

Manufacture and properties of ETFE fuel cell membrane by using radiation grafting technology

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The electron beam radiation technology could be successfully carried out for a manufacture of ETFE [Poly(ethylene-alt-tetrafluoroethylene)] membrane with a uniform and high distribution of sulfonic groups. The maximum degree of styrene-grafting existed at around 20kGy, considerably decreasing the degree of grafting above 30kGy. The hydrated ETFE film with a high degree of grafting after sulfonation could be largely swelled, showing a high transparency in water. The methanol crossover across ETFE membrane could be much more suppressed compared to Nafion 115 membrane. On the other hand, electric power generation over ETFE membrane was slightly lower than that in Nafion 115.