

[Dr. Ghuman recently joined the Institut National de la Recherche Scientifique \(INRS\)](#), Canada as an Assistant Professor in Computational Materials Design. Before that she was a core member of the SOIFIT team and worked at the International Institute for Carbon-Neutral Energy Research (I2CNER) Japan, and Paul Scherrer Institute (PSI) Switzerland- the two key member institutes of the SOIFIT program.

She leveraged a unique combination of leading-edge computational techniques and a multidisciplinary approach to contribute to the SOIFIT research. In particular, to bridge the gap between theory and experiments she implemented a novel approach for understanding the Solid Oxide Fuel Cell (SOFC) electrolytes from nano- to electronic-scale. This collaborative work provided unprecedented insights into the interfaces present in commonly used SOFC electrolytes and is currently under review at the Journal of Physical Chemistry C.

Her involvement with the SOIFIT team was not only beneficial for the project but also played an influential role in her research path. Before joining the SOFIT team, Dr. Ghuman's research mainly focused on designing novel catalysts for energy-intensive processes (such as H₂ production via water splitting, NH₃ synthesis via Haber-Bosch, CO₂-to-fuel conversion via Fischer-Tropsch, etc.). However, the opportunities given by the SOIFIT program increased the scope of her research, as she could implement her computational expertise for designing and understanding complex SOFC electrolytes. Consequently, she not only secured a tenure track position at INRS but also got nominated for the prestigious 'Canada Research Chair' position in 'Computational Materials Design for Energy and Environmental Applications'. Currently, Dr. Ghuman continues to be a cooperative member of SOIFIT program and strives to conduct cutting edge research for designing novel materials for next-generation SOFCs.



Participation of Dr. Ghuman in the brainstorming sessions with researchers from I2CNER (Japan) and PSI (Switzerland).