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Removal of AY99 from an aqueous solution using an emulsifiedliquid membrane. Application of Plackett-Burman Design

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Abstract: Water contaminated with dyes presents serious environmental problems. An important quantity of dyes is released asindustrial waste in nature. As part of the recovery and the regeneration of these complexes, the extraction of a cationic dye AcidYellow 99 has been the subject of this work. To removal dyes from industrial wastewater, the technique of extraction byemulsion liquid membrane could provide an industrial success. The membrane used in this study consisted of SPAN80 asemulsifier and aliquat 336 as extractant. The stability of the emulsified liquid membrane has a very important role in theextraction. A study of the effects of different components of the membrane is necessary. The process parameters were studiedusing a statistical method of experimental Plackett-Burman design, This method allows us to study the effects of different factorssimultaneously and determines which factors are most important parameters. The modeling was done by a mathematical modelrepresenting the extraction yield according to various factors. The most significant factors on the elimination of the acid yellow99by the emulsion liquid membrane were then studied.

Keywords : emulsified liquid membrane, modeling, recovery, acid yellow, design of experiment (DOE).