

## Effect of Ultrasonic Treatment on the Suspension Stability, Zeta Potential and Contact Angle of Celestite

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**Abstract :** In this study, firstly, the effect of ultrasonic treatment on the stability of celestite suspension was investigated. In this context, the variations of the suspension stability with ultrasonic power, treatment time, immersion depth of ultrasonic probe, and treatment regime (batch and continuous) were determined. The experimental results showed that the suspension stability and zeta potential of celestite decreased with ultrasonic treatment. Also, the treatment time, immersion depth of probe, and treatment regime affected the stability of celestite suspension. Secondly, the effect of pre-treatment of the suspension with the ultrasonic process on the shear flocculation of celestite using sodium dodecyl sulfate (SDS) was studied and the variations of the flocculation, zeta potential, and contact angle of the mineral with SDS concentration were presented. It was found that the ultrasonic pre-treatment slightly improved the shear flocculation of celestite particles in accordance with the increase in the contact angles. In addition, the ultrasonic process again relatively reduced the magnitude of the negative potential of celestite particles in the presence of SDS.

**Keywords :** celestite, contact angle, suspension stability, ultrasonic treatment, zeta potential

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