

Numerical study of Solid Oxide Fuel Cells including radiation

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This work presents the development of a mathematical model for the simulation of solid oxide fuel cells (SOFCs). Because of their high operating temperatures, there has been an issue that thermal radiation may play an important role in the overall heat transfer within the electrodes and electrolyte layers of SOFC. In this paper, a detailed thermophysical property of the composite materials have been used to define a simple 3D model, incorporating the heat transfer characteristics of the electrodes and electrolyte layers of the typical planar SOFC. Radiation effect was investigated by comparing with non-radiative model.