Effect of flow behavior on the current distribution in a direct methanol fuel cell

박상민[1,2], 김상경[2], 임성엽[2], 정두환[2,*], 홍원희[1], 백동현[2]
[1]한국과학기술원; [2]한국에너지기술연구원
(doohwan@kier.re.kr*)

Current density distribution was measured to investigate the effect of operating condition on the local electrical output throughout the membrane electrode assembly in a direct methanol fuel cell. The current distribution profiles were examined under various operation conditions of cell temperature, flow rate of the reactants, and the methanol concentration at different imposed current density and channel configuration of the flow field. The deviations from an even current density distribution were observed when air flow rate at the cathode was reduced. However, it was not affected by decrease in flow rate at the anode. The flow behaviors on both flow fields of anode and cathode were observed using transparent single cell under same conditions. It was found that channel clogging due to water droplet and froth formation along the cathode flow field had mostly influence on inhomogeneity of the current distribution.