

Intensification of heterogeneous processes in gas-liquid systems by means of interphase mass transfer activators

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Keywords: *interphase mass transfer activators, volumetric mass transfer coefficient, gas-transport liquids, oxidation of sulphite-ions by oxygen.*

Abstract

Study results oxygen mass transfer from a gas phase to water in the presence of liquid interphase mass transfer activators (gas-transport liquids) are presented. It was shown that influence of water immiscible organic liquids on oxygen mass transfer is connected with realization of the "shuttle" mechanism of mass transfer in the liquid medium and defined by such their properties as solubility and diffusivity of O₂, viscosity and interphase tension with water. It was shown that gas-transport liquids considerably intensify of interphase oxygen transport (at 2.0-5.6 time) at gas-liquid system. On an example of modeling heterogeneous process of oxidation of sulfite-ions by oxygen it was shown that organic liquids with gas-transport function was able to increase of the chemical processes rate limited by O₂ transport from a gas phase to water. It was shown that sulfite-ions oxidation rate in water-organic media increases at 1.2-1.9 time and correlates with volumetric mass transfer coefficient for corresponding water-organic media.