

INTERMEDIATE-TEMPERATURE FUEL CELLS WITH SUBMICRON THIN PROTON CONDUCTING CERAMIC ELECTROLYTES

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Abstract: Ceramic fuel cells running at intermediate temperature (200–400 °C) with alcohol fuels have potential to deliver high-energy density portable power sources by overcoming the bottlenecks of the currently prevailing direct methanol fuel cells (DMFCs). Additionally, the fuel cell operation in 200–400 °C enables the simple and compact integration of the methanol reformer into stack, which would significantly increase the conversion efficiency by changing the anode reaction from slow methanol oxidation to fast hydrogen oxidation. In Samsung Advanced Institute of Technology, low intermediate temperature fuel cells based on sub-micron thick thin film ceramic proton conductors have been actively investigated. In the talk, the advantages, fabrication method and functionality of the proton conducting ceramic thin film fuel cells will be presented. Also, the future strategy to overcome the current bottleneck such as limited size will be discussed.