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The Annealing Effect of Membrane Electrode Assembly(MEA) on the Cell Performance for DMFC

DMFC 성능 향상을 위한 MEA의 열처리

정호영 · 조기윤 · 성경아 · 박정기
한국과학기술원 생명화학공학과

Nafion solution has been usually used as an electrode binder in DMFC. But, it has been known that Nafion binder is quite soluble in the alcoholic mixture due to its characteristics of the morphology. The dissolution of Nafion binder on the electrode can decrease the cell performance as well as the long-term performance because of the lowered interfacial stability. However, the dissolution of Nafion binder is known to be improved by annealing. In this paper, annealing was introduced in the MEA and the cell performance with annealing temperature was investigated.

Annealing decreased the solubility of Nafion binder. This can lead to the durability of Nafion binder in methanol solution during operation of the cell. Annealing at T_g of Nafion binder increased the specific surface area as well as the electrochemical active surface area of the electrode. In addition, annealing decreased the cell resistance. As a result, annealing at T_g improved the cell performance as well as the long-term stability.

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