Reactivity of nano-size zinc powder in the aqueous solution of $[Fe^{III}(edta)(H_2O]^-$.

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Streszczenie

Nitrogen mono-oxide and sulfur dioxide can be removed by simultaneous absorption into aqueous mixed solutions of sulfite and [FeII(edta)]H2O)]2-, ferrous ion coordinated to an anion of ethylene-diaminetetraacetic acid (EDTA or edta). In the industrial system with coexisting oxygen in the gas phase, [FeII(edta)](H2O)]2- complex is oxidized to [FeIII(edta)](H2O)]- by molecular oxygen. Because the ferric complex has no capability for reaction with NO, the suppression of this undesired oxidation process is a very important technological problem to be overcome. In our preceding work, we discussed the reduction kinetics of ferric ion by metal powder on the basis of the kinetic data regarding the ferric ion reduction in aqueous solutions of [FeIII(edta)](H2O)]- containing aluminum, tin or zinc powders. Zinc powder of normal size was recognized as an effective reducing agent. In the present work, augmentation of reducing capability of zinc powder was examined more. The rate of reduction of nano-size zinc powder was found to be about 11 times higher than that of normal-size zinc one.

Słowa kluczowe

EDTA, Nitrogen oxide, chelate method, iron complexes, zinc nanopowder

Adres publiczny

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