

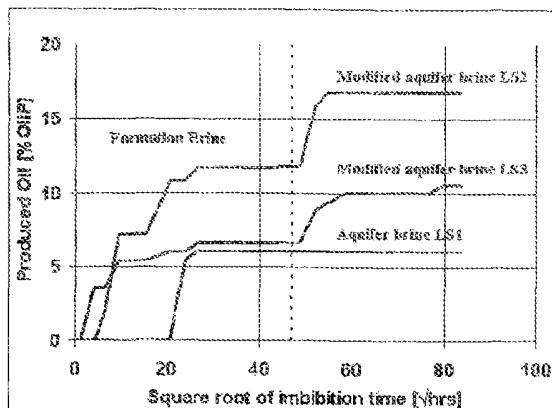
# UK Patent Application GB 2479110 A

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(54) Title of the Invention: **Aqueous displacement fluid injection for enhancing oil recovery from a limestone or dolomite formation**  
Abstract Title: **Aqueous displacement fluid injection for enhancing oil recovery from a limestone or dolomite formation**

(57) A method for enhancing oil recovery (EOR) from a limestone or dolomite formation containing crude oil and connate water comprises: -determining a  $\text{SO}_4^{2-}/\text{Ca}^{2+}$  ratio (Mo1/Mo1) in the connate water; and -injecting into the formation pore spaces an aqueous displacement fluid with a  $\text{SO}_4^{2-}/\text{Ca}^{2+}$  molar ratio (Mo1/Mo1) above 1 and a higher  $\text{SO}_4^{2-}/\text{Ca}^{2+}$  molar ratio (Mo1/Mo1) than the connate water. The method modifies the wettability of the limestone or dolomite formation such that its oil wettability is reduced and its water wettability is increased. Figure 17 shows that only brines LS2 and LS3 will be effective in wettability modification. In Table 5 it is shown that these brines have a  $\text{SO}_4^{2-}/\text{Ca}^{2+}$  ratio (Mo1/Mo1) above 1 and a higher  $\text{SO}_4^{2-}/\text{Ca}^{2+}$  ratio (Mo1/Mo1) than the connate water.



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