

Abstract

In order to improve the flow characteristics, this work aims to study the rheological behavior of the oil crude (coming from the oil field of Tin Fouye Tabankort/South Algeria) with and without additive friction reducing. An experimental study was performed by measuring the rheological characteristics by flow tests and dynamic mode (oscillation) at different temperatures (20 °C, 30 °C and 50 °C) using the rheometer AR2000. The temperature of the crude oil varies between these extreme values in the south of Algeria. For this, the effect of the shear rate, the temperature and the additive concentration of Sodium Dodecyl Benzene Sulfonate (SDBS) on the rheological parameters have been studied. The obtained results show that the crude oil exhibits a non-Newtonian behavior at a low shear rate which can be described by the Herschel–Bulkley model. It was also noted that the Newtonian behavior occurs at high values of the gradient of shear rate. The viscoelasticity character of the crude oil by identifying of the elastic modulus (G') and the viscous modulus (G''), has indicated that the rheological properties of crude oil were significantly influenced by the additive