Materials Selection for Circularity and Sustainability

History, Status Quo and Future Developments

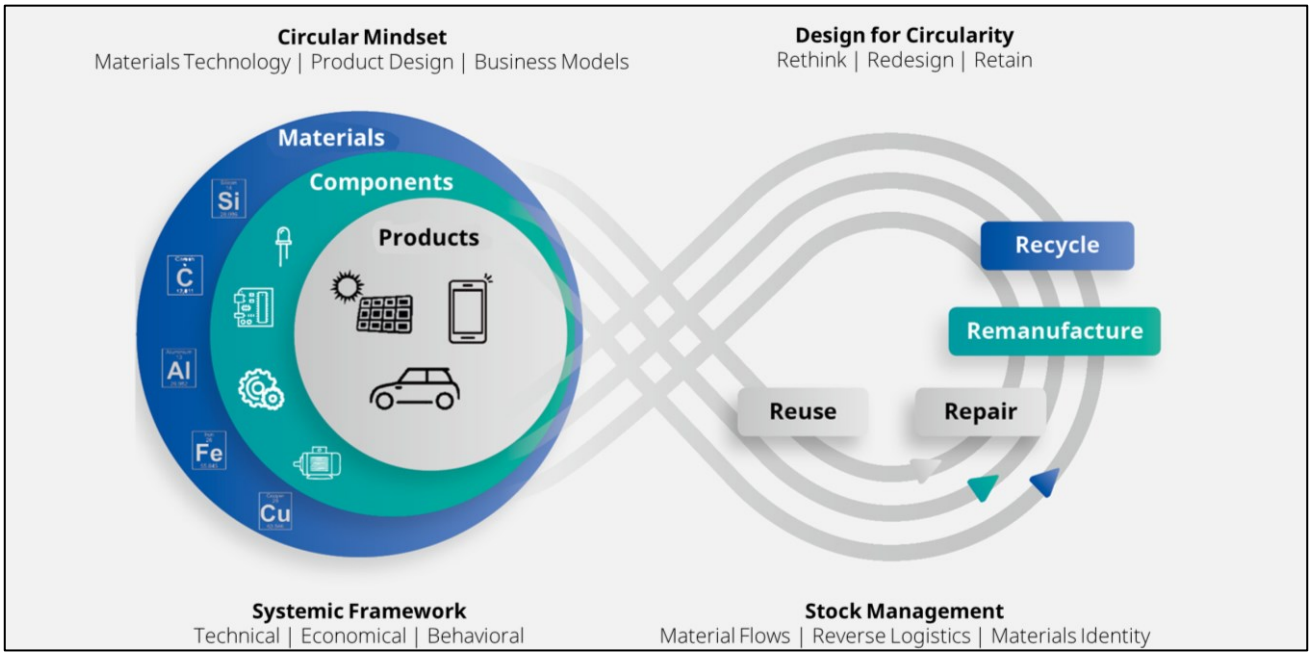
Bachelor or master thesis

Recommended for: B.Sc. or M.Sc. SSE

Material matters! The selection of engineering materials is a key leverage point for the sustainability performance of products. In a world of quickly increasing material and chemical diversity, material selection serves the need to find best possible matches between design requirements of products and requirement profiles of materials. In the end it is the underlying method, that determines the material decision and its related sustainability performance.

Circularity engineering and strong sustainability fundamentally change the objectives of engineering methods. This thesis will summarize the existing engineering and non-engineering material selection methods, their history, strengths, weaknesses and limitations. By comparing them with the concept of circularity engineering, their potential and limitations within this framework should be discussed. Further their functionality and usability should be assessed and compared by testing them on simple case studies. Finally, a requirement list for material selection methods within the framework of circularity engineering should be developed and existing research gaps summarized as a foundation for future research at INATECH.

Having participated in our lecture on material selection for sustainable engineering is recommended but not required.



Starts: As soon as possible

Timeframe: According to examination regulations

More topics on request!

Contact

M.Sc. Hannes Geist

hannes.geist@inatech.uni-freiburg.de | 0761 / 203 54 235

Department of Sustainable Systems Engineering | INATECH

Walter und Ingeborg Herrmann Chair for Power Ultrasonics and Engineering of Functional Materials I EFM

Faculty of Engineering | University of Freiburg