

### Nanocomposite reverse osmosis membrane containing functional zeolite nanoparticles

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In this study, composite reverse osmosis (RO) membranes made from sulfonated poly (arylene ether sulfone) containing amino groups (aPES) and aminated template free zeolite nanoparticle (aTMA) were prepared with the aim of enhancing chlorination resistance and improving membrane performance. The performance of the RO membranes containing aPES and aTMA was evaluated; salt rejection and water flux were 98.8% and 37.8 L/m<sup>2</sup>h, respectively. Salt rejection decreased by only 12.7% and water flux increased by 2.5 L/m<sup>2</sup>h after the chlorination test. aPES/aTMA significantly modified the three-dimensional polyamide (PA) network structures and contributed to the high performance because of copolymer chain stiffness due to a high degree of cross-linking in the RO membranes. Therefore, aPES and aTMA, which helped improve water permeability, also protected the active layer structure from degradation and enhanced chlorine resistance of the RO membrane.