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Cationic membranes produced by swift heavy ions to be applied in pem fuel cells

J.E. Manzoli^{1,7}, R. Mazzei^{2,3}, A.B.C. Geraldo¹, E. Moura¹, G. García Bermúdez^{4,5,6},
M.F. del Grosso⁴, V. C. Chappa^{4,6}, C. Arbeitman⁴.

1. Instituto de Pesquisas Energéticas e Nucleares, IPEN, CTR, sala 30, Av.Prof.Lineu Prestes, 2242, Cidade Universitaria Sao Paulo SP, Brasil, CEP05508-000.
2. U. A. Tecnológicas y Agropecuarias, Laboratorio de Polimeros, Comisión Nacional de Energía Atómica, Av. del Libertador 8250, 1429 Buenos Aires, Argentina
3. Universidad Tecnológica Nacional Facultad Regional Buenos Aires, Departamento de Ingeniería Química, Avda. Medrano 951 CP, C1171AAQ. Buenos Aires, Argentina.

4. U. A. de Física, Laboratorio Tandar, Comisión Nacional de Energía Atómica, Buenos Aires, Argentina.
5. Escuela de Ciencia y Tecnología, Universidad Nacional de General San Martín, Buenos Aires, Argentina
6. Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina.
7. Universidade São Judas Tadeu

Membranes in PEM fuel cells may have some characteristics like high stability and durability under high temperature, mechanical tension and oxidative atmosphere. These requirements are expected by fluorinated polymers. The functionalization of these materials is achieved by radiation-induced grafting. In this preliminary study, PVDF films were irradiated by heavy fission fragments from ^{252}Cf source and Cl and S beams respectively at 70 and 110 MeV energies. These ion beams were provided by the heavy ion accelerator Tandar of Buenos Aires. Chemical etching was used to produce pores in diameter about few hundreds of nanometers. After this procedure, the pores were grafted with styrene in the remained active sites and finally these membranes were sulfonated. This procedure gives bulk grafting characteristics. These membranes were studied by FTIR, SEM and electrochemical analysis. After these characterizations, parameters were defined in order to proceed the test performance in polymer exchange membrane fuel cell (PEMFC).