

THE EFFECT OF DIFFERENT SOLVENTS IN THE GRAFTING OF STYRENE INTO ETFE FILMS VIA GAMMA RADIATION

Adriana N. Geraldes¹, Heloísa A. Zen¹, Geise Ribeiro¹, Henrique P. Ferreira¹, Duclerc F. Parra¹, Gerhard Ett², Ademar B. Lugão¹

¹ Instituto de Pesquisas Energéticas e Nucleares – IPEN/CNEN – SP, Av. Prof. Lineu Prestes, 2242, Cid. Universitária, 05508-000, São Paulo, SP, Brasil. angeral@ipen.br

² Grupo Electrocell, Av. Prof. Lineu Prestes, 2242 - ed. CIETEC (Pré-Parque Tecnológico), Cid. Universitária, 05508-000, São Paulo, SP, Brasil.

Styrene was grafted onto ETFE (poly(ethylene-alt-tetrafluoroethylene)) films with different solvents using gamma radiation. Some parameters were studied: i) the effect of different solvents: methanol, toluene and isopropanol in the polymer surface; and ii) the grafting yield in the films. The ETFE films were immersed in solution of styrene/solvent (1:1 v/v) and nitrogen was bubbled to eliminate the oxygen. Then the films were submitted to irradiation process at 100 kGy dose. The polymer surface was investigated by scanning electron microscopy (SEM) and the degree of grafting was gravimetrically determined. The structural changes were observed by FTIR due to the appearance of new peaks characteristics of styrene grafting. The irradiated ETFE films exhibited a much higher grafting degree to styrene / toluene. The investigation demonstrated that the surface polymer is strongly influenced by the type of solvent. Examinations of surface of the grafted films by SEM technique show an effect of the diluent (toluene, isopropanol and methanol). At styrene / methanol or styrene/isopropanol, the surface of ETFE-g-PS present small cavities and discontinuities, but at styrene / toluene the surface shows a more homogeneous.

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