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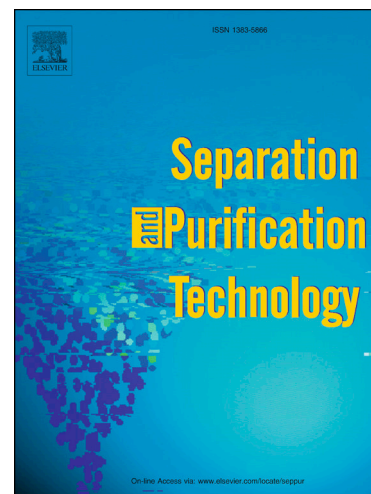
Ihsan Ullah

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Carbon nanotube membranes for water purification: Developments, challenges, and prospects for the future

Ihsanullah*

Center for Environment and Water, Research Institute, King Fahd University of Petroleum & Minerals, Dhahran 31261, Saudi Arabia

*Corresponding author. E-mail: engr.ihsan.dir@gmail.com, ihsankhan@kfupm.edu.sa (Ihsanullah)
Tel.: +966-(13)8603868

Abstract

Carbon nanotubes (CNTs) have recently attracted considerable attention for the synthesis of novel membranes with attractive features for water purification. This paper critically reviews the recent progress on the synthesis and applications of carbon nanotube (CNT) based membranes in water treatment. Various synthesis techniques for the preparation of CNT based membranes are discussed. Furthermore, the effect of incorporating CNTs in the matrix on the membrane properties has deliberated in detail. The key issues associated with the synthesis of CNT based membranes for actual applications are highlighted. Finally, research directions are given to ensure the fabrication and application of CNT membranes in a more effective manner. This paper may provide an insight for the development of CNT based membranes for water purification in future. With their tremendous separation performance, low biofouling potential and ultra-high water flux, CNT membranes have the potential to be a leading technology in water treatment, especially desalination.

Keywords: *Carbon nanotube; membranes; water treatment; mixed matrix membranes; bucky-paper; desalination; nanocomposite membranes*

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