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Magnetic field pulse gradient NMR determination of geometric pore parameters and correlation functions for forces of interaction between molecules of a liquid and pore surface

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Abstract

Pore volume/surface ratio is determined by means of NMR with magnetic field pulse gradient g (MFPG) for standard porous media (glass spheres with the diameter of 58 to 63 μm and two fractions of sand with particle diameter under 90 and 200 to 250 μm) upon addition of polar (water and dimethylsulfoxide) and nonpolar (decane) liquids. Experimental and calculated values are compared, and the deviations explained. The type and values of correlation functions for interaction between the molecules of the studied liquids and the pore surface within the time interval of 3 to 100 ms were determined. The method of MFPG NMR enables us to study only the tails of the correlators. The diffusion decays are reduced at high values of $g > 17$ T/m under the Porod-Debye g^{-4} law. © 1996 MANK Hayka/Interperiodica Publishing.
