

Performance of PEG on immobilization of zero valent metallic particles on PVDF membrane for nitrate removal

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Abstract. The principal objective of this study is to investigate the effect of Polyethylene Glycol (PEG) crosslinking in Polyvinylidene Fluoride (PVDF) in immobilization of Fe and bimetallic Fe/Cu and Cu/Fe zero valent particles on the membrane and its efficiency on removal of nitrate in wastewater. PVDF/PEG polymer solution of three weight compositions was prepared to manipulate the viscosity of the polymer. PEG crosslinking was indirectly controlled by the viscosity of the polymer solution. In this study, PEG was used as a modifier of PVDF membrane as well as a cross-linker for the immobilization of the zero valent particles. The result demonstrates improvement in immobilization of metallic particles with the increase in crosslinking of PEG. Nitrate removal efficiency increases too.

Keywords: zero-valent iron nanoparticle; bimetallic nanoparticle; membrane grafting; nitrate removal
