Sorption of Hydrophobic Organic Compounds by Clay-humic Complexes. (S02-wang211923-Oral)

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Abstract:

It has been accepted that soil organic matter often associated with clay minerals as clay-organic complexes in nature.Therefore, it may be inappropriate to extrapolate the sorption behaviors for HOCs from the studies on extracted HA to soil system. In present study, two clay minerals (kaolinite and montmorillonite) coated with a humic acid (HA) at two loading levels were employed to determine the sorption of phenanthrene. Results showed that clay-humic complexes had higher sorption capacity (KOC) than the HA solid particles. All isotherms were nonlinear, indicating both partitioning and adsorption mechanisms involved in the reaction. The N values in the modified Freundlich equation for the complexes under investigation were substantially greater than that for the HA, which suggests that the structure of HA on mineral surface is less condensed than the HA solid particles. Moreover, within each type of clay minerals, complex with high loading level of HA had higher KOC and more linear isotherm than that with low loading. Structure configuration of HA on mineral surface will be discussed.

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