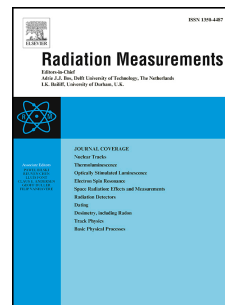


Accepted Manuscript

Ultrafast selective ionic transport through heat-treated polyethylene terephthalate track membranes with sub-nanometer pores

Pengfei Wang, Xue Wang, Yun Ling, Mao Wang, Siyuan Ding, Wenhao Shen, Zhong Wang, Yugang Wang, Feng Liu



PII: S1350-4487(18)30115-X

DOI: [10.1016/j.radmeas.2018.09.007](https://doi.org/10.1016/j.radmeas.2018.09.007)

Reference: RM 5993

To appear in: *Radiation Measurements*

Received Date: 25 February 2018

Revised Date: 29 August 2018

Accepted Date: 13 September 2018

Please cite this article as: Wang, P., Wang, X., Ling, Y., Wang, M., Ding, S., Shen, W., Wang, Z., Wang, Y., Liu, F., Ultrafast selective ionic transport through heat-treated polyethylene terephthalate track membranes with sub-nanometer pores, *Radiation Measurements* (2018), doi: <https://doi.org/10.1016/j.radmeas.2018.09.007>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Ultrafast selective ionic transport through heat-treated polyethylene terephthalate track membranes with sub-nanometer pores

Pengfei Wang, Xue Wang, Yun Ling, Mao Wang, Siyuan Ding, Wenhao Shen, Zhong Wang, Yugang Wang, Feng Liu*

School of Physics and State Key Laboratory of Nuclear Physics & Technology, Peking University, Beijing 100871, China

*Corresponding author.

E-mail address: liufeng-phy@pku.edu.cn (Feng Liu)

Abstract

12- μm -thick *polyethylene terephthalate* (PET) track membranes with sub-nanometer pores fabricated with the newly developed track-UV technique without chemical etching showed ultrahigh selective ionic transport yet low permeability. We discovered that the permeability of these track membranes could be irreversibly improved by two to three orders of magnitude via heat treatment. Meanwhile, the heat-treated track membrane maintains the high selectivity of ions. Our experimental results suggest heat treatment on the track membranes with sub-nanometer pores could provide a reliable and controllable way to increase the channel size of the nanopores of the sub-nanometer in radius, and bring the track membrane to promising applications on ion separations, water purification, diaphragm material and so on.

Key words: track membrane, high permeability, high selectivity, track-UV technique, PET membrane, ion irradiation

Download English Version:

<https://daneshyari.com/en/article/11030939>

Download Persian Version:

<https://daneshyari.com/article/11030939>

[Daneshyari.com](https://daneshyari.com)