

International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



Smart Carbon based Heat Transfer fluid for efficient heat transfer applications

Overview

The enhancement of thermal behavior of Heat transfer fluid (HTF) by using high specific heat capacity nanostructure materials such as smart carbon (Carbon Nano Clusters (CNCs), Layer Structured Carbon and Graphene nanocomposite) based materials can be provided enormous benefits for heat transport phenomena which are primary importance to solar thermal power generation and industrial heat transportation. Due to nanometer-scale materials, particles are well stable without sedimentation.

Key Features

- High heat capacity & thermal conductivity
- High specific surface area and therefore more heat transfer surface between particles and liquids
- Reduced sedimentation & pumping power
- Adjustable thermal properties
- Cost effective and easy to prepare
- 27% enhancement in specific heat capacitance

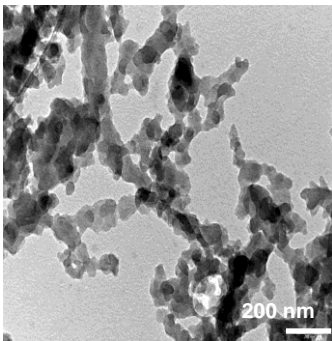
Potential applications

- Industrial cooling applications
- Solar thermal power plants
- Extraction of geothermal power and other energy sources
- Cooling of Microchips
- Lubricants

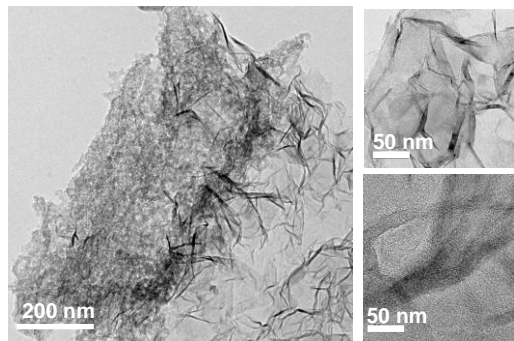
Commercial HTF & ARCI's nano HTF



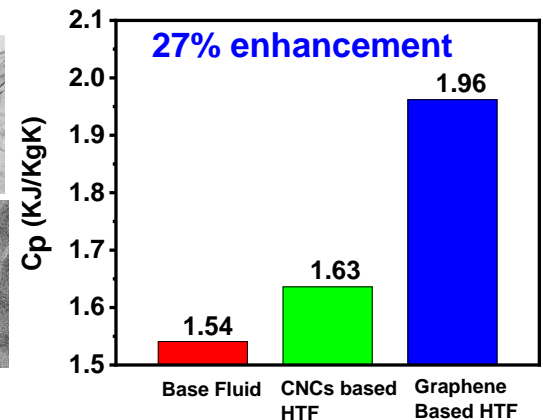
Carbon Nanoclusters (CNCs)



Graphene nanocomposite



Specific Heat capacity of Graphene nanocomposite based HTF



IPDI*	1	2	3	4	5	6	7	8	9	10
Status										

IPDI: Intellectual Property Development Indices

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