## عنوان مقاله:

Conjugate Natural Cooling of an Electronic Device Exposed to CuO-Water Nanofluid

## محل انتشار:

بیستمین کنفرانس سالانه مهندسی مکانیک (سال: 1391)

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## خلاصه مقاله:

This article presents a numerical investigation of conjugate natural convection of CuO-water nanofluid in a square cavity. A square volumetric heat source is located at the center of the cavity, resembling an electronic device for heat generating. All the walls are considered to be adiabatic except the right hand side wall which is at the cold temperature. Transport equations for Newtonian fluid have been solved numerically, using finite volume method and employing the SIMPLER algorithm. The effects of relevant parameters such as solid volume fraction of the nanoparticles and the size of the heat source on the cooling performance of the cavity have been studied at Ra=105. Data and results are presented in the form ofheat source temperature, isotherms and convective heat transfer enhancement index, E. The results show that utilizing nanofluid enhances the heat transfer rate for all sizes of heat source. In addition, the factors to determine the best size of heat source in order to maximize the heat transfer performance have been discussed

## کلمات کلیدی:

Nanofluid, Conjugate natural convection, Numerical simulation, Electronic cooling