The EOR Alliance

Alkali-Free Surfactant-Polymer (SP) Flooding for Heavy Oil

Description:
Increase oil production of heavy oil reservoirs while minimizing operational issues using alkali-free surfactant-polymer flooding.

Application:
Heavy oil reservoirs where thermal methods are not applicable. From Primary to Tertiary recovery.

Results:
Oil recovery of a Canadian Heavy oil greater than 90% ROIP (after polymer flooding) has been obtained at lab scale with the injection of a small surfactant-polymer (SP) slug.
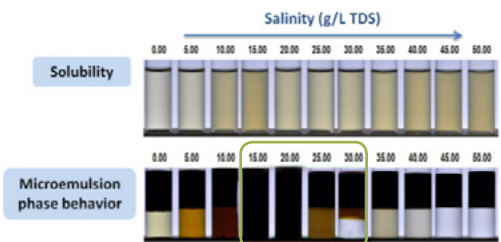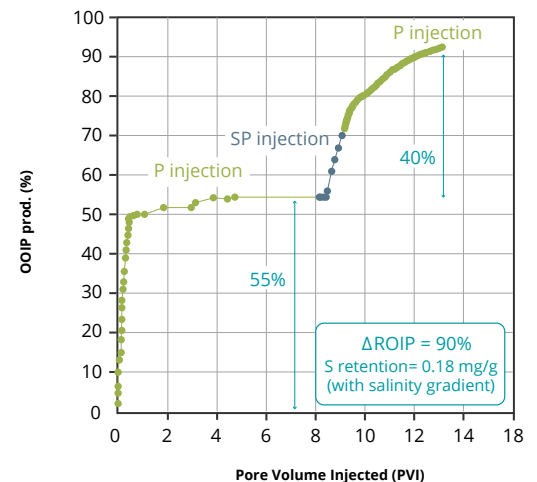
Challenges:
- Chemical EOR is far from being a mature technique for Heavy and Extra-Heavy oil.
- In-situ surfactant generation with alkali is attractive but raises scaling, corrosion and logistical concerns.
- Heavy oil mobilization and transport in the reservoir by means of SP/ASP are difficult to predict by numerical simulation.

Solutions:
- Surfactant-polymer formulation ensuring good mobility control and low interfacial tension.
- To be able to perform relevant economical feasibility assessments by reservoir simulation.

Objectives:
- Develop customized SP formulations for heavy oil reservoirs.
- Validate and optimize the formulations performances at core scale.
- Generate all case-specific surfactant and polymer data for reservoir simulation.
- Evaluate the economic feasibility through pilot or pattern scale simulations.
- Assess for the impact of Surfactant and Polymer on separation and water treatment.

ΔROIP = 90%
S retention= 0.18 mg/g
(with salinity gradient)

References: SPE 165234, SPE 169715, SPE 169697

An Alliance between: **IFP Energies nouvelles** — **BeicipFranlab** — **SOLVAY** asking more from chemistry®