

# Invitation to the 93. AMAP Colloquium

Presentation by

**Prof. Dr.-Ing. Sebastian Münstermann**

Head of the Institute of Metal Forming  
at RWTH Aachen University

**Integrated Computational Materials and  
Process Engineering - an Overview of  
Research Projects at the IBF**

on Thursday, **March 20<sup>th</sup>, 2025 at 4.00 pm**  
with subsequent discussion at AMAP

All interested persons are sincerely invited to the AMAP foyer.  
Snacks and refreshments will be available.

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# Integrated Computational Materials and Process Engineering – An Overview of Research Projects at the IBF

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## Abstract

Thermomechanical process chains in metal processing lead to a continuous evolution of the microstructure and material properties, which directly affects the performance of the component. The simulation-based description of these process chains, known as Integrated Computational Materials Engineering (ICME), therefore aims to quantitatively model the causal chain of process-microstructure-properties-performance.

In the presentation, after introducing the new structure of the IBF, now featuring two chairs, the current research focuses related to ICME will be discussed, and the specific contributions of the IBF will be illustrated with examples. Special emphasis will be placed on multiscale simulation approaches, which are currently used to calculate effective property profiles (strength, toughness, cyclic properties).