

Development of Bipolar Plate Material for PEMFC using Carbon/Polymer Composite

강수정, 김동욱¹, 이민혜¹, 남재도^{1,*}, 이종호²
성균관대학교 고분자기술연구소;
¹성균관대학교 고분자시스템공학과; ²LS전선(주)
(jdnam@skku.edu*)

Proton exchange membrane fuel cell (PEMFC) are viewed as one of the most environmentally friendly propulsion systems for automotive travel in the future. A bipolar plate is one of the key materials of PEMFC. The Carbon/Polymer composite bipolar plate for PEMFC were developed high electrical conductivity, high strength at low cost. With phenol resin and graphite powder as raw materials, conductive composite for bipolar plate was obtained by hot-pressure molding. Study on the effect of porosity, bulk conductivity, flexural strength, and gas permeability. The optimum molding condition of composites were obtained about graphite length, phenol resin content, molding pressure, molding temperature, molding time, and mixing process. Effective mixing process was obtained about graphite content of 60 - 80 wt %. The best conductivity of the composite was 322 S/cm when its phenol resin content was 20 % molded at 200 °C for 60 min.