

Fabrication of Polysulfone/Graphite Composite Bipolar Plates for PEFC

김신호^{1,2}, 양태현^{3,*}

¹고려대학교; ²한국에너지기술연구원 고분자연료전지연구단;

³한국에너지기술연구원

(thyang@kier.re.kr*)

The bipolar plate is one of the important components in a polymer electrolyte fuel cell (PEFC). The study on fabrication of bipolar plate using polysulfone (PS) has been conducted. The melting point of the PS is higher than other thermosetting resin so that it has good thermal stability. In addition, the mechanical strength of PS is superior.

The solution blending of PS with graphite leads to lower anisotropy values.

The molding temperature is an important factor for the fabrication of bipolar plate using PS. Changing the molding temperature the bipolar plate using 20w.t% PS was fabricated under 400kgf/cm². The flexural strength, specimen resistivity and through plane resistivity became higher with increasing the molding temperature.

The flexural strength was over 55MPa, through plane resistivity was 0.0005 ohm□m, sheet resistance was 0.17 ohm/sq at 290°C.

The cross section images of bipolar plate showed PS penetrated into the graphite powders. The flat surface of bipolar plate was observed by scanning electron microscopy (SEM).