



Contribution ID: 7

Type: **Talk**

Texture measurements of archaeological objects at FRM II

Tuesday, 19 June 2018 14:20 (20 minutes)

Together with the microstructure, polycrystalline materials are characterized by their texture. Texture records the thermo-mechanical history of the materials. Quantitative texture analysis of archaeological materials can therefore help to understand technological processes which were applied on the objects in ancient times.

The main advantage of neutron diffraction over X-ray diffraction arises from the fact that the interaction of neutrons with material is weak, and consequently the penetration depth of neutrons is about 100-1000 times larger than that of laboratory X-ray diffraction. This is particularly essential for non-destructive texture analysis of archaeological objects as no additional surface treatments of the samples (e.g. polishing) are necessary. STRESS-SPEC at FRM II is designed as a state of the art multi-purpose diffractometer for strain and texture analysis. Besides the optimized high neutron flux the available large variability in gauge volume definition systems together with the robotic sample handling option offer high flexibility for bulk or gradient texture measurements.

In this contribution we will first present the instrument and its basic methods for texture/pole figure (and strain) measurement. In addition some successful texture measurements performed at STRESS-SPEC on archaeological objects, such as gold artifacts found at the bronze age rampart of Bernstorf (Bavaria, Germany) and Indian wootz blades will be shown.

Primary authors: GAN, Weimin (Helmholtz-Zentrum Geesthacht); REBELO-KORNMEIER, Joana; HOFMANN, Michael

Presenter: HOFMANN, Michael

Session Classification: Non-destructive characterisation by Scattering and Diffraction Methods

Track Classification: Scattering and diffraction methods