WWU MÜNSTER

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Topic: Atomic structure and local mobility in deformed bulk metallic glasses

Metallic glasses display unique mechanical properties due to their atomic disorder on the long-range level. Their high hardness and their outstanding elastic module are of technical interest, however, yet not theoretically to predict. Studying the structure of such metals on the atomic scale under various conditions will give further insights into the properties and the behaviour of the amorphous phase.

Characterising deformed and undeformed states of bulk metallic glasses (BMGs) is the main focus of this project. Besides the synthesis of materials by induction melting and copper-mould casting, pre-characterisations are performed. These include thermal and structural analysis. In addition to using diffraction and spectroscopy techniques, the atomic structure and the mobility on the atomic scale in undeformed and deformed BMGs is investigated by transmission electron microscopy (TEM) methods. Sample pre-treatments and their impact on the local structure and dynamics is investigated throughout this project as well.