

## **Numerical study of natural convection for Cu and TiO<sub>2</sub> nanofluids inside different enclosures**

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**ABSTRACT** In this study, steady-state laminar and turbulent natural convection for Cu and TiO<sub>2</sub> nanofluids inside different enclosures are numerically investigated. Natural convection is concerned due to a temperature difference between the hot and cold surfaces. The Boussinesq approximation is used to form the governing equations and the commercial software package ANSYS Fluent version 14.0 is used to numerically solve the governing equations. The temperature profiles and flow patterns at different Rayleigh numbers are studied and compared for the different curved geometries. Heat transfer coefficients are presented for the enclosures with different nanofluid concentrations. The nanoparticles enhance the heat transfer. The heat transfer enhancement increases with increasing nanoparticle concentrations. A new curved enclosure is suggested to augment heat transfer.