DFG Deutsche Forschungsgemeinschaft | MAT frame | SPP 2122 Materials for Additive Manufacturing

New Frontiers in Materials Design for Laser Additive Manufacturing

Date: **22nd-25th May 2022**
Location: **Montabaur Caste, Montabaur, Germany**

Sunday, 22nd May

4:00 pm - 7:00 pm Arrival, Check-in, Placing Posters

5:00 pm - 6:30 pm Dinner

7:00 pm - 7:10 pm Welcome and Introductory Comments (Bilal Gökce)

7:10 pm - 9:30 pm **Session 1: Powder Properties**

7:10 pm - 7:15 pm	Introduction by Discussion Leader (Katrin Wudy)
7:15 pm - 7:45 pm	Eduard Hryha, Chalmers University of Technology, Sweden – Powder degradation during powder bed fusion processing
7:45 pm - 8:00 pm	Discussion
8:00 pm - 8:30 pm	Oana Ghita, University of Exeter, UK – Challenges in material design for high temperature AM
8:30 pm - 8:45 pm	Discussion
8:45 pm - 9:15 pm	Arno Kwade, TU Braunschweig, Measurement and interpretation of disperse and flow properties of additive manufacturing powders
9:15 pm - 9:30 pm	Discussion

Monday, 23rd May

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm **Session 2: Powder Additivation**

9:00 am - 9:10 am	Introduction by Discussion Leader (Bilal Gökce)
9:10 am - 9:40 am	Xiaochun Li, University of California, Los Angeles, USA – Nanotechnology Enabled Laser Additive Manufacturing of High-Performance Metals
9:40 am - 9:55 am	Discussion
9:55 am - 10:35 am	Coffee Break
10:35 am - 11:05 am	Katrin Wudy, TU München, Germany - Current understanding and challenges in powder bed fusion of filled polymers
11:05 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Christopher Tuck, University of Nottingham, UK - Reactive Fusion - Can moving away from thermally driven AM processes increase the materials palette?
12:00 pm - 12:15 pm	Discussion

12:15 pm - 12:20 pm Group Photo

12:20 pm - 13:30 pm Lunch

1:30 pm - 4:00 pm Free Time
4:00 pm - 5:30 pm **Poster Session** (and coffee)

5:30 pm - 8:00 pm	**Session 3: Modeling**	
	5:30 pm - 5:40 pm	Introduction by Discussion Leader (Markus Apel)
	5:40 pm - 6:10 pm	Greta Lindwall, KTH Royal Institute of Technology, Sweden – Application of computational thermodynamics to alloy design for additive manufacturing
	6:10 pm - 6:25 pm	Discussion
	6:25 pm - 6:55 pm	Stefan Luding, University of Twente, Netherlands - Modern particle models for additive manufacturing applications
	6:55 pm - 7:10 pm	Discussion
	7:10 pm - 7:40 pm	Bai-Xiang Xu, TU Darmstadt - Non-isothermal phase-field simulation of microstructure evolution in powder-based additive manufacturing
	7:40 pm - 7:55 pm	Discussion
8:00 pm - 9:00 pm	Dinner	
9:00 pm - 9:30 pm	**Special After-Dinner Talk: 3D Printing on the Moon – Matthias Sperl, German Aerospace Center**	

Tuesday, 24th May

7:30 am - 8:30 am	Breakfast	
9:00 am - 12:30 pm	**Session 4: Microstructure and properties**	
	9:00 am - 9:10 am	Introduction by Discussion Leader (Olaf Kessler)
	9:10 am - 9:40 am	Mark Easton, RMIT, Australia - Grain refinement of alloys in fusion based additive manufacturing processes
	9:40 am - 9:55 am	Discussion
	9:55 am - 10:25 am	Coffee Break
	10:25 am - 10:55 am	Minh-Son Pham, Imperial College London, UK, Cellular microstructure in fusion based additive manufacturing: formation and effects on mechanical response
	10:55 am - 11:10 am	Discussion
	11:10 am - 11:40 pm	Stefan Nolte, University of Jena, Ultrashort pulse LPBF – influence on the microstructure
	11:40 pm - 11:55 pm	Discussion
11:55 pm - 1:00 pm	Lunch	
1:00 pm - 4:00 pm	Free Time	
4:00 pm - 5:30 pm	**Poster Session** (and coffee)	

5:30 pm - 8:00 pm	**Session 5: Process control and monitoring**	
	5:30 pm - 5:40 pm	Introduction by Discussion Leader (Eric Jägle)
	5:40 pm - 6:10 pm	Alex Leung, University College London, UK – Seeing melt pool dynamics during powder bed fusion with X-ray vision
	6:10 pm - 6:25 pm	Discussion
	6:25 pm - 6:55 pm	Ruth Cardinaels, Eindhoven University, Netherlands – In-situ optical and X-ray characterization of laser sintering of polymer particle pairs
	6:55 pm - 7:10 pm	Discussion
	7:10 pm - 7:40 pm	Olaf Kessler, Universität Rostock - Correlation between Differential Fast Scanning Calorimetry and Additive Manufacturing of Metals
	7:40 pm - 7:55 pm	Discussion
7:55 pm - 8:00 pm	Closing remarks (Awarding poster prizes)	
8:00 pm - 9:00 pm	Dinner	

Wednesday, 25th May

7:30 am - 8:30 am	Breakfast
9:00 am	Departure