

Abstract

This work describes the in-situ decoration of polyethersulfone (PES) nanofiber mats or nanofiber membranes decorated with silver nanoparticles (AgNPs) using an electrospinning technique. The nanofiber mats demonstrated smooth surfaces with decreasing average diameters (358 - 98 nm). The nanofiber membranes were evaluated for organic fouling using humic acid (HA) as a model foulant in a cross-flow filtration system and a correlation between hydrophilicity and fouling propensity was established. Hydrophilic membranes exhibited high resistance to fouling and reversible fouling. The calculated flux recovery increased as the hydrophilicity of the membranes increased. Bare PES nanofiber membranes had the lowest recovery and their HA fouling was not easily reversible.