The effect of nanoparticle size on thermal diffusivity of gold nano-fluid measured using thermal lens technique

Abstract

A dual beam mode-mismatched thermal lens method has been employed to investigate the dependence of thermal diffusivity of gold nanofluid on nanoparticles sizes. The samples were prepared at various sizes by utilizing the gamma radiation method. In the dual beam mode-mismatched thermal lens a diode laser (532 nm) was used as an excitation beam and a He-Ne laser with the beam output at 632.8 nm was used as a probe beam. Thermal diffusivity of gold nano-fluid increased with the increasing particle sizes ranging from 10.4 to 29.6 nm.

Keyword: Nanoparticle; Thermal diffusivity; Thermal lens.