

A method to determine the opening process for pores of latent ion tracks in polymer using electrolytic etching

Oganessian VR, Trofimov VV, Vetter J, Danziger M, Dörschel B, Hermsdorf D
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Up to now, most of studies have not considered direct measurements which would enable the detection of every pore separately while etching irradiated polymer films. It is not easy due to extremely high values of electric resistance in the moment of pore opening. In our studies presented here we used polyethylene terephthalate foils irradiated with swift heavy ions at low fluencies up to 3.7×10^3 ions/cm² (Bi ions, 11.4 MeV/nucleon, UNILAC, GSI Darmstadt). Using optimized etching conditions and computer program, we got interesting results. It was shown that the conductivity of the single tracks increases in time during etching, from the breakthrough up to the next pore opening. The "track-by-track" method therefore can be used for the conductometric and graphic description of subsequent pores' appearance.