عنوان مقاله:

Study the Effective Parameters of Chemical Flooding on Enhanced Oil Recovery

محل انتشار:

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خلاصه مقاله:

By applying waterflooding processes the residual oil drops trap by capillary forces and are likely to be around 70% of the original oil in place (OOIP). The EOR method so-called Alkaline–Surfactant–Polymer (ASP) flooding has been proved that it can be effective in reducing the oil residual saturation in laboratory experiments and field projects by reducing interfacial tension and mobility ratio between oil and water phases. Finding the relativecontributions of design variables such as, injection flow, chemical concentrations and initial injection time in the objective function (cumulative oil recovery) is vital for improving ASPrecovery processes. One of the major obstacles in enhanced oil recovery in field scale reservoir engineering problems is that each function evaluation requires a complete simulation which is computationally expensive and time consuming. A proposed approach to tackle this problem isto construct a cheap and fast alternative model which is based on numerical simulation resultsand using it for analysis purposes. At first an initial sample of designs is obtained using Latin hypercube in MATLAB software then parallel simulation runs are executed. The results showthe effectiveness and efficiency of the proposed approach since it allows establishing the relative contribution of the design variables (main factors and interactions) to the performance measure variability using a limited number of computationally expensive reservoir simulations

کلمات کلیدی:

ASP foolding, chemical flooding, parallel processing, Enhanced oil recovery, field scale reservoir simulation, experimental design, latin hyper cube sampling