

Characteristics of Copper Ion Treatment in Wastewater by Employing Sulfide as a Precipitant

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We have investigated the precipitation features of copper ion using sulfide as a precipitant by varying the mole ratio of sulfide to copper ion, pH, temperature and the kind and concentration of complexing agent. When the ratio of the concentration of copper ion to sulfide was increased to more than 1.0, extent of precipitation was very high and as the ratio was increased nucleation time was decreased and crystal growth rate was raised. The higher the pH, the greater the amount of precipitated copper ion due to lowered solubility of cupric sulfide. When temperature changed from 25°C to 55°C, the precipitation of copper ion was increased a little. On the basis of estimated thermodynamic parameters such as Gibbs free energy and enthalpy, precipitation reaction was spontaneous and endothermic. The precipitation of copper ion was lowered in the presence of complexing agent and it was affected by the stability of copper complex.