



# VIRTUAL SEMINAR

Thursday, 10.03.2022 at 13:00

## Additive manufacturing

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Additive manufacturing (AM) is defined by ISO/ASTM 17296 standard as a “process of joining materials to make objects from three-dimensional (3D) model data, usually layer by layer, as opposed to subtractive manufacturing and formative manufacturing methodologies” [1] and has been commonly used for shaping plastics. Although more challenging, there is an increased interest for shaping ceramics and magnets with AM methods.

Ceramics can be shaped with many different AM methods but in this seminar, our focus will be on Fused Filament Fabrication (FFF) and Thermoplastic 3D Printing (T3DP) which are available in our department. These two AM methods utilize thermoplastic feedstocks where in FFF, highly loaded filaments are used and in T3DP, highly loaded suspensions are preferred. Feedstock properties and preparation, processing of these feedstocks and the requirements for each method will be discussed.

As permanent magnets are becoming more and more crucial in the green transformation and prices of the raw materials are again increasing (Nd, Dy), new methods are being investigated to improve the efficiency of el. motors and generators and reduce the amount of critical heavy rare earths in these materials. Additive manufacturing could provide new magnet designs for high efficiency motors with waste free production. We focus on the feasibility of printing magnetic materials with the FFF technique and look at the obstacles that are still in the way to achieve good properties.

To sum up, in this seminar, we will introduce different AM methods with a focus on those available in our department, explaining the possibilities, limitations of these methods as well as the objectives of the work done in K7.

**Kindly invited.**