

低渗气藏中气体渗流Klinkenberg效应研究进展

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摘要 低渗气藏的开发在我国油气田开发中起着越来越重要的作用, 因此, 研究低渗气藏中气体渗流的规律有着理论和应用价值. 本文回顾了低渗气藏中气体渗流Klinkenberg效应研究的发展历程, 详细从Klinkenberg效应的特征、机理、数学描述以及滑脱因子的计算几个方面进行了总结, 系统地进行分析, 并指出了Klinkenberg渗透率测量中存在的一些实际问题, 在总结前人研究成果的基础上, 针对这些问题提出了用格子Boltzmann方法研究低渗气藏中气体渗流Klinkenberg效应, 不仅可以克服测量过程中存在的问题, 并且可以对滑脱因子的影响因素进行定量地分析, 为今后更深入的研究和广泛应用奠定了基础.

关键词 [低渗气藏](#), [Klinkenberg效应](#), [滑脱因子](#), [格子Boltzmann](#)

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Research progress of the Klinkenberg Effect in Tight Gas Reservoir

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Abstract Understanding the percolation rules of the gas flow in tight gas reservoir is very important to the development of a low permeability gas reservoir. This paper viewed the progress and development of Klinkenberg effect in tight gas reservoir. We concluded characteristic, mechanism, mathematics description and calculation of slip factor of Klinkenberg effect detailedly in this paper. By systematically analyzing, we indicated several practical problems on Klinkenberg permeability measurement. Based on predecessors' research results, we pointed out a new research orientation. It's to simulate Klinkenberg effect in tight gas reservoir by lattice Boltzmann. This method can not only solve the problems in measurement, but also can analyze effect factors quantificationally. This provides the base for further research and extensive application in low permeable gas reservoir.

Key words [low permeability gas reservoir](#); [Klinkenberg effect](#); [slip factor](#); [lattice Boltzmann](#)

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