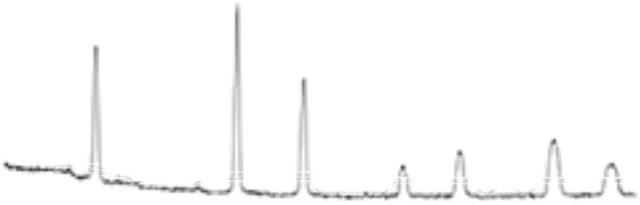

Contribution ID: **28** Type: **Talk**

The contribution of neutron techniques for electro mobility and optimization of air- and land-based gas turbines

Wednesday, 1 June 2022 11:10 (20 minutes)

Batteries play an important role in the field of electric mobility because they can replace fossil fuels in many areas. Neutrons enable the detailed characterization in situ and operando of electrochemical processes on different length scales. Examples are presented how neutron diffraction, neutron imaging and neutron depth profiling improve the understanding of batteries and individual components.
Air- and land-based gas turbines are essential for airplanes and energy production. A major goal is to reach higher operating temperatures to reduce both fuel consumption and pollution. Neutrons as a probe enable the characterization of high-temperature alloys under real working conditions such as stress/compression or high temperature. Such conditions are realized with demanding sample environments. Neutron diffraction and small-angle neutron scattering monitor the phase transformations and the precipitation kinetics. The deeper understanding of the microstructure results in an optimization of the alloy development.

Reference:
[1] R. Gilles, How neutrons facilitate research into gas turbines and batteries from development to engineering applications, Journal of Surface Investigations: X-Ray, Synchrotron and Neutron Techniques, (2020), 14, Suppl. 1, S69.

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