

Processing and Properties of Metals

EXPERTISE

Processing and Structure Characterization:

- Bulk thermomechanical processing
- Powder based additive manufacturing
- Crystalline and amorphous metals

Mechanical Properties and Damage Tolerance:

- Strength and ductility
- Crack propagation, fracture, fatigue
- Elevated to cryogenic temperatures
- Aggressive environments

SELECTED RECENT PROJECTS

- Selective laser melting: steels, Cu, W, Al, Ti, tailored microstructures, amorphous metals
- Thermomechanical processing for engineered microstructures and grain boundaries
- Thermomechanical processing for ductilizing and toughening amorphous alloys
- High entropy alloy development and damage tolerance
- Fatigue resistance of high performance alloys
- Toughening and improving damage tolerance in brittle metals, intermetallics, and ceramics

TRACK RECORD OF INDUSTRY PROJECTS

- PCC Structurals (Kruzic)
- ESCO Corporation (Kruzic)
- Intel Corporation (Kruzic)
- Plansee SE Corporation (Gludovatz, Primig)
- Glassimetal Inc. (Gludovatz)
- Liquidmetal Technologies (Li, Kruzic)
- General Electric (GE) (Li)
- LayerWise N.V. (Li)
- Aurubis Belgium (Li)
- Philips Innovative Applications (Li)
- Voestalpine Stahl Linz / Donawitz (Primig)
- Böhler Edelstahl / Forging (Primig)
- Ceratizit Austria / Luxembourg (Primig)

OUR EXPERTS

Prof. Jay Kruzic

- Deputy Head for School of Mechanical & Manufacturing Engineering



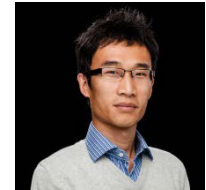
Dr. Bernd Gludovatz

- Mechanical Engineering



Dr. Xiaopeng Li

- Manufacturing Engineering



Dr. Sophie Primig

- Materials Science



THE TOOLS OF OUR TRADE

Processing and Structure Characterization:

- Selective laser melting (SLM): Concept Laser MlabR cusing and ProX DMP 300
- Gleeble 3500 thermal/mechanical simulator
- Research scale metal processing
- High resolution microscopy and tomography (SEM, TEM, EBSD, Atom Probe, microXCT, etc.)

Mechanical Properties and Damage Tolerance:

- Servohydraulic, electro-mechanical, and impact testing systems.
- In-situ testing, controlled temperatures and environments
- Micro/nano indentation, micro-mechanical testing