

Next Generation Membrane for Water Desalination: Facile Fabrication of Patterned Graphene Membrane

Authors : Jae-Kyung Choi, Soon-Yong Kwon, Hyung Duk Yun, Hyun-Sang Chung, Seongho Seo, Kukjin Bae

Abstract : Recently, there were several attempts to utilize a graphene layer as a water desalination membrane. In order to use a graphene layer as a water desalination membrane, fabrication of crack-free suspension of graphene on a porous membrane, having hydrophobic surface, and generation of a uniform holes on a graphene are very important. In here, we showed a simple chemical vapor deposition (CVD) method to create a patterned graphene membrane on a patterned platinum film. After CVD growth process of patterned graphene layer/patterned Pt on SiO₂ substrates, the patterned graphene layer can be successfully transferred onto arbitrary substrates via thermal-assisted transfer method. In this result, the transferred patterned graphene membrane has so hydrophobic surface which will certainly impact on the naturally and speed pass way for fresh water. In addition to this, we observed that overlapping of patterned graphene membranes reported previously by our group may generate different size of holes.

Keywords : chemical vapor deposition (CVD), hydrophobic surface, membrane desalination, porous graphene

Conference Title : ICWRE 2016 : International Conference on Water Resources and Environment

Conference Location : Kyoto, Japan

Conference Dates : November 10-11, 2016