



The clay component of the Jurassic oil reservoirs of the Middle Ob group of fields (Western Siberia)

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The Middle Ob group of fields, confined to the Surgut and Nizhnevartovsk arched uplifts, contains a considerable portion of hydrocarbon reserves of the West Siberian petroleum province. These are multi-level fields with a substantial potential in the Jurassic (Calloviaian and Oxfordian). The fields are characterised by the essentially clayey composition of the cement matrix that fully fills the intergranular space. However, structural electron microscope studies indicate that this matrix is a highly porous mass with a pore size of 0.0005-0.005 mm and can therefore be considered a molecular filter that concentrates molecules and chains of simple hydrocarbons. The filterability of this mass depends essentially on the clay composition of mineral complexes and assemblages that fill up the pore space. X-ray diffraction studies show that the composition of clay mineral assemblages varies in some fields of the Middle Ob group and that their key minerals are represented by kaolinite, chlorite, hydromica and mixed-layer formations in various ratios. These assemblages of clay minerals govern filtration properties of reservoirs in the process of their development.

As different clay minerals change their volumes differently in response to variations in the character of the fluid in the course of the development of oil fields, the intensity of filtration processes can be controlled and oil recovery can thus be optimised.