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(57) Abstract :
The chemical components present in a crude oil and the surfactant solutions injected during EOR, are the controlling factor for the molecular level interaction as well as the efficacy of the method for enhancing recovery from subsurface petroleum reservoirs. Optical spectroscopic approach used to study the characteristics of the components present in the crude oils while the same techniques used to probe the molecular level interaction phenomenon between crude oil and surfactant solutions. Ionic surfactants are more compatible to entrap small (2-3 FAR) and medium (4-7 FAR) PAH structures whereas non-ionic surfactant dominantly entraps medium PAH structures within their micelles. Moreover, the anionic surfactant entraps the smaller size (2-4) FARs whereas cationic and neutral surfactants entrap 2-6 FARs within the formed micelles in the microemulsions. This invention established that optical spectroscopic approach helped to design injection fluid for crude oil recovery during surfactant flooding.

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