

Effects of polyelectrolytes on reduction of model compounds via coagulation

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摘要.

Abstract

The objective of this research work was to evaluate the performance of enhanced coagulation by alum and polymer. Synthetic source waters containing high molecular weight humic acids, medium molecular weight tannic acids and low molecular weight p-hydroxybenzoic acid were formulated by adjusting the concentration of turbidity and pH; and jar tests were used to study the effect of various types and dosages of polymer on reducing the above model compounds. At a specific pH condition, the applied alum dosage would efficiently decrease the turbidity to 2 NTU follows the order: humic > tannic > p-hydroxybenzoic acid. Adjustment of pH influenced the performance of alum obviously but not of p-DADMAC. High p-DADMAC dosage overwhelming the effects of alum is less affected by pH adjustment. The results of this investigation reveal that enhanced coagulation with p-DADMAC was founded to be very effective for removing high-molecular-weight THM precursors, i.e., humic acid and tannic acid, and markedly reduced the alum dosages required for turbidity removal. The other two polymers, i.e., cationic PAM and non-ionic PAM, which had higher molecular weight but lower charge density than p-DADMAC, were not capable of removing organic precursors. It was thus concluded that enhanced coagulation with polymer, p-DADMAC, could be considered as a promising technique for removal of NOMs with hydrophobic and higher-molar-mass (>1 K) in water treatment plants