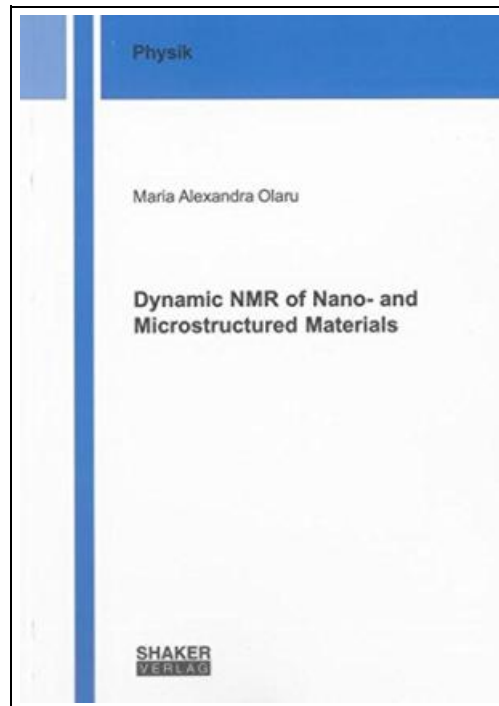


Dynamic NMR of Nano- and Microstructured Materials



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Reviews

It is one of the most popular publications. It is actually written in easy words instead of confusing. You will like how the author created this book.

(Art Gislason)

DYNAMIC NMR OF NANO- AND MICROSTRUCTURED MATERIALS



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Shaker Verlag Okt 2013, 2013. Buch. Book Condition: Neu. 208x146x15 mm. Neuware - The fast technological advancement which took place over the past few decades sustained the development of various categories of advanced polymeric, composite and porous materials, with complex physical and chemical properties determined by their structure and dynamics at nano- and micrometer levels. This brought forth the necessity of combining different methods of analysis, which cover multiple length scales, in order to allow for a comprehensive characterization and a valid prediction of a material's macroscopic behaviour. The purpose of this work was to characterize the structure and dynamics of various types of nano- and micro structured systems, such as silane crosslinked poly(ethylene), cement-in-polymer dispersion with different compositions or model and natural porous media, using a combination of nuclear magnetic resonance (NMR) methods that provide relevant information on different length scales of interest. Data processing and interpretation was facilitated by self-made computational procedures and mathematical models. The different subjects approached in this work are briefly presented in Chapter 1 (Introduction) and discussed in detail further on in an order according to the length scale of the motion probed. In Chapter 2 proton NMR wideline spectroscopy is used to obtain information on the phase composition, molecular mobility and domain sizes of crosslinked poly(ethylene) (PE), a polymer commonly used in a broad range of applications, from day-to-day life basic commodities like water and sewage pipes, to insulating coatings for medium and high voltage wires. Due to its industrial importance, this type of PE has been previously characterized using a variety of methods. The novelty brought by this study is the quantitative analysis of the spin diffusion (SD) coefficients and domain sizes of different phases by a dedicated software developed for solving the spin diffusion equations for a lamellar morphology, using as...



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