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RESEARCH PAPERS

确定多孔介质孔结构参数的渗流网络分析法

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摘要 According to the simulation of nitrogen sorption process in porous media with three-dimensional network model, and the analysis for such a process with percolation theory, a new method is proposed to determine a pore structure parameter—mean coordination number of
pore network, which represents the connectivity among a great number of pores. Here the “chamber-throat” model and the Weibull distribution are used to describe the pore geometry and the pore size distribution respectively. This method is based on the scaling law of percolation theory after both effects of sorption thermodynamics and pore size on the sorption hysteresis loops are considered. The results show that it is an effective procedure to calculate the mean coordination number for micro- and meso-porous media.

关键词 coordination number porous media percolation theory network model sorption

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Determination of a Pore Structure Parameter of Porous Media by Analysis of Percolation Network Model

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Abstract According to the simulation of nitrogen sorption process in porous media with three-dimensional network model, and the analysis for such a process with percolation theory, a new method is proposed to determine a pore structure parameter—mean coordination number of pore network, which represents the connectivity among a great number of pores. Here the “chamber-throat” model and the Weibull distribution are used to describe the pore geometry and the pore size distribution respectively. This method is based on the scaling law of percolation theory after both effects of sorption thermodynamics and pore size on the sorption hysteresis loops are considered. The results show that it is an effective procedure to calculate the mean coordination number for micro- and meso-porous media.

Key words coordination number; porous media; percolation theory; network model; sorption

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