Das *et al.* Reply: The preceding Comment [1] raises some doubts about the general applicability at asymptotic limits of the model proposed in [2]. We clearly indicated the limits (low volume fraction) within which our model is applicable. It cannot be extended to higher volume fraction. In the limit of the radius ratio $r_m/r_p \to 0$, our model predicts $k_{\text{eff}}/k_m \to 1$. Even the Hamilton-Crosser model [3] suggests the same. In the limit of $k_p/k_m \to 0$ also, our model gives $k_{\text{eff}}/k_m \to 1$, provided the particle concentration is low. Finally, the limit of $k_p/k_m \to \infty$ will not give $k_{\text{eff}}/k_m \to \infty$, as suggested in the Comment. It is easily seen that $\frac{k_{\text{eff}}}{k_m} \to \frac{k_p}{k_m}\frac{\varepsilon}{1-\varepsilon}\frac{r_m}{r_p}$ as $k_p/k_m \to \infty$ and, in this case, the effective conductivity becomes a function of k_p only, and not of k_m. For $k_p/k_m \to \infty$ and $\varepsilon \to 0$, the enhancement could still be finite. The strength of our model lies in the fact that with just one fitting parameter (c), the model successfully compares with measured enhancement data over a wide range of parameters at low particle concentrations. These comparisons and extension of the theory form the subject matter of our subsequent paper under preparation.

The classical theories [3] employ point heat source solutions to arrive at the thermal conductivity of a multiphase medium. Such models are independent of the particle size effects. In nanofluids, there is overwhelming evidence [4,5] that the enhancement in conductivity is a strong function of the particle size. The present model includes this effect through an increase in the specific surface area of nanoparticles.

The comment on effective volume fraction is not appropriate as one can independently alter the particle size keeping the volume fraction constant. The idea of interfacial resistance is appropriate for macroscopic objects which are not in perfect contact. We feel that it is not important in nanofluid systems.

About a moving particle model, we never said that kinetic theory is applicable to the particle as it is. The idea behind this model is to link the origin of thermal conductivity to molecular level phenomena, irrespective of the phase of the material. It can be shown that the thermal conductivity of the particle phase depends on the number flux of particles crossing a surface which is proportional to their Brownian velocity, which is essentially the diffusion based velocity and the particle specific heat. We found that the percent increase of enhancement over a given range of temperature is exactly the same (Figs. 3 and 4 in [2]) as the percent rise in Brownian velocity. The Comment also tries to disprove the proposition by extending the particle relative velocity to zero. We stress that the moving particle model is only applicable when the particles are moving.

Probably the most important misunderstanding is about the words "comprehensive theory." By these words we only meant that the major effects are identified with regard to thermal conductivity of nanofluids. In order to unravel the complex phenomena at play, there is a need to develop the theory further in steps.

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