



## Membrane-based extraction with strip/organic dispersion methodologies for metals removal and recovery from wastewaters

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### ABSTRACT

The generation of liquid effluents containing organic and inorganic residues from industries presented a potential hazardousness for environment and human health, being mandatory the elimination of these pollutants from the respective solutions containing them. In order to achieve this goal, several techniques are being used, and among them, supported liquid membranes technologies are showing their potential for their application in the removal of metals contained in liquid effluents. Supported liquid membranes are a combination between conventional polymeric membranes and solvent extraction. Several configurations are used: flat-sheet supported liquid membranes, spiral wounds and hollow fiber modules. In order to improve their effectiveness, smart operations have been developed: pseudo-emulsion membrane based strip dispersion (PEMSD), pseudo-emulsion based hollow fiber strip dispersion (PEHFSD), hollow fiber renewal liquid membrane (HFRLM) and double strip dispersion hybrid liquid membrane (SDHLM). This paper overviewed some of these smart supported liquid membranes technologies and their applications to the treatment of metal-bearing liquid effluents.

*Keywords:* Wastewaters; Supported liquid membranes; Strip/organic dispersion methodologies; Removal; Metals; Toxicity; Carriers

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