

Binding of organic matter into an oxidation-resistant form during the interaction of clay minerals with plant residues

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Abstract

The binding of organic matter by clay minerals was studied in experiments simulating the transformation of clay rock with a high content of dioctahedral 2:1 phases in the soil during its interaction with decomposing plant residues. Using modern methods (X-ray phase analysis, thermal analysis and Fouriertransform IR spectroscopy, and adsorption-luminescence analysis), it was shown that the binding of organic matter into a form resistant to treatment with 30% H₂O₂ entailed changes in the actual structure of the clay aggregates. Peculiar organic-silicate compositions with their structure disordered along the c* axis were formed, in which organic matter was localized both on the surface of the particles and in the interlayer spaces. © 2010 Pleiades Publishing, Ltd.

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