Solid-oxide electrochemistry at elevated pressure

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Abstract:

Pressurized operation of solid-oxide fuel cells, electrolyzers, and membrane reactors can bring many benefits. Pressurizing can boost the driving force of electrochemistry to enable higher power and greater efficiency, while facilitating integration with chemical processes. Pressurization also brings significant engineering challenges, serving to strain seals, balance-of-plant components, and the solid-oxide cells themselves. This presentation will review programs underway at Mines that involve performance characterization of solid-oxide cells at elevated temperature and pressure scaling from 5 W to 25 kW.