



Continuous operation of membrane processes for the treatment of industrial effluents

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Abstract

The feasibility of operating a Non-Dispersive **Solvent Extraction** (NDSX) process in a continuous mode is analysed for the first time in this work. A configuration is proposed for the treatment of industrial effluents and metal recovery. The pollutant is removed from the effluent in the extraction module and simultaneously it is recovered in the stripping module, for recycling and re-use in the plant that generates the effluent. Thus, the amount of pollutant disposed of into the environment is reduced. The optimum **membrane areas** and the operating conditions are calculated solving a non-linear programming problem that includes the differential equations representing the composition profiles in the **membrane modules**. A particular application of this technology is evaluated, to remove Cr(VI) from surface treatment effluents, recover and concentrate it for recycle and reuse. The optimum operating conditions and areas of the extraction and stripping membranes, calculated at different Cr(VI) effluent compositions, are reported.

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Keywords

Selective membranes; Continuous operation; Optimisation; Cr(VI) recovery

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