TREATMENT OF SYNTHETIC OILY WASTEWATERS BY COAGULATION - MF HYBRID PROCESS USING MULLITE - ALUMINA CERAMIC MEMBRANES

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Abstract

In this research, effects of in-line coagulation on permeation flux (PF), flux reduction (FR) and total organic compound rejection (TOC R) of synthesized mullite-allumina MF ceramic membrane (with 50 wt % alumina content) during treatment of synthetic oily wastewater were investigated. Four coagulants ((ferrous chloride (FeCl2.4H2O), ferrous sulphate (FeSO4.7H2O), aluminum chloride (AlCl3.6H2O) and aluminum sulphate (Al2(SO4)3.18H2O)) plus equal concentration of slaked lime in form of calcium hydroxide (Ca(OH)2) were examined in the coagulation – MF hybrid process at different concentrations (0, 50, 100 and 200 ppm). At the best condition (200 ppm of ferrous sulphate plus slaked lime), PF increased from 118.32 to 212.55 (L m⁻² h⁻¹), FR decreased from 58.5 % to 17.82 % and TOC R increased from 89.6 % to 92.5%.

Key words: ceramic membranes, coagulation, hybrid process, microfiltration (MF), synthetic oily wastewater treatment

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