

Separation of Dye from Water Through Supported Liquid Membrane Extraction Process

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Synthetic dye Rhodamine 6G (R6G) and water separation was investigated using blended organic liquids in a supported liquid membrane (SLM) system. Highest R6G distribution coefficient ($K_D=18$) was obtained at feed pH=1 using pure octyl alcohol (OcOH). For SLM stability improvement, LM blends were prepared composed of OcOH and polysiloxane liquid poly (phenyl methyl) siloxane (PPMS). Though permeability decreased at optimal blending condition of 1:1 (w/w), SLM longevity was exhibited in contrast to pure OcOH SLM. Equilibrium experiments revealed Langmuir type of dye adsorption. The dye mass transport behavior was elucidated wherein it showed a decrease in overall coefficient (K_o) at increasing feed concentrations. At varied hydrodynamic conditions, improved K_o values up to $Re = 10000$ was observed. But beyond this condition, SLM stability is compromised due to shear-induced LM losses. **Acknowledgement**—This work was supported by The National Research Foundation of Korea grant [No. 2009-83876] and Priority Research Centers Program [No. 2009-0093816] funded by the Korea Government, Ministry of Education Science and Technology.