

## Internal magnetic field gradients as information source about porous media characteristics

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### 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  $\langle G_{int} \rangle(\zeta)$  dependences, where  $\langle G_{int} \rangle$  is the effective (average) internal magnetic field gradient and  $\zeta = \langle r^2 \rangle^{1/2} / \langle R \rangle$  is the ratio of the root-mean-square displacement of molecules to the average particle size  $\langle R \rangle$ . It is shown that the dependence  $\langle G_{int} \rangle(\zeta)$  can be approximated by the power law  $\langle G_{int} \rangle(\zeta) \propto \zeta^\alpha$ , where the power index  $\alpha$  does not depend on the particle size but is sensitive to its geometry. © Springer-Verlag 2005.

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