

## Enhancement of Chlorine-resistance in Desalination Membrane via Addition of Nanocarbon Materials

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To overcome the low chlorine resistance of existing reverse osmosis (RO) membrane, we introduced chemically inactive nano-carbon materials, such as multiwalled carbon nanotube (MWCNT) and graphene oxide (GO), in conventional polyamide RO membrane fabrication process. First, amine-functionalized MWCNT and GO were prepared by acid treatment, followed by reacting with diamines. To fabricate the active layer of RO membrane, they were dispersed in m-phenylenediamine (MPDA) solution. A polysulfone membrane was used for support layer, and the active layer was fabricated via interfacial polymerization of MPDA/nano-carbon and trimesoyl chloride (TMC) solution on support layer. Permeate flux and salt rejection rate of membranes were tested with homemade apparatus we have developed, and the active layer was characterized by SEM, TEM, FT-IR, etc. Consequently, it was found that the chlorine resistance of nano-carbon inserted membrane was significantly increased comparing to existing membrane.