



## Enhancement of heat absorption rate of direct absorption solar collector using graphite nanofluid

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**Abstract :** Metal absorbers are prone to conductive, convective and radiation heat losses. Direct absorption of solar energy by a fluid is possible with and without concentration of solar energy. The addition of higher thermal conductivity materials to the base fluid is vital to improving the rate of heat absorption. An experimental study was performed with and without nanoparticle dispersion in the water under similar operating conditions. The agglomeration of nanoparticles was found high at the volume fraction in the order of 0.1% and the low at a volume fraction of 0.002%. The lower volume fraction of nanoparticles to the base fluid increased the temperature gradient with respect to time.

**Keywords:** Direct solar absorption, volumetric receivers, nanoparticle dispersion.