HYSTERESIS OF THE RESISTIVITY INDEX IN UNCONSOLIDATED POROUS MEDIUM

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Abstract Four-electrode resistivity measurements were conducted on water-wet, oil-wet, and intermediate wet quartz sandpacks for 3–7 saturation directions with a steady state flooding procedure. The data from 3 runs indicated that there was a resistivity index hysteresis loop in the S_w-I_R plot during saturation cycles on each sandpack. The hysteresis behavior substantially depended on the sand surface wettability and saturation history. The more oil-wet, the more hysteresis in resistivity index. In the water-wet sandpack, a moderate hysteresis of the resistivity index was found. In the middle wet and oil-wet pack, a large hysteresis was demonstrated between saturation and desaturation. The recommendation from this study is that the saturation history influence should be taken into account in laboratory resistivity measurements.