

**SOFC MODELING AND SIMULATION UNDER  
THE U.S.DOE SECA CORE TECHNOLOGY  
PROGRAM**

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The U.S. Department of Energy initiated the Solid State Energy Conversion Alliance (SECA) to encourage the development of solid oxide fuel cell modules for use with commonly available fossil fuels at low cost. The U.S. Department of Energy's National Energy Technology Laboratory and Pacific Northwest National Laboratory coordinate SECA activities. Commercial developers, universities, and government agencies, and other national laboratories participate in the Alliance in a tightly coordinated structure to produce commercial cost-effective prototypes. The SECA Core Technology Program supports the industrial development teams by providing problem-solving research to overcome technical barriers identified by the industry teams. Core Technology activities include programs in fuel processing, manufacturing, controls and diagnostics, power electronics, modeling and simulation, and materials. The modeling and simulation program develops computational tools to support development and commercialization of SECA technology. This paper reviews the various development and validation activities and availability of modeling tools at DOE National Laboratories as part of the SECA Core Technologies modeling and simulation program.