

## STS-10

### Additive Manufacturing, Applications and Numerical Modelling

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**Key Words:** *3D-printing, Additive Manufacturing, Simulation, Optimization, Material Science, High-Temperature Functional Materials, Selective Laser Melting.*

In this special technology session, the aim is to present optimal 3D printing technologies focused on manufacturing and process of the products. Our aim is to describe challenges of temperature related materials behaviour, additional heat treatments, heat treatment process, simulation and optimization and by improving fundamental understanding of the material behaviour. The aim is to present forementioned topics with industrial perspective with different 3D printing technologies, e.g., selective laser melting, digital light processing and fused.

**The contributing authors will address the following themes:**

- **Effect of heat treatment in dissimilar welds of additively manufactured laser welded 316L-Inconel 718 joints**  
Markku Lindqvist, Eetu Kivirasi, Heidi Piili and Antti Salminen
- **Review of micro and mesoscale simulation methods for laser powder bed fusion**  
Aditya Gopaluni, Heidi Piili, Antti Salminen
- **The effects of laser welding parameters on weldability and quality of the microstructure of additively manufactured Inconel 718-316L joints**  
Eetu Kivirasi, Markku Lindqvist, Heidi Piili and Antti Salminen
- **Thermomechanical modeling of L-PBF 3D printing**  
Juha Jeronen, Tero Tuovinen and Matti Kurki
- **Strategic application of digital tools to enhance lifecycle cost: product design and optimization in metal-based powder bed fusion**  
Patricia Nyamekye, Rohit Lakshmanan, Heidi Piili