

Investigation of nanopore evolution in ion track-etched polycarbonate membranes

Cornelius TW, Apel PYu, Schiedt B, Trautmann C, Toimil-Molares ME, Karim S, Neumann R
NUCL. INSTRUM. & METHODS IN PHYSICS RESEARCH SECT. B 265 (2007) 553–557

Single heavy ion tracks in polycarbonate foils were chemically etched in an electrolytical cell under various conditions (different temperatures, etchant concentrations, and applied potentials), and the pore evolution was monitored by measuring the current through the membrane. Different zones of the latent tracks could be identified via changes in the radial etching rate with time. Further it was found that the shape of the radial etching rate versus time curves depends on temperature, etchant concentration, and applied voltage. The functionalities are attributed to etching products (double-charged diphenylol-propane anions), which are adsorbed on the pore walls and, thus, affect the further etching process.