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www.elsevier.com/locate/memsci

PII: S0376-7388(14)00617-6
DOI: <http://dx.doi.org/10.1016/j.memsci.2014.07.077>
Reference: MEMSCI13121

To appear in: *Journal of Membrane Science*

Received date: 10 January 2014

Revised date: 8 May 2014

Accepted date: 26 July 2014

Cite this article as: Vivek Chavan, Chhavi Agarwal, Ashok K. Pandey, J.P. Nair, P. Surendran, P.C. Kalsi, A. Goswami, Controlled development of pores in polyethylene terephthalate sheet by room temperature chemical etching method, *Journal of Membrane Science*, <http://dx.doi.org/10.1016/j.memsci.2014.07.077>

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Controlled development of pores in polyethylene terephthalate sheet by room temperature chemical etching method

Vivek Chavan¹, Chhavi Agarwal^{1*}, Ashok K. Pandey¹, J. P. Nair², P. Surendran², P. C. Kalsi¹, A. Goswami¹

¹Radiochemistry Division, Bhabha Atomic Research Centre, Trombay, Mumbai-400085, India

²Pelletron, Nuclear Physics Division, Bhabha Atomic Research Centre, Trombay, Mumbai-400085, India

* Corresponding author: FAX: +91-22-25505150/25505151, Tel: +91-22-25594093

E-mail: cagarwal@barc.gov.in

Abstract

In the present work, a room temperature chemical etching (RTCE) method has been explored for controlled development of pores in the chlorine ions (115 MeV) bombarded polyethylene terephthalate (PET) (25 μ m) sheets. In this pore development method, a mixture of ethanolamine and NaOH is employed. The pore-size distributions in thus formed PET track-etched membranes have been obtained by the capillary flow porometry, and compared with the results of PET track-etched membranes subjected to widely used chemical etching (CE) at elevated temperature. Multiple pore size distributions have been observed with the CE method. However, with RTCE, pores with single narrow pore size distribution have been observed. To further improve the RTCE method, the chlorine ions bombarded PET sheets have been sensitized with UV radiation (254 nm) for 1 h, and subjected to RTCE. The average pore-size has been found to increase with UV-sensitization without affecting the nature of pore-size distribution, indicating the possibility of formation of the track-etch membranes with different pore sizes. Track etching studies show

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