

The reliability of optical fiber - TWRC technique in liquids thermal diffusivity measurement

ABSTRACT

The conventional thermal-wave resonator cavity (TWRC) technique was modified by using an optical fiber as both to transmit light beam and to produce thermal wave. This technique also known shortly as OF-TWRC was used to measure liquid thermal diffusivity in a thermally thick condition. The stability of the pyroelectric signal amplitude was good over long time duration. The thermal diffusivity values of various liquids obtained by this technique are in agreement with those of literature indicating this technique is reliable as compared to the conventional TWRC technique.

Keyword: Pyroelectric; Thermal wave; Thermal diffusivity; Optical fiber.