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Dynamic NMR of Nano- and Microstructured Materials

By Maria Alexandra Olaru

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...



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