Leibniz Universität Hannover

iPeG Institut für Produktentwicklung und Gerätebau

Student Project

Call for Proposals:
04.08.2025

Start: By agreement

Thermal Post-Processing of Additively Manufactured Particle Damping Structures

Motivation

At the Institute for Product Development, additive manufacturing is being explored for its potential in producing functionally optimized structures. A key area of research involves the integration of particle damping into structural components to enhance damping performance.

This student project focuses on understanding how thermal post-processing—specifically heat treatments at different temperatures and durations—affects the damping performance of particle-filled AM structures. Of particular interest is whether the internal particles, typically free-moving in damping cavities, undergo unwanted changes such as sintering or agglomeration during heat treatment, which could impair vibration damping effectiveness.

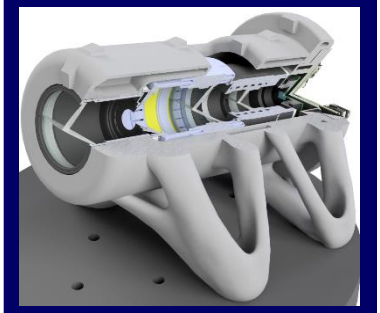
Potential Work Packages:

- Literature review on:
  I. Particle damping principles and additive manufacturing of damping structures
  II. Heat treatment effects in metallic AM materials (e.g., Scalmalloy)
- Design of test structures with internal damping cavities
- Execution of controlled thermal post-processing (varying temperature and time)
- Vibration testing and evaluation of damping behavior before and after heat treatment
- Summary and discussion of results

Your Profile:

- Interest in additive manufacturing and functional materials
- Curiosity about vibration damping and mechanical behavior
- Independent and structured work approach
- Enjoyment of experimental research and critical analysis

Have we sparked your interest? If so, we look forward to receiving your application.



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