The successful application of Computational Materials Engineering (CME) to different alloy developments has led to the demand of incorporating these new capabilities to entire production chains of real aero engine parts. By integrating material and manufacturing properties the ICM²E approach was born.

In parallel additive manufacturing technologies are gaining more and more interest as alternative manufacturing method. Due to the large parameter sets applicable in these manufacturing methods and their impact on achievable material properties and quality, the use of simulation to support the manufacturing process development is highly attractive. This is especially true for aerospace applications with their high quality demands.

The applicable simulation techniques are manifold. Within the presentation an exemplarily set of software tools, which builds up a simulation chain from melt pool to strength will be presented and used to start a discussion on capabilities and limitations of this ICM²E approach.

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