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Use of sludge membrane filters as an alternative method for processing wastewater treatment

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ABSTRACT

This research highlighted the ability of sludge membrane filters (SMF) as an alternative technique for processing wastewater treatment. The sludge ash based membranes were prepared by blending cellulose acetate (CA) with sewage sludge ash (SSA) from wastewater by dry–wet phase inversion method in various proportions of CA/SSA (100/0, 90/10, 80/20 and 50/50 wt%). Characterization of prepared membranes was performed such as water content, X-ray diffraction analysis and mechanical strength. Also, the possibility of solute rejection of nickel ions from wastewater using SMF was evaluated. Effects of organic additives concentration such as polyethylene glycol (PEG 600) in the casting solution were studied in range of 0–10 wt%. Results reported that the best performance of CA/SSA blend membranes was at 50/50 wt% Furthermore, investigation of SMF in reducing the water turbidity, COD, BOD, TSS and total dissolved solids of effluent wastewater from Abu Rawash plant was depicted.

Keywords: Sludge membrane filters; Wastewater treatment; Cellulose acetate/sewage sludge ash; Phase inversion method; Characterization

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