



Colloid facilitated transport of humic substances in soil: laboratory experiment and modeling calculation.

Marina Dinu and Tatyana Moiseenko

Institute of Geochemistry and Analytical chemistry by Vernadsky, Moscow, Russian Federation (marinadinu999@gmail.com)

An understanding of ability to predict the fate and transport of colloids in soil systems are of great importance in many environmental and industrial applications. Especially, in the case study sizes and zeta potentials of lignin and humus components (as a parameter reflecting the mobility and tread of organic substances). The objects of investigation were water extracts of gleepodzolic soil of European territory of Russia and Western Siberia, as well as humus substances extracted from this soil. In this study, evaluation of size, molecular weight distribution and zeta potential were used to predict the mobility of the organic component fractions of the soil. Fractionation was performed using multistage filtration plant (100 Da) and measuring physic-chemical parameters measured with the Malvern Zetasizer Nano ZSP.

Significant differences in the distribution of organic matter on the molecular weight, charge (sign) of the zeta potential and the size of the sample of European Russia in comparison with samples of Western Siberia have been found. Also, laboratory studies have demonstrated of any differences in physicochemical parameters as infrared spectra, ultraviolet spectra, complexing ability of samples of the same soil type but different areas of Russia.

The results can be used in the prediction of the migration ability of fractions humus substances and their stability at change physic-chemical conditions (the coefficient of mobility of the organic components by calculated in MathCad).

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