Contribution ID: **234** Type: **not specified**

Investigating Electrolytes for Solid Oxide Fuel Cells Through Advanced Synchrotron Techniques

Wednesday, 20 November 2024 09:00 (30 minutes)

Solid oxide fuel cells (SOFCs) have emerged as a promising candidate in the search for an efficient and environmentally friendly source of electrical energy. SOFCs offer several benefits over traditional sources of electricity, such as high efficiency and reduced emissions. However, SOFCs have experienced limited commercialization due to short device lifespans and high operating temperatures, the latter feature is largely dictated by the electrolyte material. The quest for improved electrolyte materials, which would ideally exhibit properties such as high phase stability and high ionic conductivity at intermediate temperatures (˜650 oC), remains a critical aspect in advancing SOFC performance and application. Advanced synchrotron techniques are required to investigate the local and long-range structural details which determine the overall electrolyte performance. I will present selected work wherein advanced synchrotron techniques at elevated temperatures were used to investigate the structure of bismuth oxide- and lanthanum molybdate-based materials to probe the suitability of these materials as SOFC electrolytes.

Primary authors: Dr KIEFER, Mathias (University of the Witwatersrand); Prof. BILLING, Caren (University of the Witwatersrand); Dr STONE, Kevin (SSRL); Dr OLDS, Daniel (NSLS-II); Prof. BILLING, David (University of the Witwatersrand)

Presenter: Dr KIEFER, Mathias (University of the Witwatersrand)

Session Classification: Plenary

Track Classification: AfLS