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## **In-situ investigation of the rolling texture influence in the AZ31 magnesium alloy with a strain diffractometer**

*Monday 20 March 2023 16:00 (2 hours)*

The influence of the basal texture of the hot-rolled sheet of the AZ31 magnesium alloy on the activity of individual deformation mechanisms and its implication on the mechanical response of the material was studied using a combination of advanced in-situ experimental techniques. Neutron diffraction coupled with acoustic emission (AE) was employed to monitor the twinning activity and the evolution of its dynamics from nucleation toward twin growth. The in-situ neutron diffraction experiments were performed by using the biaxial diffractometer TKS-400 installed in the HK-9 horizontal neutron channel of the LVR-15 research reactor employing the axial geometry. The lattice strain evolution analysis confirmed the microplastic behavior of the sample compressed in the sheet normal direction suggested by the AE response. The in-situ EBSD experiments provided direct observation of the deformed microstructure, presenting an important confirmation of the hypothesis drawn from the indirect neutron diffraction and AE measurements.

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