



Evaluation of Graphene oxide and polyhedral oligomeric silsesquioxane (POSS) effects on the desalination performance of nanocomposite membranes

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Abstract:

In the present study, the effect of graphene oxide (GO) and POSS nanoparticles are investigated as main factors on the desalination performance of nanocomposite membranes. Response surface methodology (RSM) was applied to investigate the interactions between two main parameters and optimize the membrane performances. With the aim of simultaneous improvement of salt rejection and water flux performances, optimum values of 0.0044 wt.% for GO content and 0.38 wt.% for POSS content are proposed by central composite design (CCD). Based on the optimum values, the membranes have been successfully prepared via phase inversion method and tested by a cross-flow pattern. The experimental value of permeation flux and salt rejection was 82 % and 11.7 L/h.m², respectively. They were in good agreement and very close to the optimized value predicted from CCD, which were 84 % and 12.9 L/h.m². The results show that process optimization using CCD was a reliable method for prediction of membrane performance.

Biography:

Yousef Jahani is academic member of staff-professor at Iran polymer and petrochemical institute, Tehran. The research on the reactive modification of polyolefin, branching, blending and compatibilization of polymer blends and plastic foam. Besides running the contract researches he is supervising PhD and Master Students together with lecturing some topics for graduate students.



Publication of speakers:

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- H.J. Kim, M.-Y. Lim, K.H. Jung, D.-G. Kim, J.-C. Lee, "High-performance reverse osmosis nanocomposite membranes containing the mixture of carbon nanotubes and graphene oxides." *J. Mater. Chem. A.* 3 (2015): 6798-6809.

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