

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Numerical investigation of heat transfer enhancement of natural convection in a square cavity filled with a Water-CuO nanofluid JOSE NUNEZ GONZALEZ, Universidad de La Cienega del Estado de Michoacan de Ocampo, ALBERTO BELTRAN, Universidad Nacional Autonoma de Mexico — We presents a numerical study of natural convection heat transfer in a square cavity filled a water-CuO nanofluid. The governing equations for natural convection are solved numerically with a Chebyshev pseudo spectral method using and projection method as a decoupling strategy. The Nusselt number is determined as a function of Rayleigh number and the solid volume fraction. The high conductivity of the CuO nanoparticles modifies the overall thermal conductivity of the fluid, even with a decrement of the Nusselt number the effective thermal conductivity increase therefore higher heat transfer rate is obtained with the numerical model.

Jose Nunez Gonzalez
Universidad de La Cienega del Estado de Michoacan de Ocampo

Date submitted: 20 Jul 2014

Electronic form version 1.4