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Thermal Conductivity Enhancement of Nanofluids in Conjunction with Electrical Double Layer (EDL)[1] JUNG-YEUL JUNG[2], JUNG YUL YOO[3], Seoul National University — A novel expression for the thermal conductivity of nanofluids is proposed on the bases of both electrical double layer (EDL) and kinetic theory, which is applied to Al_2O_3 nanofluids satisfactorily with respect to temperature, volume fraction and particle size. In the case of dilute nanofluids, the effects of the Brownian motion and interparticle interaction due to EDL on enhancing the thermal conductivity of nanofluids are quite comparable, while the effect of interparticle interaction due to EDL is more prominent in the case of dense nanofluids. The model presented in this paper shows that interparticle interaction due to EDL is the most responsible for the enhancement of thermal conductivity of nanofluids.

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