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**A critical synthesis of thermophysical characteristics of nanofluids.** (English) Zbl 1227.80022  
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Summary: A critical synthesis of the variants within the thermophysical properties of nanofluids is presented in this work. The experimental results for the effective thermal conductivity and viscosity reported by several authors are in disagreement. Theoretical and experimental studies are essential to clarify the discrepancies in the results and in proper understanding of heat transfer enhancement characteristics of nanofluids. At room temperature, it is illustrated that the results of the effective thermal conductivity and viscosity of nanofluids can be estimated using the classical equations at low volume fractions. However, the classical models fail to estimate the effective thermal conductivity and viscosity of nanofluids at various temperatures. This study shows that it is not clear which analytical model should be used to describe the thermal conductivity of nanofluids. Additional theoretical and experimental research studies are required to clarify the mechanisms responsible for heat transfer enhancement in nanofluids. Correlations for effective thermal conductivity and viscosity are synthesized and developed in this study in terms of pertinent physical parameters based on the reported experimental data.

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80A20 Heat and mass transfer, heat flow (MSC2010)

76T20 Suspensions

80-05 Experimental work for problems pertaining to classical thermodynamics

Cited in **20** Documents

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[boiling](#); [free and forced convection](#); [nanofluids](#); [review](#); [surface tension](#); [thermophysical properties](#)

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