



Accelerating the Development of Materials in the Era of Digital Transformation

Programme DLR Materials Colloquium 2023 – December 5th 2023

- 9:30 **Welcome and introduction** (15 min)
Prof. Dr.-Ing. Heinz Voggenreiter, Director Institute of Materials Research, Cologne, and Institute of Structures and Design, Stuttgart
Prof. Dr. Guillermo Requena, Vice-Director Institute of Materials Research, Cologne
- 9:45 **KEYNOTE: Integrated computational materials engineering and its digital transformation** (30+5 min)
Ida Berglund - Questek
- 10:20 **High throughput computational screening of secondary alloys from scrap metal mixtures** (20+5 min)
Katrín Bugelnig - DLR
- 10:45 Break (30 min.)
- 11:15 **AI-based domain expert surrogate model (AI-DESM): A breakthrough in predictive precision control of temperature and properties in additive manufacturing** (20+5 min)
Omar Fargani – 1000 Kelvin
- 11:40 **Digital material twins for silica aerogels** (20+5 min)
Nina Borzecka - DLR
- 12:05 **Quantum computing as a transformative tool in materials science and engineering** (20+5 min)
Eric Breitbarth - DLR
- 12:30 Lunch break (60 min.)
- 13:30 **Digitalisation at MTU aero engines** (20+5 min)
Anna Wawrzinek / Franz Wilhelm - MTU
- 13:55 **Embedding robotics into experimental mechanics to enable AI-driven knowledge discovery** (20+5 min)
Florian Paysan - DLR
- 14:20 **Deep learning on solid oxide fuel cell microstructure data to predict performance and aging** (20+5 min)
Pascal Plettenberg - Bosch
- 14:45 Break (30 min)
- 15:15 **Applied AI for the analysis of large microstructural data sets** (20+5 min)
Tobias Strohmam - DLR
- 15:40 **High throughput scanning metrology for thermoelectric transport properties – A prerequisite for combinatorial materials research** (20+5 min)
Paweł Ziolkowski - DLR
- 16:05 **Rapid development of advanced thermal and environmental barrier coatings using pvd technology** (20+5 min)
Ravisankar Naraparaju - DLR

16:30 **Wrap-up**

Prof. Dr.-Ing. Heinz Voggenreiter, Prof. Dr. Guillermo Requena

16:45 **Optional: Guided tour through the Institute of Materials Research**