

The use of Machine Learning Methods for In-Situ Rutherford Backscattering Spectrometry Data Analysis

Thursday, 18 April 2024 12:20 (20 minutes)

In-situ Rutherford Backscattering Spectrometry (RBS) is a powerful tool for monitoring changes in the interface region of a sample in response to external stimuli. This involves acquiring RBS spectra at regular intervals during annealing. Machine learning based methods have previously been used for standard RBS data analysis, and for the current study, an artificial neural network tailored for in-situ RBS data analysis is developed. This neural network is capable of processing and analysing data obtained from an in-situ RBS thermal annealing experiment from the Tandetron at iThemba LABS. With further development and optimisation, this neural network will potentially be extended to other IBA techniques available at iThemba LABS such as ERDA, PIXE etc.

Primary authors: SEGOLA, Kutlwano; MAGCHIELS, G (Quantum Solid-State Physics, KU Leuven); MT-SHALI, Christopher (iThemba LABS); KHUMALO, Zakhelumuzi (ithemba LABS); KOTSEDI, L (Tandetron Laboratory, NRF-iThemba LABS,); VANTOMME, A (Quantum Solid-State Physics, KU Leuven,); MSIMANGA, Mandla (Tshwane University of Technology)

Presenter: SEGOLA, Kutlwano

Session Classification: Nuclear Physics Applications and Projects