INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	**Ph.D.**

Thesis Title: **Nanoparticle Dispersed Deep Eutectic Solvents as Low-Cost Heat Transfer fluid for Concentrated Solar Power**

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SHORT ABSTRACT

The current thesis explores Nanofluids using low cost Deep Eutectic Solvent (DES) as Heat Transfer Fluid (HTF) primarily for Concentrated Solar Power (CSP). In order to enhance the thermal properties of DES or base fluids, the Nanoparticle Dispersed Deep Eutectic Solvents (NDDES) were prepared by adding nanoparticles (Al2O3 spherical, Al2O3 cylindrical and h-BN hexagonal) at different weight percent. The stability and the thermophysical properties namely density, viscosity, thermal conductivity and specific heat capacity were then measured within the temperature range 298.15 - 353.15 K. The performance of these nanofluids were then evaluated within a forced convective heat transfer configuration under both laminar and turbulent flow conditions with varying Reynolds number and heat flux. In the concluding part, ASPEN plus flowsheet was conceptualized to ascertain the steam generation rate and overall heat transfer coefficient of these novel nanofluids.