

152. Title: Study of reaction of a viscous oil structure on actions by a physical field

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Abstract: The regularities of reaction of the viscous bitumen (maltha) structure when affected by modulated and impulse electromagnetic and acoustic fields via recording of infrared emission spectra are studied. It has been found that characteristic reactions of viscous oil clusters and links between them are located in the THz range for electromagnetic waves and in the MHz range for acoustic actions, which are revealed in absorption and emission spectra. The reaction of the rest (non-THz) part of the infrared spectrum is described on the basis of the physical-mathematical model of the process of a photon-phonon soliton, which causes decrease of emission IR spectrum intensity after microwave action due to fixation of the electromagnetic field by a soliton. The obtained results, which establish selectability of the maltha specimen reaction on spectral composition of the affected radiation, are important for increasing the efficiency of ultrasonic and electromagnetic microwave actions on the productive stratum during application of secondary methods for oil deposit exploration.