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Numerical analysis of the porous structure of mineral and carbonaceous adsorbents using the fast multivariant procedure of adsorption system identification with the clustering-based adsorption models

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The optimal selection of the methods and conditions to produce adsorbents requires reliable and accurate description of the parameters of the microporous structure and adsorption processes. Many theories of the adsorption processes were developed in the past century, which assumes different mechanisms of physical adsorption and various simplifications. This work presents the results of the application of new mathematical adsorption models with the unique numerical fast multivariate identification procedure as the universal tool for analyzing the microporous structure of the mineral and carbonaceous adsorbents. The proposed method yields a broader range of reliable information on the microporous structure of the analyzed material, which is particularly useful for the assessment of the impact of production process conditions and modifications on the development of both geometrical and energetic properties of the surface of mineral and carbonaceous microporous materials.

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