BoKoMaT

28.09. – 29.09. 2023

_8

Sakia Noorzayee

Wissenschaftliche Mitarbeiterin

Lehrstuhl Werkstoffwissenschaft, Ruhr-Universität Bochum

Vortragssprache: EN

Sustainable NiTi Shape Memory Metallurgy

Binary NiTi shape memory alloys (SMAs) consist of two of the most expensive mass-mined metals that together generate more than 32 megatons CO2 equivalent per year during production. Given the current climate change and energy crisis challenges, exploring recycling properties and possibilities of NiTi scrap is gaining attention. The presence of carbides and oxygen-based intermetallics in the alloy matrix is well-known to affect fatigue performance and transformation temperatures of NiTi SMAs. Therefore, the objective of this study is to examine the impact of carbon and oxygen, which are picked-up during recycling of NiTi SMAs. A chemical model is introduced to investigate the absorption of impurities through remelting of NiTi wires with thin surface layers. Combining theoretical predictions and experimental results allows to evaluate and to establish sustainable practices in NiTi ingot metallurgy.

S. Noorzayee, N. Paufler, J. Frenzel, G. Eggeler
Institut für Werkstoffe, Ruhr-Universität Bochum, Universitätsstr. 150, 44801 Bochum