

# The Low-Field Pulsed Mode Dynamic Nuclear Polarization in the Pentavalent Chromium Complex and Crude Oils

Alexandrov A., Archipov R., Ivanov A., Gnezdilov O., Gafurov M., Skirda V.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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## Abstract

© 2014 Springer-Verlag Wien Measurements of the enhancement of the proton resonance signal right after applying the radiofrequency pulse with the variable duration in the magnetic field of about 100 Gauss on the homebuilt prototype of the dynamic nuclear polarization (DNP) spectrometer at near room temperature are presented. A dependence of the DNP enhancement of the solvent protons of the solution of the pentavalent chromium complex in ethylene glycol on the pumping pulse duration and incident pumping power is given. No DNP effect on the native protons of the crude oils and natural bitumen from the Russian oilfields is observed. A miserable DNP enhancement is registered on the protons of toluene by dissolving the crude oil and bitumen samples. The perspectives of using the results and technical solutions for geological exploration, studies of the asphaltene structures and their dynamics are discussed.

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