

## عنوان مقاله:

Single Walled Carbon Nanotube Effects on Mixed Convection heat Transfer in an Enclosure: a LBM Approach

## محل انتشار:

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## خلاصه مقاله:

The effects of Single Walled Carbon Nanotube (SWCNT) on mixed convection in a cavity are investigated numerically. The problem is studied for different Richardson numbers (0.1-10), volume fractions of nanotubes (0-1%), and aspect ratio of the cavity (0.5-2.5) when the Grashof number is equal to  $10^3$ . The volume fraction of added nanotubes to Water as base fluid are lowers than 1% to make dilute suspensions. The Study presents a numerical treatment based on LBM to model convection heat transfer of Carbon nanotube based nanofluids. A theoretical model is used for effective thermal conductivity of the nanofluid containing Carbon nanotubes. This model covers different phenomena of energy transport in nanofluids. Also, an analytical model is applied for effective viscosity of the nanofluid which includes the Brownian effect and other physical properties of nanofluids. Results show that adding a low value of SWCNT to the base fluid led to significant enhancement of convection heat transfer. Make a comparison between the obtained results and other published papers shows that Carbon nanotubes enhances the rate of convection heat transfer better than other nanoparticles.

## کلمات کلیدی:

Effective Thermal Conductivity, Effective Viscosity, Lattice Boltzmann Method, Lid-Driven Cavity, Mixed convection, (Nusselt number, Richardson Number, Single Walled Carbon Nanotube (SWCNT)

## لینک ثابت مقاله در پایگاه سیویلیکا:

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