

Strategies to enhance performance of solid oxide cell

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Hydrogen is a clean and sustainable fuel; water splitting is a green method for Hydrogen production. However, room temperature water splitting suffers from expensive catalysts, low kinetics, and high energy consumption (high overpotential). High temperature steam electrolysis through solid oxide cell (SOC) could solve these problems, but interface delamination, material degradation, and resistant phase formation limit its application. In this talk, I will discuss the strategies developed in our group to enhance the performance: 1. surface treatments; 2. 3-dimensional (3D) electrode development; and 3. New materials for electrolyte and electrode.

Bio

Dr. Meng Zhou received his BS in materials science from University of Science and Technology of China; MS in physics from Tulane University and Ph.D. in chemical engineering from New Mexico State University (NMSU). He took position as an assistant professor in Chemical and Materials Engineering Department at NMSU in 2017. His research mainly focuses on energy storage and conversion devices (Battery, Supercapacitor, Fuel Cell), H₂ production and CO₂ reduction. He has authored and co-authored 51 peer-reviewed journal publications, including *Nature* and *Advanced Functional Materials*. Dr. Zhou has received above \$2M research funding from NSF and National Labs.

