AN ABSTRACT OF A THESIS

ESTIMATION OF SURFACE DIFFUSION OF HUMIC AND FULVIC ACIDS CONTAINED IN HUMIC SUBSTANCES ON ACTIVATED CARBON

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The adsorption behavior of two commercially available humic substances; Aldrich humic acid (Aldrich Chemical Company, Inc, Milwaukee, WI) and Suwannee River fulvic acid (International Humic Substances Society, Department of Soil Water and Climate, University of Minnesota, St. Paul, MN), on F-400 activated carbon (Calgon Corp.) was studied. Differential Column Batch Reactor tests were conducted at two different ionic strengths. Flow Field-Flow Fractionation (FFF) was used to separate the different fractions in humic samples. Surface diffusion coefficients were determined from column tests. Emergence time of the most dominant form of macromolecules was determined from FFF. Surface diffusion coefficients and emergence times were affected by the organic composition (i.e. Aldrich humic acid or Suwannee River fulvic acid) and also by ionic strength. Surface diffusion coefficients were higher by an order of magnitude at high ionic strength than at low ionic strength. Shifting of peaks was observed indicating change in molecular composition during adsorption. Change in polydispersity was observed due to adsorption.