
Title: Solid oxide fuel cell reactor analysis and optimisation through a novel multi-scale modelling strategy

Author: Amirpiran Amiri Periasamy Vijay Moses O. Tadé Khaliq Ahmed Gordon D. Ingram Vishnu Pareek Ranjeet Utikar

PII: S0098-1354(15)00107-6
DOI: http://dx.doi.org/doi:10.1016/j.compchemeng.2015.04.006
Reference: CACE 5159

To appear in: *Computers and Chemical Engineering*

Received date: 26-11-2014
Revised date: 5-3-2015
Accepted date: 6-4-2015

Please cite this article as: Amiri, A., Vijay, P., Tadé, M. O., Ahmed, K., Ingram, G. D., Pareek, V., and Utikar, R.,Solid oxide fuel cell reactor analysis and optimisation through a novel multi-scale modelling strategy, *Computers and Chemical Engineering* (2015), http://dx.doi.org/10.1016/j.compchemeng.2015.04.006

Highlights

This study developed a non-isothermal, spatially distributed model for a SOFC channel and cell.

The model can capture any fuel-air flow pattern within a flowsheeting environment.

Sensitivity analysis and thermal optimisation are carried out by using the process analysis facilities within Aspen Plus.

An optimum air distribution profile was determined for a cell of a SOFC that minimises the temperature gradient.