

Article Abstract

Title:	Experimental studies on a vapour compression system using nanorefrigerants
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Abstract:	Convective heat transfer is very important in the HVAC, refrigeration and microelectronics cooling applications. R134a is most widely adopted alternate refrigerant in refrigeration equipment, such as domestic refrigerators and air conditioners. Though the global warming up potential of R134a is relatively high, it is affirmed that it is a long term alternate refrigerants in lots of countries. The addition of nanoparticles to the refrigerant results in improvements in the thermophysical properties and heat transfer characteristics of the refrigerant, thereby improving the performance of the refrigeration system. Stable nanolubricant has been prepared for the study. The experimental studies indicate that the refrigeration system with nanorefrigerant works normally. It is found that the freezing capacity is higher and the power consumption reduces by 25 % when POE oil is replaced by a mixture of mineral oil and alumina nanoparticles. Calculations show that the enhancement factor in the evaporator is 1.53 when nanorefrigerants are used instead of pure refrigerant.
Keywords:	Nanofluids, thermal conductivity, heat transfer coefficient, freezing capacity, COP.