

Determination of thermal diffusivity of Montmorillonite containing silver nanoparticles

Abstract

The thermal lens (TL) technique is used to study thermal diffusivity of silver nano-fluid containing silver nanoparticles (Ag-NPs) of a particular size from about 30.5 to 4.2 nm at Montmorillonite (MMT) as an inorganic matrix in aqueous solution. In this technique a diode laser (wavelength 514 nm, power 80mW) and intensity stabilized He-Ne laser were used as the excitation source and probe beam, respectively. Experimental results showed that the thermal diffusivity values of nanofluids decreases when the particle size of Ag-NPs decreases.

Keyword: Thermal diffusivity; Nano-fluids; Thermal lens; Montmorillonite; Silver nanoparticles