

Polypropylene films modified by radiation induced graft polymerization

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Modification of polypropylene by radiation induced graft polymerization was carried out using simultaneous irradiation method. PP films with 0,1mm thickness were placed in a glass tube in contact with styrene monomer/toluene solution and nitrogen was bubbled to guarantee inert atmosphere. The films were irradiated at 40 and 80 kGy doses at room temperature in cobalt-60 source. After radiation process the films were submitted to sulfonation reaction. The effect of radiation dose on the grafting yield was investigated. The samples were characterized by Thermogravimetry Analysis (TGA), Differential Scanning Calorimetry (DSC) and Infrared Spectroscopy (FTIR). The degree of grafting (DOG) was calculated gravimetrically and the ion exchange capacity (IEC) was also determined after the sulfonation process by acid base titration. The sulfonated films exhibited a little decrease in thermal properties and the IEC values are near to the Nafion[®] value of 0.9 meq g⁻¹.

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