



Contribution ID: 236

Type: **Poster**

## Activation energy of diffusion determined from a single in-situ neutron reflectometry experiment

*Tuesday, 21 March 2023 16:00 (2 hours)*

A new methodology for the determination of self-diffusivities in solids and the corresponding activation energy of diffusion using in-situ Neutron Reflectometry is presented. In contrast to the classical ex-situ approach based on a sequence of isothermal measurements at different temperatures, the in-situ method allows one to work with a single experiment based on ramping the temperature with a constant rate. Our experiment demonstrates the success of the method for the model system of amorphous germanium. The activation energy of 2.2 eV and the absolute values of diffusivities achieved by the new method are in good agreement with the results of the classical approach, while a significantly lower amount of experimental time and samples are necessary. The presented method allows for an all-in-one type of experiment which can provide clearer and quicker results than similar methods using isothermal annealing procedures.

**Primary authors:** Dr HÜGER, Erwin (TU Clausthal Germany); Dr STAHN, Jochen (PSI Villigen Switzerland); Prof. SCHMIDT, Harald (TU Clausthal Germany)

**Presenter:** Dr HÜGER, Erwin (TU Clausthal Germany)

**Session Classification:** Poster session TUESDAY

**Track Classification:** Chemistry of Materials (Structure and Spectroscopy)