

Finding the Reaction Constant between Humic Acid and Aluminum Ion by Fluorescence Quenching Effect

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Abstract : Humic acid was used as the removal target for evaluating the coagulation efficiency in this study. When the coagulant ions mix with a humic acid solution, a Fluorescence quenching effect may be observed conditionally. This effect can be described by Stern-Volmer linear equation which can be used for quantifying the quenching value (K_q) of the Fluorescence quenching effect. In addition, a Complex-Formation Titration (CFT) theory was conducted and the result was used to explain the electron-neutralization capability of the coagulant ($AlCl_3$) at different pH. The results indicated that when pH of the $AlCl_3$ solution was between 6 and 8, fluorescence quenching effect obviously occurred. The maximum K_q value was found to be 102,524 at pH 6. It means that the higher the K_q value is, the better complex reaction between a humic acid and aluminum salts will be. Through the K_q value study, the optimum pH can be quantified when the humic acid solution is coagulated with aluminum ions.

Keywords : humic acid, fluorescence quenching effect, complex reaction, titration

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