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Effluent as surfactant for enhanced oil recovery

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Abstract

This investigation considers black liquor (BL), obtained as an effluent from paper mills as candidate for chemical enhanced oil recovery (EOR). The main constituent of BL is sodium lignosulfonate, an anionic surfactant. Results show that this anionic surfactant may be the preferred candidate for EOR as they may be effective in creating low interfacial tension (IFT) as dilute concentrations without requiring an alkali or a co-surfactant. Some of the formulations exhibit a low IFT at high salinity, and hence may be suitable for use in high saline reservoirs. Adsorption tests were conducted on core samples which indicate that the loss of these formulated surfactants may be comparable to other types of anionic surfactants. Evaluation of the surfactants performance was done in oil recovery by core flood tests. Selected formulations recovered about 20-30% of the waterflood residual oil saturation even with dilute concentration of 0.18 wt% surfactant concentrations from core samples.

Biography

Subrata Borgohain Gogoi has completed her Ph.D. from Dibrugarh University in 2007. She is an Associate Professor in the Department of Petroleum Technology, a premier department in Petroleum studies in India. She has published more than 20 papers in reputed national and international journals.