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Influence of rock micro-pore structure parameters on Remaining oil Distribution

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Most of the water-flooding fields in the eastern part of our country have now entered the stage of high-water-cut mining, their actual recovery rates are generally low. Because of this, the research on the remaining oil distribution in the reservoir is urgent. In order to reflect the influence of the pore structure parameters of the core on remaining oil from the microscopic scale, this article starts with sandstone core. The displacement experiment of the selected rock samples and the micro-grayscale images of the cores were obtained after CT scanning. Then images are processed by non-local uniform filtering and watershed segmentation algorithm. Finally, some of the pore structure units were extracted from the remaining oil distribution obtained and a pore network model was constructed. Experimental results show: Rock pore radius is proportional to the degree of enrichment of remaining oil and inversely proportional to the water-flooding effect. The coordination number and shape factor of rock are inversely proportional to the degree of enrichment of remaining oil and proportional to the water-flooding effect. What's more, the pore-throat ratio value is more intermediate, the lower the enrichment of remaining oil, the better the water-flooding effect. This study is of guiding significance for the design of the remaining oil in the water-flooding oilfield.

References

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