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**Pressure cycle rheology of nanofluids at ambient temperature**  
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Texas A and M University at Qatar — Colloidal suspensions of particles dispersed in a base fluid (or drilling fluid) are commonly used in oil industry to aid the drilling of oil well into the ground. Nanofluids, the colloidal suspensions of nano-sized particles dispersed in a basefluid, have also shown potentials as cooling and abrasive fluids. Utilizing them along with drilling fluids under cyclic high-pressure loadings have not been investigated so far. In the present work, rheological characteristics of silicon oil based nanofluids (prepared with alumina nanoparticles) under pressures up to 1000 bar are investigated using a high-pressure viscometer. The rheological characteristics of nanofluids are measured and are compared with that of the basefluid under increasing and decreasing pressures. Relative viscosity variations of nanofluids were observed to have influenced by the shear rate. In addition, under cyclic high-pressure loading viscosity values of nanofluids are observed to have reduced. This reduction in viscosity at the second pressure cycle could have been caused by the de-agglomeration of particles in the first cycle while working a high-pressure and high-shear condition.

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