

EVALUATION OF MODELS FOR THE THERMAL CONDUCTIVITY OF NANOFLUIDS

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SUMMARY: Nanofluids, a new class of solid/liquid suspensions, offer scientific challenges because their measured thermal conductivity is superior to traditional heat transfer fluids. There are some theoretical models which try to explain the large enhancement of the thermal conductivity of nanofluids. The four fundamental mechanisms that could be responsible of this increase are: molecular-level layering of the liquid at the liquid/particle interface (nanolayer), Brownian motion of the nanoparticle, nanoparticle clustering, and the nature of heat transport in the nanoparticles. In this paper, the models that include the effect of nanolayer are evaluated, and compared with the Maxwell Model which is the oldest model for thermal conductivity of a mixture.