

Immense impact from small particles: Review on stability and thermophysical properties of nanofluids

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ABSTRACT

Nanofluid is a conventional fluid, blended with single or more nano additives with a dimension of less than 100 nm. Early studies revealed that dispersing a small amount of nano additives to base fluids can enhance the effective heat transfer properties of nanofluids by up to 250% relative to the base fluid. However, from a number of studies on nanofluid published, inconsistent thermophysical properties of formulated nanofluids reported due to many factors such as preparation approach, types of base fluids and morphology of nano additives. Selection of accurate parameters during nanofluids formulation can resolve this issue. The discussion on experimental studies by different authors include the stability evaluation of nanofluids and thermophysical measurement including its density, rheological and thermal conductivity studies can provide a guideline to the researchers towards the future development of nanofluids system with optimum thermophysical properties. This review article provided critical comments on biodegradable vegetable oil base fluid as one of the alternatives to non-renewable mineral oil as well it presents an overview of the remarkable research progress on conducting polymers base nanofluids witnessed in recent years. The outcome of this review paper would give an overview of further enhancements in nanofluid systems for industrial.

KEYWORDS

Nanofluids; Stability; Nano additives; Synthesis; Thermo-physical properties

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