

Simulation of the Laser Metal Deposition Process using Meshfree Particle Methods

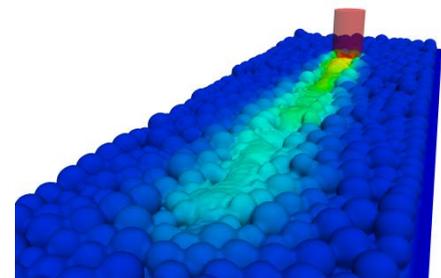
Supervisor: Prof. Dr.-Ing. habil. Dr. h.c. mult. Dr.-Ing. E.h. Peter Wriggers, Leibniz Universität Hannover, IKM

Dr.-Ing. Christian Weißenfels

Projekt ID: 9

Motivation: Additive Manufacturing has a big potential for the fabrication of end products with optimized geometry and tailored material properties. The Laser Metal Deposition (LMD) process allows a highly accurate deposition of different materials at various locations and is therefore an ideal process for the fabrication of functionally graded materials. However, the lack of reproducibility, the slow fabrication speed, and the lack of economic efficiency hinders the breakthrough of this technology.

Objective of the PhD project: The characterization of Additive Manufacturing Processes cannot be conducted only on experiments. Numerical modeling helps to understand the relationship between process, structure, and properties. Therefore, realistic models are a prerequisite.



Numerical simulation of a single track in Selective Laser Melting

The objective of this project is to develop models to accurately reproduce the material supply and the deposition procedure in LMD processes based on prior works on Selective Laser Melting.



This is a PhD-project of SAM “School for Additive Manufacturing”. SAM is a structured PhD-programme of the Leibniz Universität Hannover in cooperation with the Hochschule Hannover, the Laser Zentrum Hannover e. V., the TU Braunschweig and the TU Clausthal.

Students interested in this or any other project of SAM can apply for fellowships. Please have a look at <https://www.iw.uni-hannover.de/de/forschung/school-for-additive-manufacturing/projekte/> for details.

