

From Current Researches to Future Applications

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Any, even at the first glance quite abstract, research ultimately provokes interests because of possible applications in the activities of humanity. The main current tendency is to turn scientific knowledge into technological products. Applications of the magnetic resonance (MR) to study condensed media were realized just after the registration of the electron spin resonance (EPR, 1944), nuclear magnetic resonance (NMR, 1946), and nuclear quadrupole resonance (NQR, 1950) in these objects. Magnetic resonance has also been successfully used for quantitative and qualitative analysis (evaluation of the quality of food, estimation of oil and gas productivity of rocks, and much more).

The goal of the special issue is to reflect a few interesting aspects of modern trends in NMR, which may bring new methodology developments and important practical applications. The first three articles are devoted to the further progress of the NMR technique.

Solid-state NMR spectroscopy has found wide applications after the development of the method of magic-angle spinning (MAS) that allowed obtaining high-resolution spectra in solid and viscous samples. In the article, “Magic-angle spinning NMR and molecular mobility in heterogeneous systems” D. Michel treated the problem of applicability of the method to heterogeneous systems with nanometer dimensions. The special situation is considered when local magnetic fields at interphases are not completely averaged out even in the case of fast thermal motion of embedded molecules. At first, the local inhomogeneous magnetic fields, which arise

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