

고출력 전지를 위한 Zn/AgO 단전지 반응의 실험적 연구

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Experimental study of Zn/AgO reaction of unit cell for high power battery

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Key Words: High power battery (고출력 전지), Zinc-silver oxide battery(아연-산화은 전지), power density (출력 밀도), optimum design (최적 설계), half cell test (반전지 실험)

Abstract : Zinc-silver oxide battery has been used especially for military purpose because it has high power density than other batteries. However, high cost is a crucial issue, so optimum design should be taken into account. Experimental approaches were accomplished to find out basic electrochemical parameters. In this study, temperatures and concentrations of electrolyte (KOH), are varied to get voltage-current density relation. Also, half cell test has been conducted to get data for electrode resistance. Numerical calculations were carried out to simulate performances of battery on the basis of our basic parameters.

고분자 전해질형 단위 연료전지의 주요 작동 조건이 공기극 플러딩 현상에 미치는 영향

김한상[†] · 하태훈*(서울대 원) · 민경덕** · 김민수**(서울대)**Effect of Main Operating Conditions on Cathode Flooding Characteristics in a PEM Unit Fuel Cell**

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Key Words: Water management, PEM, Flooding, Water droplet, Flow channel, Two-phase Flow

Abstract : Water management has been a critical operation issue for PEM fuel cell design and optimization. The flooding on cathode side resulting from excess water can limit the cell performance. In this study, the visual cell was designed and fabricated for the visualization of liquid water droplet dynamics related to cathode flooding in flow channels. The experiment was carried out to observe the formation, growth and removal of water droplets using CCD imaging system. Effects of operating conditions (cell temperature, air flow rate and relative air humidity) on cathode flooding characteristics were mainly investigated. Based on this study, we can get the basic insight into flooding phenomena and its two-phase flow nature. It is expected that data obtained can be effectively used for the setup and validation of two-phase PEM fuel cell models.