Negatively charged polyethersulfone hollow fiber nanofiltration membrane for the removal of bisphenol A from wastewater

Abstract

Removal of endocrine disrupting compound (viz., bisphenol A, BPA) by laboratory-fabricated hollow fiber polyethersulfone (PES) nanofiltration (NF) membranes have been investigated. The tailor made charged PES hollow fiber NF membranes have been developed by blending negatively charged surface modifying macromolecule (cSMM). It is resulted more than 90% removal of BPA, mainly due to negatively charged properties of the membrane and the negatively charged solute under the influence of higher pH feed water matrix. The PES hollow fiber modified by blending cSMM is associated with sulfonic groups, confirmed by energy dispersive X-ray and Fourier transform infrared analysis. The blending of cSMM has successfully modified PES hollow fiber which is resulted twice better removal of BPA compared to the unmodified PES.