



### **MCoMge09-001**

#### **Composite metal-supported solid oxide fuel cells**

Jabbar, M.H.A.(1);

(1) Nissan;

Keynote: For automotive applications, metal-supported solid oxide fuel cells (SOFCs) are more advantageous than conventional ceramic-based anode-supported SOFCs. Metal-supported SOFCs can withstand several thermal cycles, enabling quicker startup, and can satisfy load-following criteria. However, due to the chemical expansion coefficient and shrinkage mismatches with commonly used electrolytes, the construction of metal-supported cells is challenging. In this study, we investigated composite metals and ceramics as easier-to-fabricate metal composite supports for solid oxide fuel cells (SOFCs) than standard metal-only cells to address chemical compatibility and shrinkage mismatch issues. We were able to reach 0.7 W/cm<sup>2</sup> SOFC performance at 700 °C in H<sub>2</sub> (3% H<sub>2</sub>O) with meticulous SOFC design. The recently created cell has good electrode/electrolyte interface compatibility, as seen by its low ohmic ASR of 0.19 Ωcm<sup>2</sup> at 700 °C.