Energy Procedia

2013, Pages 1232-1240

Extraction and desextraction of a cationic dye using an emulsified liquid membrane in an aqueous solution

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Abstract: The removal of methylene blue (C16H18ClN3S) as a cationic dye which might be rejected in textile industry wastewaters during its production or its use was the main objective in this work. The extraction was performed by an emulsified liquid membrane (ELM) consisting of sorbitan mono-oleate (SPAN80) and di(2-ethylhexyl)phosphoric acid (D2EHPA) as a surfactant and an extractant respectively. The internal phase used was sulfuric acid. Effects of important factors (concentration of H2SO4, stirring velocity, quantities of organic, aqueous, phases, external and emulsified phases, concentrations of extractant and surfactant were studied according to the stability of the ELM. Then using favorable conditions for a good stability of the membrane, the extraction and of methylene blue (MB) from an aqueous solution was investigated. Optimal conditions were then determined and the extraction efficiency reached 98.15%. The desextraction of this dye was performed at 81.91% and the membrane was regenerated.

Keywords : emulsified liquid membrane, emulsion W/O, extraction, methylene blue, desextraction