



Fractal Analysis of Gas Transport in Polymers: The Theory and Practical Applications

By Georgii Vladimirovich Kozlov, Gennady Zaikov, Abdulakh Kazbulatovich Mikitaev

Nova Science Publishers Inc. Hardback. Book Condition: new. BRAND NEW, Fractal Analysis of Gas Transport in Polymers: The Theory and Practical Applications, Georgii Vladimirovich Kozlov, Gennady Zaikov, Abdulakh Kazbulatovich Mikitaev, In the present monograph, theoretical structural analysis of the main processes of gas transport in polymeric materials (diffusion, solubility, permeability and selectivity) was offered. The mentioned analysis uses fractal (multifractal) analysis and cluster model of polymers amorphous state structure, based on the local order notions, as a tool for polymeric materials structure description. Besides, for the mentioned gas transport processes description, such modern physical treatments as a multifractal model of fluctuation free volume and the conception of anomalous (strange) diffusion were used. Such approach allows the quantitative description of gas transport processes and their prediction as a function of testing temperature, degree of crystallinity, cross-linking and grafting, and so on. Special attention is given to gas transport processes in multicomponent polymeric systems. A number of practical aspects of theoretical structural analysis application was considered in cases of thermal degradation, interfacial layers formation in polymer composites, stability to cracking in active environments and chemical reactions.



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