

The Application of Polymers in Enhanced Oil Recovery: Recent Trends

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Abstract : In this article, the latest advancements made in the applications of polymers in the enhanced hydrocarbon recovery technologies are investigated. For this purpose, different classes of polymers are reviewed and the latest progresses made in making them suitable for application under harsh reservoir conditions are discussed. The main reservoir conditions whose effects are taken into account include the temperature, rock mineralogy and brine salinity and composition. For profile modification and blocking the thief zones, polymers are used in the form of nanocomposite hydrogels. Polymers are also used as thickeners during CO₂ flooding. Also, they are used in enhanced gas recovery, to inhibit the mixing of injection gas with the in-situ natural gas. This review covers the main types of polymers, their functions and the challenges in their applications, some of which are mentioned above. Included in this review are also the latest progresses made in the development of new polymeric surfactants used for surfactant flooding.

Keywords : EOR, EGR, polymer flooding, profile modification, mobility control, nanocomposite hydrogels, CO₂ flooding, polymeric surfactants

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