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Application of the LBET method to an analysis of single and multiple carbon dioxide and methane adsorption isotherms

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The paper presents the results of the research on the application of the LBET method with the fast multivariant identification procedure as a tool for analysing the microporous structure of carbonaceous materials on the basis of high-temperature gaseous carbon dioxide and methane adsorption isotherms. The analysis involved single, double and triple adsorption isotherms, which is a unique approach to microporous structure analysis. On the basis of the results of calculations, it can be observed that LBET method describe well the analysed adsorption systems. Also, the concurrent analysis of two and three adsorption isotherms enhanced the accuracy of the determined parameters, namely the volume of the first adsorption layer and cluster height, testifying to the effectiveness and justifiability of analysing multiple adsorption isotherms.

Biography

Miroslaw Kwiatkowski is working an assistant professor at the AGH University of Science and Technology, at the Faculty of Energy and Fuels. Main field of his interests is chemical technology, chemistry and physical chemistry, nanotechnology, material science and engineering, mathematical modelling of the adsorption process, description of the porous structure, an analysis of the influence of the production method on the formation of the porous structure of carbonaceous adsorbents, numerical analysis, computer science, energy efficiency, renewable energies, electrical energy markets and problems connected with waste management as well as economics and management. His published work includes more than 40 papers in international journals and 72 conference proceedings. He is a member of the editorial board of internationals journals as well as a member of the Organizing Committee many international conferences, and a regular reviewer in a reputable international scientific journals. Apart from scientific work Miros³aw Kwiatkowski also does some teaching.

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