Chair of Materials Engineering of Additive Manufacturing
TUM School of Engineering and Design
Technical University of Munich

HIWI Position
Preparation of Literature Review on 'Recyclability of Metal Matrix Composite Powders for Additive Manufacturing purposes'

Motivation

Recycling of end-of-life (EoL) Metal Matrix Composite (MMC) parts is still an underexplored field, despite the growing demand for sustainable manufacturing. At the Chair of Materials Engineering of Additive Manufacturing, we are addressing this gap by using our new state-of-the-art powder atomizer to transform EoL MMC components into reusable powders. These powders will be processed through various additive manufacturing technologies to demonstrate circular use of advanced materials. As a first step, we aim to build a comprehensive literature review on MMC recycling to establish the current state of the art and identify opportunities for future research and projects.

Objective

The aim of this HiWi position is to:

- Build a structured overview of the current state of research on MMC recycling;
- Extract and organize knowledge from diverse publications and databases into a usable format;
- Support the preparation of a publishable literature review by creating figures, tables, and structured summaries;
- Identify research gaps and new ideas that could lead to future projects;
- Map potential partners and funding opportunities relevant to MMC recycling and additive manufacturing.

Tasks

- **Literature search**: Identify relevant papers, reviews, and conference proceedings on MMC recycling and additive manufacturing;
- **Organization**: Classify and manage references using literature management software (e.g., Citavi);
- **Analysis**: Extract and structure key information (e.g., materials, manufacturing routes, recycling methods, sustainability aspects);

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- **Documentation**: Summarize findings in tables, figures, and short written sections for integration into a review article;
- **Gap analysis**: Highlight missing knowledge, research challenges, and potential opportunities.

Your profile

- Enrolled student at TUM with a valid work permit;
- Background in mechanical engineering, materials science, industrial engineering, or related fields;
- Strong interest in metallurgy, additive manufacturing, and recycling;
- Good organisational and communication skills.
- Ability to work independently and meet deadlines.
- Proficiency in English (written and spoken); German is a plus.

What we offer you

- An exciting role at the interface of additive manufacturing and sustainability.
- Practical experience with database management, data analysis, and AI-based analysis tools.
- Close collaboration with scientific staff and course instructors.
- Flexible working hours (~8 hours/week).
- Payment according to TUM guidelines (link).

Application: If you are interested, please send your application documents (**cover letter, CV, and relevant certificates**) to **application.mat@ed.tum.de**

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