Effect of Process Conditions on Dynamics and Performance of PEMFC: Comparison With Experiments

Thin Solid Films
Pages:
6505-6509
Volume:
518
Issue:
22
Date:
Wednesday, September 1, 2010
DOI:
http://dx.doi.org/10.1016/j.tsf.2010.01.051

Three-dimensional numerical computations have been carried out to investigate the dynamics inside proton-exchange membrane fuel cell (PEMFC) and its performance using STAR-CD solver, the computational fluid dynamics software. Theoretical results in polarization curves quantitatively corroborate the experimental findings previously reported in Jung et al. Also, effects of various process conditions such as relative humidity, stoichiometric ratio at anode and cathode channels, and cell configuration on the performance of fuel cell have been further scrutinized. It has been revealed that the moderately high stoichiometric ratio at cathode channel and single serpentine geometry improve the cell performance and also the humidity change at cathode makes the cell voltage variation high, comparing with the humidity change at anode.

Author Name:
H. Y. Park
J. W. Hwang
K. T. Park
S. Kim
Y. U. Jeong
H. W. Jung
S. H. Kim

Industries:
Products: