

KINETICS OF OXYGEN ABSORPTION IN AQUEOUS SODIUM DITHIONITE SOLUTIONS

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Summary

The absorption and reaction of oxygen in aqueous alkaline solutions of sodium dithionite has been experimentally investigated in a novel gas-liquid contactor. The novel gas-lift bubble column contactor was used to study the kinetics over wide ranges of reactant concentrations, temperature, and pH. The oxygen-sodium dithionite reaction was found to be first-order with respect to dithionite in the range of dithionite concentration < 0.1 M, and second-order in the range of dithionite concentration > 0.1 M. The reaction with respect to oxygen was found to be zero-order for all dithionite concentrations. These results and experimental investigations of the effect of solution alkalinity and temperature on the reaction rate are consistent with previous findings obtained in different gas-liquid contactors. The results thus confirm the feasibility of using the gas-lift bubble column for the kinetics of gas-liquid reactions.

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