

# Rheology of organoclay suspension

Mpitloane Joseph Hato, Ke Zhang, Suprakas Sinha Ray and Hyoung Jin Choi

## Abstract

We have studied the rheological properties of clay suspensions in silicone oil, where clay surfaces were modified with three different types of surfactants. Dynamic oscillation measurements showed a plateau-like behavior for all the organoclay suspensions studied, which indicated more solid-like characteristics. Shear stress results showed a non-Newtonian behavior over a wide applied shear range and increased at a high shear rate for all the organoclay suspensions. Shear-thinning behavior was observed for all the suspensions investigated. Our results exhibited that  $G(t)$ , which was calculated using the Schwarzl equation, increased with increasing the degree of hydrophobicity of the surfactant used for the modification of pristine clay surface and decreased with time following a downward curve. A similar trend to that of  $G(t)$  was also observed for all the organoclay suspensions when Coleman and Markovitz relation was used.

Keywords: Clay – Suspension – Rheological property – Hydrophobicity

## Images

