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Internal magnetic field gradients as information source about porous media characteristics

Archipov R., Romanova E., Sagidullin A., Skirda V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The geometry of particles is analyzed by the example of a model porous system (filling of glass spheres and glass cylinders) studied by nuclear magnetic resonance. The experimental approach is based on the registration of the □Gint□(ζ) dependences, where □G int□ is the effective (average) internal magnetic field gradient and ζ = □r2□1/2/□R□ is the ratio of the root-mean-square displacement of molecules to the average particle size □R□. It is shown that the dependence □Gint□ (ζ) can be approximated by the power law □Gint□(ζ) ∝ ζα, where the power index α does not depend on the particle size but is sensitive to its geometry. © Springer-Verlag 2005.