

## 수중 Carbon Nanotube의 분산 특성 및 Humic Acid 흡착 반응

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As a feasibility study for the application of carbon nanotubes to the treatment of environmental pollutants, the adsorptive characteristics of humic acid on carbon nanotubes have been investigated. The dispersion feature of carbon nanotube was investigated by measuring the variation of their electrokinetic potential with pH, and the effects of some dispersants were also examined. In the experimental conditions, humic acid was observed to mostly adsorb on nanotubes within a few minutes and reach the equilibrium state in about one hour. The adsorptive features of humic acid on nanotubes were found to follow the Freundlich model better than Langmuir Model. Humic acid adsorbed on carbon nanotubes endothermically and the change of enthalpy in adsorption reaction was estimated to be ca. 18.37 kJ/mol at standard state. The entropic change in adsorption reaction for humic acid was ca. 0.0503 kJ/mol at standard state and the activation energy for adsorption was also estimated based on the change of rate constants with temperature. FT-IR investigations showed that the functional groups such as alcohol, ester, and aromatics which existing in the chemical structure of humic acid might work as the bridge in its adsorption on nanotubes.