



IIAMR CONFERENCE, Barcelona 2022

MICROSTRUCTURE RESEARCH - MATERIAL ENGINEERING - NEW SURFACES: a short overview of our research topics at the Institute for Functional Materials and the Material Engineering Center Saarland

F. Mücklich

*Saarland University and Material Engineering Center
Saarbrücken, Germany*

ABSTRACT

Basic research and the efficient linkage with transfer to industrial applications is provided by the strategic partnership between the Institute "Functional Materials" at Saarland University and the "Material Engineering Center Saarland", working closely together in the same building.

1. we work with unique technical equipment on microstructure research on the micro-, nano- and atomic scale and cooperate also with the neighboring computer science for the efficient use of Artificial Intelligence and in particular Machine Learning.
2. innovative material engineering for new alloys of steel, copper, other metals and also reactive materials pave the way to sustainable materials with “joining on demand” and “disassembly on demand” for the vision of a future with Circular Economy.
3. we work on novel surfaces by pulsed interfering laser beams with ns-, ps- and fs-Lasers and functionalize the surfaces for e.g. better electrical contacts, tribological behavior or antimicrobial properties. More than 900 samples are being examined on the ISS for this purpose by Matthias Maurer, my first diploma student who is now ESA astronaut. For this purpose, also the StartUp Surffunction was founded and two of our PhD students will report in more detail about their special topics.