

Deep Eutectic Mixtures with Graphene Functionalized Nanofluids for Indirect Solar Desalination using Multistage Flash Approach – Science and Engineering Research Board, Government of India (Project No. CRG/2018/000522)

PI: Prof. Tamal Banerjee, Department of Chemical Engineering, IIT Guwahati

Co PI: Prof. Suryasarathi Bose, Department of Materials Engineering, IISc Bangalore

Synthesis of the deep eutectic solvent (DES) based nanofluids with hybrid nanoparticles. Synthesis of MWCNT-conjugated DES nanoparticles and graphene-coated MWCNTs. Measurement of thermophysical properties of nanofluids. Evaluation of flow properties of nanofluids in convection regime at turbulent condition. Evaluation of nanofluids as a thermic fluid in multi-flash desalination.

- ❖ The nanofluid was prepared by mixing DES (Methyltriphenylphosphonium bromide salt and ethylene glycol in the molar ratio of 1:4) and 0.02 weight% of MWCNT.
- ❖ A significant increase in thermal conductivity and specific heat for MWCNT-DES nanofluid.
- ❖ Better thermophysical properties of nanofluid suggests that, it can replace the traditional commercial HTFs for use as an advanced Heat Transfer Fluid in Concentrated Solar Power (CSP) and Multi-Stage Flash (MSF) column plants.

