Factorial experimental design for treatment of an industrial wastewater using micellar-enhanced ultrafiltration

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ABSTRACT

In the present study, micellar-enhanced ultrafiltration (MEUF) using linear alkylbenzene sulfonate (LAS) surfactant was applied in order to treat soft drink processing wastewater. The effects of two parameters of LAS surfactant concentration and transmembrane pressure (TMP) on the separation performance and flux were studied by applying a full factorial design. It was found that LAS concentration and TMP had negative and positive effect on the flux, respectively. The results showed that the optimum TMP for rejection of pollution indices of the wastewater was equal to 3.5 bars at the surfactant concentrations above critical micelle concentration (CMC). In addition, the stable flux and rejections were precisely predicted by the full factorial design models.

Keywords: MEUF process; Surfactant; Critical micelle concentration; Full factorial design

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