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Asphaltenes precipitation in the presence of carbon dioxide

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The gaseous carbon dioxide is a widely used fluid in the enhanced oil recovery process of oil, aiming to increase its wettability and thus to improve the productivity of the reservoir. After the CO_2 is injecting into the well, he comes into contact with the oil and thus promotes changes in the equilibrium conditions and in the fluid properties, which can cause the precipitation of organics solids, especially the asphaltenes. In the literature, some studies has been done about asphaltenes deposits formation by changing composition and by the presence of high content of paraffin of low molar mass. In this work, the asphaltenes stability was evaluated by means of induced gaseous carbon dioxide with dodecylbenzene sulfonic acid (DBSA), which is a widely used as an additive dispersant to avoid its precipitation in the presence of the n-alkanes. This test was done using a spectrophotometer of visible ultraviolet. On the results obtained in this work, the CO_2 was able to induce the asphaltenes precipitation and with the increase of pressure evaluated the results showed that there was no significant change in inducing precipitation. In addition, the DBSA has a strong influence upon the precipitation of asphaltenes, suggesting that the interaction of DBSA with the CO_2 may be reducing its efficiency, due to some loss of solubility, even in contact with CO_2.

Biography

Tatiana Simoes Loureiro has completed her Master's degree at Federal University of Rio de Janeiro recently. She started her Ph.D. and still studies asphaltenes precipitation onset by different gases and asphaltenes characterization in the Laboratory of Macromolecules and Colloids in Petroleum Industry. Simultaneously, she is postulating herself on Chemistry Bachelor.

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