

عنوان مقاله:

Physical and Mechanical Properties of Copolyimide based Fuel Cell Membranes

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

Physical and mechanical properties of four series of chemically and thermally stable sulfonated copolyimides as ion-conducting ionomers for application in fuel cell membrane, depending on chemical structure of diamine monomers were studied. The physical and mechanical properties of solid polymer membranes including thermal stability, mechanical strength, water uptake, water stability and morphology were evaluated. All the polymers were thermally stable. The SEM micrographs revealed that the hydrophobic-hydrophilic phase separation in polyimide was not occurred. Use of flexible monomers such as 4,4'-oxydianiline (ODA) and 4,4'-(4-aminophenoxy) diphenylsulfone (APDS) in the hydrophobic sequences increased the plastic behavior compared to rigid polymers prepared from 4,4'-(5-amino-1-naphthoxy) diphenylsulfone (ANDS) and m-phenylenediamine (m-PDA). It was concluded that the properties of polymeric films were strictly depended to chemical composition of monomers and molecular weight of copolymers.

کلمات کلیدی:

mechanical properties, fuel cell, membrane, sulfonated copolyimide, ionomers

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