عنوان مقاله:

CO2 Diffusion in the Matrix Block of Fractured Reservoirs; an Experimental Study

محل انتشار:

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خلاصه مقاله:

Gas injection is widely acknowledged as a very effective oil recovery scenario from the naturally fractured reservoirs. Among different affecting mechanisms that cause more oil recovery, diffusion of gasses from the gas filled fractures into the oil saturated matrixes is believed to play a very crucial role in enhanced oil recovery, which is usually neglected and therefore its different aspects are not clearly known yet.This paper presents a series of careful reservoir condition experiments of CO2 diffusion into n-heptane saturated core plugs with different properties. The experiments are performed at constant temperature of 41oC and initial pressure of 500 to 670 psi. The pressure drop inside the high pressure coreholder, which is considered as an indication of diffusion of the gasses into the matrixes was carefully monitored by means of an accurate pressure sensor during 240 minutes. Based on the carefully imposed conditions of the experiments, the merely mechanism which cause pressure drop is diffusion into the matrixes, therefore the effects of important rock properties on CO2 diffusion are studied. The experimental observations showed that the ratio of fracture-matrix surface area to the matrix bulk volume governs early diffusion .and pressure drop, while the total matrix oil volume directly affects the late diffusion and pressure drop

کلمات کلیدی:

CO2 Diffusion, Fractured Reservoir, Enhanced Oil Recovery, Pressure Decay