SIMULATING ADDITIVE MANUFACTURING OF POLYMERS - A MULTI-PHYSICS AND MULTI-SCALE CHALLENGE

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ABSTRACT

Additive manufacturing (AM) technologies with polymers, such as material-extrusion or powder bed fusion of plastics, have gained tremendous visibility and relevance in the industry throughout the recent years. The development of plastic-based AM processes from research tools towards industrial systems implies the use of new materials and novel process strategies. Establishing these novel materials and process strategies requires the use of validated numerical tools that complement experimental investigations to gain further insight into the AM process.

This Session aims to provide a platform to present recent investigative advances in the simulation of plastic AM. Addressed plastic-based AM processes are mainly laser-based powder bed fusion, material extrusion and vat polymerization. The topics include, but are not limited to

- advanced process simulations of plastic-based AM
- multi-physics and multi-scale approaches
- material modelling for plastic-based AM processes

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