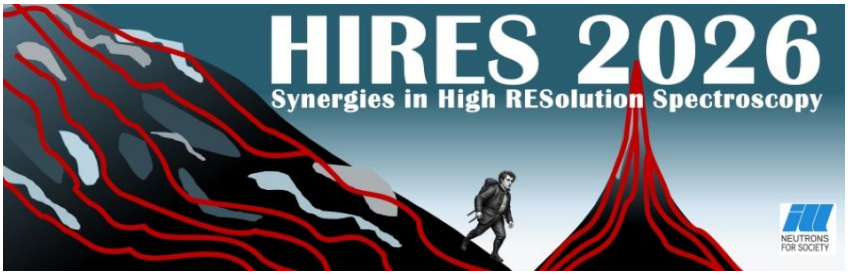

Contribution ID: **76** Type: **Poster**

The Upgrade of the TOSCA Spectrometer at ISIS

The TOSCA spectrometer is a broadband indirect geometry spectrometer, with a particular sensitivity to and high-resolution in the chemical fingerprint region ħω = 50–200 meV (400–1600 cm−1), making it well suited to the study of molecular vibrations. TOSCA has been operating since 1998 and with a guide upgrade in 2017 providing a significant flux increase. To keep the instrument competitive and to further increase its scientific capabilities TOSCA is due for an upgrade of its secondary spectrometer (termed TOSCA-plus) as part of the ISIS Endeavour programme. The primary aim of the upgrade is to increase the detected flux (~ x10) by increasing the solid angle of the instrument's graphite analysers. However, introducing a spatially focusing analyser means deviation from the current ideal time/energy focusing of the geometry, thus requiring careful design to ensure there is no degradation in resolution. In order to investigate the impacts on both the resolution and signal of the proposed geometry Monte Carlo ray tracing simulations have been performed with the McStas package to compare the performance of TOSCA-plus to the current TOSCA setup.

Session

Instrumentation

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Session Classification: Instrumentation