

## Stability and Rheological Study of Carbon Nanotube Water Based Nanofluid

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**Abstract :** In this research, stability and rheology behavior of Multi-walled carbon nanotube (MWCNT) nanofluids by using Xanthan Gum as a dispersant were measured. This paper addresses the effects of Xanthan Gum (XG) concentration and nanoparticle loading on stability and viscosity of nanofluids. The stability of nanofluids is measured by Zeta Sizer Nano-ZS (Malvern Instruments, ZEN 3600). The zeta potential of the stable samples was analyzed. The rheological behavior of carbon nanotube CNT nanofluids was analyzed using rheometer (Model AR G2, TA Instrument). Both stability and viscosity of the nanofluids increased with increasing CNT and XG concentration. The experimental results indicated that the zeta potential of nanofluid samples is stable. The results demonstrated that the zeta potential was affected by the CNT concentration and is augmented in parallel with increasing CNT concentration. The rheology results showed that the viscosity of CNT/XG nanofluid was increased. The escalated viscosity of CNT/XG nanofluid is owing to the higher van der Waals interaction between the CNT nanoparticles. On the other hand, the viscosity of the CNT/XG nanofluid decreases with increasing temperature. In summary, this research provides useful insight into the behavior of CNT nanofluids.

**Keywords :** nanofluid, carbon nanotube, stability, rheology

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