Document details

Back to results | 1 of 1

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Effect of intermittent addition on turbidity removal by polymer flocculant : Computer simulation of simplified flocculation model (Article)

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Abstract

View references (26)

Since there are many factors which influence the process of flocculation by polymer flocculant, the scientific understanding of the flocculation mechanism is still under discussion. We have proposed a simple bridging model which expresses flocculation under various additive manners of the flocculant and enables the understanding of qualitative trends of the flocculation system. In the present study, from the simulated results based on the model and experimental data, we obtained the following knowledge: 1) the intermittent addition of polymer flocculant gives better and reproducible turbidity removal; 2) the optimum dosage, which results in maximum turbidity removal in a given manner of addition, increases as the number of doses under the intermittent addition increases; 3) at a given amount of primary particles, the reproducibility at the optimum dosage of the 1-time dose is the worst among all results, irrespective of the additive manner. It could, therefore, be concluded that all these findings are originating from the difference of probability of bridging formation among particles under various additive manners.

Author keywords

Computer simulation | Flocculation | Modelling | Polyelectrolyte | Water treatment

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Engineering controlled terms: Computer simulation | Models | Polyelectrolytes | Polymers | Turbidity | Water treatment

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