



Competition effects and binding of trace elements (REE, U, Th and Al) to Suwannee River Fulvic Acid and organic rich soil water.

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Binding to Suwannee River Fulvic Acid (SRFA) of selected trace elements was studied at various metal to dissolved organic matter (DOM) ratios in the pH range 3.5 to 7.0 using DEAE anion exchanger. The quantification of organically complexed trace element after the removal of SRFA bound onto an organic anion exchanger resin was modelled using Wham VI. A series of 108 experiments using a mixture of Suwannee River Fulvic Acid (SRFA) and rare earth elements (REE), thorium and uranium in absence and presence of aluminium are in general accordance with the recent calibration done by Tang and Johannesson (2003) i.e. absence of a large preference for heavy REE binding. Competition for organic matter binding sites in presence of aluminium is important for REE speciation and fractionation under natural soil pH conditions of $4.0 < \text{pH} < 6.0$. The observed slight preferential binding of middle REE to SRFA in presence of aluminium in the synthetic solutions was also observed in soil waters naturally rich in aluminium from a riparian soil profile in Northern Sweden using the same fractionation procedure.