

Abstract Submitted
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Fluid Manipulation Utilizing Electrowetting Techniques¹ LAURA KAISER, Xavier University, Department of Physics, LAURA PYRAK-NOLTE, Purdue University, Department of Physics — The fraction of the pore space in rock occupied by a given fluid is called saturation. The relationship between saturation and capillary pressure for porous media is hysteretic between imbibition and drainage cycles. If the wetting phase saturation increases, the capillary pressure follows an imbibition curve, and, if the wetting phase saturation decreases, the capillary pressure follows the drainage curve. Due to this hysteresis, researchers have suggested that there is a third variable that should be considered called interfacial area per volume that removes the ambiguity in the capillary pressure - saturation relationship. Before the relationship can be explored in more detail, we first must be able to manipulate the saturation internally rather than externally. We used electrowetting techniques to manipulate the contact angle of a salt water drop. This technique affects the interfacial energy and, therefore, enables manipulation of the contact angles and saturation. Once mastered, the technique could be used to explore the effect of interfacial area per volume on micromodel systems.

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