Materials & Chemicals

WEIGHING APPARATUS, AUTONOMOUS MATERIAL SYNTHESIS SYSTEM AND METHODS THEREFOR

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Inventors: Lianyi Chen, Matthias Beuting

The Invention

UW-Madison researchers have developed a high-precision Autonomous Material Synthesis System (AMSS) that can produce a large number of metal alloy samples with varying compositions in a short time and without user interaction. The system is based on Powder Bed Fusion (PBF), a technology widely used in additive manufacturing to produce parts of arbitrary shapes by selectively melting metal powders using focused laser light. This system varies the material composition by mixing different metal powders in different ratios. The use of PBF makes it possible to produce samples in a shape that can be used directly for mechanical testing. The system will allow control of the sample composition with high precision (material composition uncertainty less than 0.5%). In addition, the samples will be of high quality with near-zero porosity and other defects in the material microstructure. Finally, as a byproduct of the precise process control required to achieve high sample quality, the machine will provide optimized processing conditions for additive manufacturing for each composition.

Additional Information

For More Information About the Inventors

- Lianyi Chen

Tech Fields

- Materials & Chemicals : Metals

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867