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NUMERICAL INVESTIGATION OF THE EFFECTIVE THERMAL CONDUCTIVITY OF NANO FLUIDS USING LATTICE BOLTZMANN MODEL

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SUMMARY: In this paper a lattice Boltzmann model is proposed for simulating energy transport processes inside nanofluids. First, a lattice Boltzmann model is described for simulating nanofluids. Then, some calculations for the effective thermal conductivity of nanofluids are reported and comparison is made with theoretical and the experimental data. The numerical data on the effective thermal conductivity of Al2O3 □ water and Al2O3 □ ethylene glycol nanofluids are in good agreement with the experimental data. This proves that the method proposed here for the determination of the effective thermal conductivity of the nanofluids is valid.