<<油气渗流力学>>

图书基本信息

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作者：李璗，陈军斌 著

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内容概要

《石油高等院校特色教材：油气渗流力学（英文版）》为《油气渗流力学》的英文版，由李璗、陈军斌编写。
全书从驱动力和驱动方式出发，在对达西定律分析的基础上，遵循由浅入深的认识规律，详细介绍了单相不可压缩液体的稳定渗流理论、刚性水压驱动下的油井干扰理论、微可压缩流体的不稳定渗流理论、天然气的渗流规律、水驱油理论、油气两相渗流理论、流体在双重介质中的渗流理论、非牛顿液体渗流理论等。
《石油高等院校特色教材：油气渗流力学（英文版）》可作为石油工程、石油地质、地下水工程、油田化学等专业本科生教材，也可作为相关专业研究生的参考书，还可供从事油气田勘探与开发的科研技术人员参考。

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章节摘录

 插图： If the flow which exists in the bottom water coning is called disturbed movement,the flowwith same production and under same condition withoutbottom water coning is called undisturbed movement,andthe two flow laws will be compared later. Assume the top and bottom of formation areimpermeable,the potential distribution on side face of runder two situations is the same.Because the undisturbedrange is wider than the disturbed range,under the samecondition,the potential of disturbed flow at arbitrary pointin formation is smaller than that of undisturbed flow.Thepotential along the cylinder surface of rw of undisturbedflow is expressed with A'B'C'D',which lies in the rightside of the distributing curve ABCD of the potential ofdisturbed flow as shown in Figure 6-9.Because theproduction of the two is equal,its area should be equal to the area ABCDEA. It can be seen from Figure 6 -9 that the intersection point C'of straight line DC and A'B'C'D'lies below the point C,and the coordinate of point C is coincident with the coning apex.At thismoment,because the flow rate of disturbed flow and undisturbed flow is equal,the area A'B'C'D'EA'should be equal to the area ABCDEA ;that is:the area of belt ABCC'B'A'A should be equal to thearea of triangle C'D'D. If the potential remains unchanged and the production of well increases,then thepotential on the borehole wall must decrease,according to the equilibrium condition of waterconing,the following expression can be obtained: The expression above is the slope of line CD,so before the bottom water breaks through theoil well,the potential of oil-bearing part below well bottom can be expressed with thecurve BC as shown in Figure 6-10(b).On the coning apex,the included angle between tangentof curve BC and vertical line is:/3 is positive.So under this condition,the shape of oil-water interface presents tip end at thelocation of well axis as shown in Figure 6-10(a).Water will break through the oil well quickly.When the flow rate is equal and also the potential,the potential of undisturbed flow alongthe well axis is bigger than that of disturbed flow,which is expressed with the curve B'B"C'D' inFigure 6-10(b) ,which lies in the right side of the curve BC.It can be seen that because the areaof triangle C'D'D should be equal to the area of banded region B'B"C'CB,under any condition,the area of triangle C'D'D should be bigger than that of arch.

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