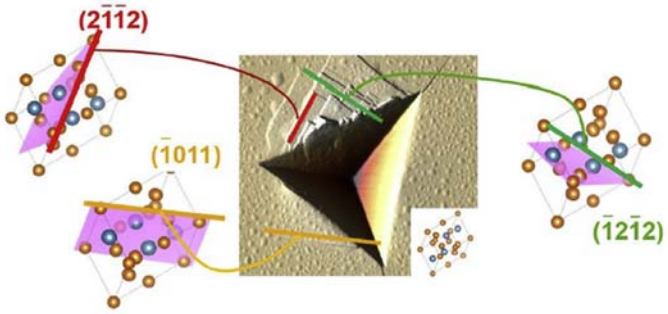
Bachelor / Master Thesis

Room temperature deformation of the C14 Laves phase prototype $MgZn_2$



Motivation:

Intermetallic phases were shown to significantly improve the creep resistance of magnesium alloys extending their use to higher temperatures. However, little is known about the deformation behaviour of these phases at application temperatures, which are commonly below the macroscopic brittle to ductile transition of the intermetallics. Previous literature state deformation behaviour of the Laves phase prototypes at homologous temperatures using macroscopic testing and analysed the plasticity at elevated temperatures. To create comparability of macroscopic and nanomechanical tests, the aim of this study is to investigate the plastic deformation of the C14 Laves phase prototype ($MgZn_2$) using nanomechanical tests, such as a combination of nanoindentation tests and EBSD measurements to calculate the hardness, indentation modulus and to classify the resulting deformation area.

Tasks:

- Metallographical preparation
- Evaluation of plasticity and mechanical properties at room temperature, by using nanomechanical testing tools and correlate it with SE-images

What we offer:

- Work in a young enthusiastic team of computational material engineers
- You can learn how to use a state-of-the-art electron microscope

The ideal candidate will:

- Have any engineering background and is motivated to learn new methods

Earliest projected starting date:

ASAP (SoSe2022)

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