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Impact of anionic surfactants on oxygen transfer rate in the electroflotation process

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ABSTRACT

This work concerns the treatment of liquid effluents rich in anionic surfactant by the electroflotation process in batch mode. The oxygen transfer was studied considering its importance for the abatement of the dissolved organic matter in the industrial effluents. The volumetric mass transfer coefficient ($K_L a$) which is the key parameter in the characterisation of transfer process was evaluated for different values of current density and various surfactant concentrations. The volumetric mass transfer coefficient was also dissociated to evaluate the liquid-side mass transfer coefficient (K_L) and specific interfacial area (a). The K_L decreases with the anionic surfactant concentration until the critical micelle concentration and then it has undergone a notable increase, the specific interfacial area decreases with the anionic surfactant. Models of (K_L) have been established to describe the effects of the operational parameters as well as the physicochemical characteristics of the liquid phase on the oxygen transfer.

Keywords: Electroflotation; Mass transfer coefficient; Current density; Anionic surfactant

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