properties that could be induced via light-matter interaction "upon command." Common to all these processes is their operation under computer control without requiring part specific tooling or special fixturing. All these and other laser-based processing disciplines are enablers for the revolution in manufacturing offered by direct 3D fabrication.

The primary goal of this conference is to provide a forum for professionals in materials science, laser processing physics/chemistry, mechanical engineering, design tools, software modeling, characterization and metrology to share and discuss the latest advances in the field of laser-based manufacturing. This gathering will offer a unique opportunity to join the discussion for the development and implementation of next generation laser-based 3D manufacturing processes.

Joint Sessions with LAMOM (LA301), Synthesis and Photonics of Nanoscale Materials (LA303) and Advanced Fabrication Technologies for Micro/Nano Optics and Photonics (OE201) are being considered to bridge with other technologies relevant to laser 3D manufacturing such as fundamentals of laser processing, nanoscale processing and fabrication of micro/nano optics. Future joint sessions with material developers will also be planned.

This year two new topics are added in light of the ever growing concerns over cyber security and the development in 3D printing metrology: computed tomography (CT) and metrology for 3D printing and additive manufacturing, and cyber security issues in 3D printing and additive manufacturing.

Papers are solicited on the following topics:

- applications of laser-based 3D manufacturing
- laser-based solid freeform fabrication
- selective laser sintering (SLS)
- direct metal laser sintering (DMLS)
- selective laser melting (SLM)
- laser cladding
- stereolithography (SLA)
- multi-photon polymerization

- laser direct-write and laser induced forward transfer (LIFT)
 - laser-based bioprinting
 - bio-inspired processing techniques
 - biomedical structures and devices generated by laser digital fabrication
 - laser manufacturing of materials with graded or heterogeneous composition
 - laser induced phase transformations to realize specific material properties
 - lasers, materials and process controls for additive manufacturing
 - effects of laser processing conditions on mechanical behavior
 - scale-up and overcoming product throughput barriers
 - development of standards and structure validation
 - laser-materials processing interactions, modeling, and simulation
 - process-structure-property relationships
 - development of in situ sensors for all 3D manufacturing technologies (e.g. SLS, DMLS, SLM and SLA)
 - sensors for 3D manufacturing validation
 - sensors for 3D manufacturing verification
 - computed tomography (CT) and metrology for 3D printing and additive manufacturing
 - cyber security issues in 3D printing and additive manufacturing.
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