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Organizers of the symposium are the oldest Russian scientific societies and the largest educational-scientific centers of St. Petersburg.

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AMINO ACID COMPOSITION OF CLAY-ORGANIC-MATTER COMPLEXES RESISTANT TO OXIDATION BY PEROXIDE

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With the use of modern methods it was shown, that fixation of organic substance in forms resistant to H₂O₂ treatment is related to change of actual structure of clay aggregates. Formation of organic–smectite complexes with a disordered c*-axis structure is a universal and usual way for the kinetic stabilization of the system during pedogenesis under forest-steppe conditions.

The main source of smectites are beds of the transformed volcanic ashes, however deposits of similar type practically are not present within the Central Russia region. As alternative sources, bentonites of fresh-water and sea basins are used. These bentonites were accumulated in the continental basins as the products of secondary micas biogenic degradation on the paleo catchments areas. Here zones with the most intensive interactions between clay minerals and organic matter are soils. Since Devonian the formation, degradation, transport and redeposition of a soil material is constant stages of sedimentary process. Most of the sediment carried in rivers is likely to have been part of a soil profile at some stage. Continental depositional environments are also sites of soil formation. Therefore actual structure of clay minerals in specific deposit may be has a soil history. The main aim of the study was to experimentally substantiate this phenomenon.

We investigated the amino acid composition of organic matter (OM) fixed in the labile spaces between the layers in the forms resistant to H₂O₂ treatment. In this work, bentonite-like clay samples of Upper Pliocene Akchagylic Stage were used. The <2.5- μ m fraction was separated by the elutriation of a stable suspension after the treatment of the samples with 1 mol/l CH₃COOH and their washing with distilled water. Then, they were multiply treated with 30% H₂O₂ at room temperature for 30–40 days. *Acid hydrolysis* was performed using 1 mol/l HCl at 110 °C for 24 h. Amino acids were determined by HPLC (Flexar, Perkin Elmer).

In the acid hydrolysis products of the stable OM typical albuminous amino acids are presented. As well as for clay fraction of soils, we could see that the grouping of amino acids in acidic, basic and neutral groups show that in the composition of stable OM there are no acidic amino acids practically. The main part of their is presented by neutral amino acids. In the neutral amino acids composition amino acids not bearing partial charges and not solvated water prevail.

Distinctions between amino acids group composition of stable OM <2.5- μm soil fraction soils and Pliocene clays in some cases can practically be absent. In other cases Pliocene clays contain a little smaller relative quantity of neutral hydrophobic amino acids. However the general mechanism remain.

At the heart of mechanism which define amino acid composition features of OM bounding fine-dispersed Pliocene clays and forest-steppe soils mineral phases in resistant to H_2O_2 treatment forms the selective binding of neutral, hydrophobic and basic amino acids by fine-dispersed phases which is caused by the physical and chemical reasons lays.

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BIOLOGICAL CONTAMINANTS IN SEDIMENTARY ROCKS

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Microbial paleontology is a discipline focused on the study of fossil prokaryotic organisms. This field, which has emerged during the 1980s, is of importance for understanding the genesis of sedimentary rocks, including mineral products such as oil. The principal technique of this research is scanning electron microscopy.

Our long-term study of Earth rocks and meteorites in a scanning electron microscope has yielded a very extensive and unique body of data on biogenic structures occurring in those objects. These data helped clarify conditions and mechanisms of genesis of various rocks and ores, while discovery of biomorphic structures in meteorites allowed to confirm