

A Method of Predicting Powder Flowability for Selective Laser Sintering

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Abstract

This work investigates a method for pre-screening material systems for Selective Laser Sintering (SLS) using a combination of Revolution Powder Analysis (RPA) and machine learning. To develop this method, nylon was mixed with alumina or carbon fibers in different wt.% to form material systems with varying flowability. The materials were measured in a custom RPA device and the results compared with as-spread layer density and surface roughness. Machine learning was used to attempt classification of all powders for each method. Ultimately, it was found that the RPA method is able to reliably classify powders based on their flowability, but as-spread layer density and surface roughness were not able to be classified.

The full paper may be found in a special issue of the TMS publication *JOM*, March 2022.