عنوان مقاله:

Optimization of thermal conductivity of Al2O3 nanofluid by two methods

محل انتشار:

اولین همایش نانومواد و نانوتکنولوژی (سال: 1390)

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خلاصه مقاله:

Most of the heat transfer fluids such as water, ethylene glycol, and engine oil have limited heat transfer capabilities due to their low heat transfer properties. Nanofluids are suspensions of nanoparticles in basefluids, a new challenge for thermal sciences provided by nanotechnology. In this study, we are to optimize and report the effects of various parameters such as the ratio of the thermal conductivity of nanoparticles to that of a base fluid, volume fraction, nanoparticle size, and temperature on theeffective thermal conductivity of nanofluids using nonlinear optimization methods. To do this, we used MATLAB default modules for geneticalgorithm and generalized reduced gradient method. Results showed that the proposed GA method has superior performance compared togeneralized reduced gradient method. Also in this research we would like to exercises the importance of maximizing the thermal performance ofnanofluid flows under appropriate constraints. Thermal conductivity of nanofluid enhanced is increased 32 percent by using GRG method and 48percent by GA method

کلمات کلیدی:

Optimization, nanofluid, Thermal conductivity, GRG, GA

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