Abstract Submitted
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Electric field controlled small molecule transport through vertically aligned large diameter multiwalled carbon nanotube forest membrane[1] PURUSHOTTAM TIWARI, Florida International University, PADMINI KRISHNAKUMAR, Arizona State University, YESIM DARICI, JIN HE, Florida International University, DEPARTMENT OF PHYSICS, ARIZONA STATE UNIVERSITY COLLABORATION — Vertically aligned multi-walled carbon nanotube (MWCNT) forest based porous membranes have been fabricated. The average inner diameter of the CNT is about 7 nm and the length is about 45 μm. The translocation behaviors of small charged molecules and gold nanoparticles through the CNT membrane under electric field have been investigated. Electrophoresis is found to be the main mechanism for the translocation of small molecules under the applied electric field in the range of 10000 Vm^{-1}. The interactions between the molecule and the hydrophobic CNT inner surface play an important role for the transport of small molecules. The chemical modifications at CNT ends can also effectively regulate the transport of molecules.

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