

The research on materials for **additive manufacturing** is a major focus at Montanuniversität Leoben and is strongly driven by a large number of worldwide co-operations. In both education and research all material classes for additive manufacturing are covered including **metals/alloys, composites, ceramics** as well as **polymers**.



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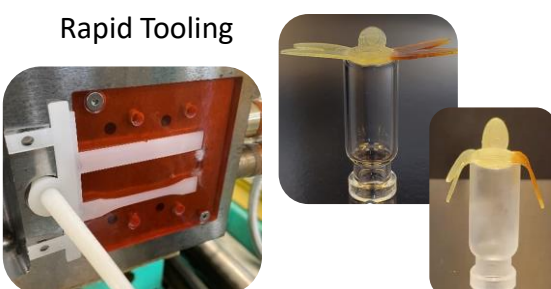
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## Novel Polymeric Materials


Rapid Tooling



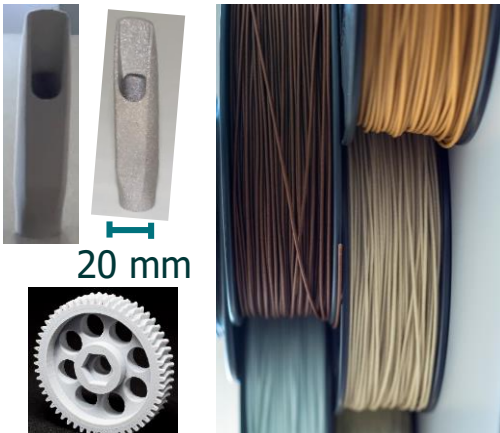
Shape Memory Polymers



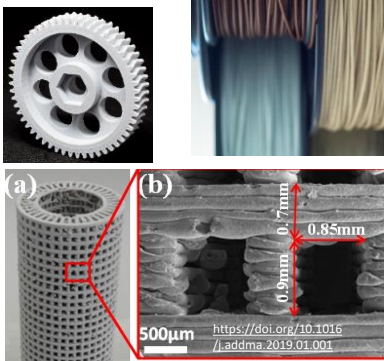
Biocompatible Materials



## Filled Materials for MEX



20 mm

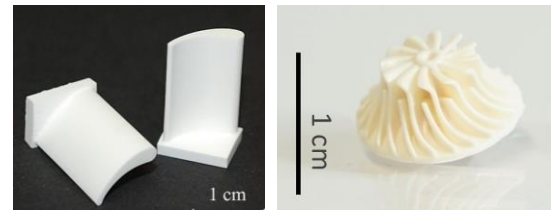


0.9mm 0.7mm 0.85mm

500µm

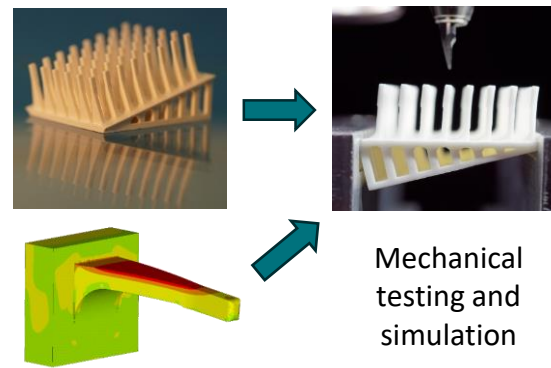
<https://doi.org/10.1016/j.addma.2019.01.001>

## Design & testing of AM ceramics



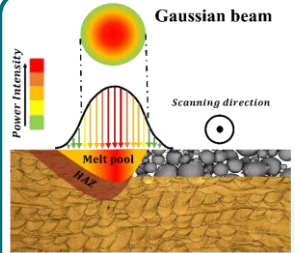
1 cm

Design of complex shapes



Mechanical testing and simulation

## AM of metallic materials



Gaussian beam

Power Intensity


Scanning direction

Melt pool


HAZ

Using laser as a source of energy

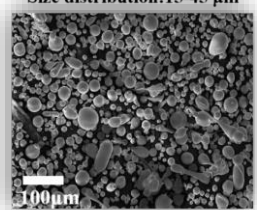
Feeding materials



Versatile in geometry



Size distribution: 15-45 µm



100µm

Powder bed materials