

# EUROMAT 2021

EUROPEAN CONGRESS AND EXHIBITION  
ON ADVANCED MATERIALS AND PROCESSES

WWW.EUROMAT2021.FEMS.EU

12. - 16. SEPTEMBER 2021

GRAZ, AUSTRIA

**ASMET**  
THE AUSTRIAN SOCIETY FOR  
METALLURGY AND MATERIALS

**FEMS** 30  
FEDERATION OF EUROPEAN  
MATERIALS SOCIETIES  
1987 - 2017  
www.FEMS.org

## Area C

### Symposium C.11

#### **Title: Laser based processing and manufacturing**

<b>Organizer</b>	<b>Institution</b>	<b>Contact email</b>
Andrés Fabián Lasagni	TU Dresden, DE	<a href="mailto:andres_fabian.lasagni@tu-dresden.de">andres_fabian.lasagni@tu-dresden.de</a>
Daniel Sola	ARAID-Universidad de Zaragoza, ES	<a href="mailto:dsola@unizar.es">dsola@unizar.es</a>
Javier Solis	Institute of Optics-CSIC, ES	<a href="mailto:j.solis@io.cfmac.csic.es">j.solis@io.cfmac.csic.es</a>
Ioanna Zergioti	National Technical University of Athens, GR	<a href="mailto:zergioti@central.ntua.gr">zergioti@central.ntua.gr</a>

#### **Abstract**

Laser-based manufacturing is a key technology, able to open significant markets for suppliers applying laser-material processing, as well as for equipment manufacturers. Industrial sectors with high economic and social relevance, such as automotive, microelectronics, aviation and (bio)medical sectors rely on the quality of laser-material processing for the functionality and ultimate performance of their products. The aim of this Symposium is to bring together scientists and engineers working on laser-matter interaction and laser-based manufacturing processes on macro, micro and/or nano-meter scales addressing the current scientific and technological advances related to laser-based technology. The papers will be oriented to technical or industrial developments describing applications in different technological fields as well as basic research studies on the interactions of laser beams with materials and the influence of such interactions in the mechanisms governing the manufacturing processes.

Topics of this symposium will cover the following subjects (but not limited to):

- Laser sources, optics, components and systems for laser-based manufacturing.
- Fundamental aspects of laser-materials processing, including dynamics, modelling and simulation.
- Laser beam cutting and drilling, forming.
- Laser beam welding, soldering and brazing.
- Laser surface treatment, including, but not limited to transformation hardening, annealing, alloying, cladding, cleaning, marking.
- Laser micro/nano processing, including, but not limited to micro-joining, micro-cutting & drilling, surface patterning/texturing, (ultra) short pulsed laser processing.
- Laser-based Additive Manufacturing processing, including laser printing and sintering both on the macro- and micro/nano scale, including laser-transfer techniques.
- Laser direct writing (waveguide, crystallization, photopolymerization, etc).
- 3D Laser Bioprinting, Optical Tweezing and trapping for biomedical applications.