Zurich University
of Applied Sciences

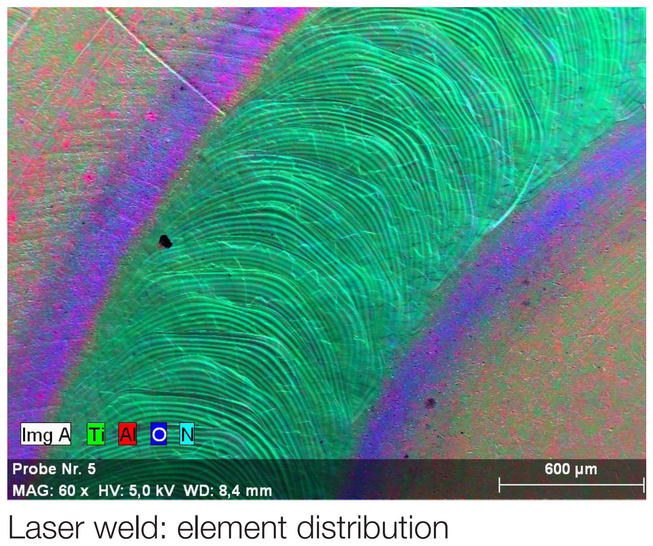
School of Engineering

IMPE Institute of Materials
and Process Engineering

Metallic Materials

Process improvement

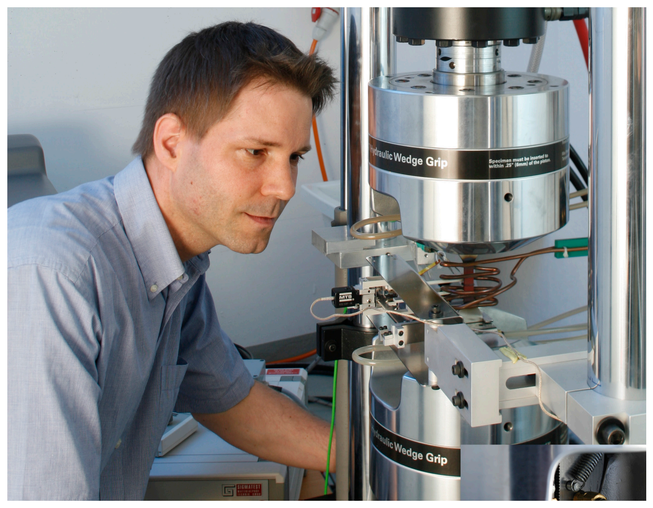
- Development of advanced manufacturing processes: welding, brazing, coating, heat treatment
  > tailored mechanical properties
- Surface treatment (e.g. sandblasting, shot peening)
- Evaluation of mechanical properties after process improvement



Laser weld: element distribution

Mechanical testing of materials

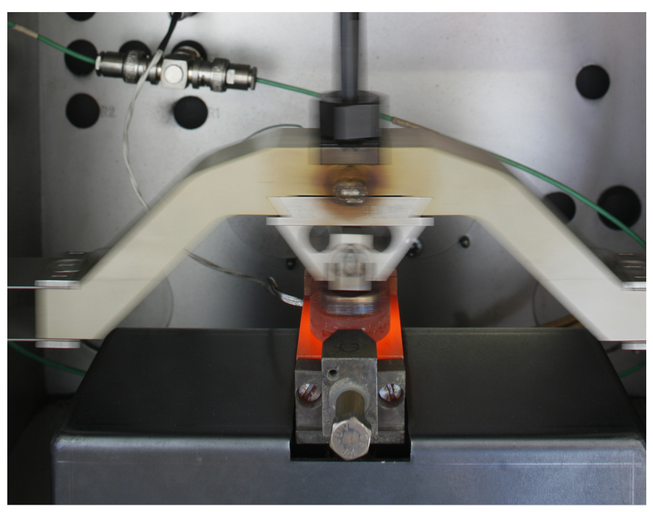
- Steel, aluminium-, copper-, nickelbase- and titanium alloys, metallic and ceramic coatings
- Cyclic deformation behaviour of metallic materials
- LCF, HCF, specialized mechanical testing methods up to 1100 °C
- Experimental validation of design analysis tools
- Wear and friction testing up to 900 °C
- Acoustic emission analysis



Low-cycle fatigue (LCF) test

Analysis and assessment of failure mechanisms

- Base materials and coatings, components
- Fractography: light microscopy and scanningelectron microscopy (VP-SEM)
- Microstructure and chemical composition: energy dispersive X-ray analysis (EDX)
- 3D surface topography analysis (confocal and interferometry technique)


Friction and wear test at 650 °C

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