

MAXIMIZING OF SOLAR ABSORPTION BY (TiO₂-WATER) NANOFLUID WITH GLASS MIXTURE

FARHAN LAFTA RASHID¹, KHUDHAIR ABASS DAWOOD² & AHMED HASHIM³

^{1,2}Ministry of Science and Technology, Iraq

³Babylon University, Babylon, Iraq

ABSTRACT

Suspensions of nanoparticles (i.e., particles with diameters < 100 nm) in liquids, termed nanofluids, show remarkable thermal and optical property changes from the base liquid at low particle loadings. Recent studies also indicate that selected nanofluids may improve the efficiency of direct absorption solar thermal collectors. Nanofluids are prepared by dispersing and stably suspending nanometer sized solid particles in conventional heat transfer fluids. Past researches have shown that a very small amount of suspending nanoparticles have the potential to enhance the thermo physical, transport and radiative properties of the base fluid.

At this research adding very small quantities of nano particle (TiO₂) to pure water with different weights percent ranged 0.1, 0.2, 0.3 and 0.4wt.%, we found that the best weight percent is 0.2 that gave more heat absorbed. Then adding glass impurities ranged 10, 20 and 30wt.% to the nanofluid in order to enhancing the absorbed heat so energy storage. The best glass weights percent is 0.3.

KEYWORDS: Glass Impurities, Energy Storage, Enhancement Absorbed Heat, Solar Energy