

Natural Convection of a Nanofluid in a Conical Container

Authors : Brahim Mahfoud, Ali Bendjaghlouli

Abstract : Natural convection is simulated in a truncated cone filled with nanofluid. Inclined and top walls have constant temperature where the heat source is located on the bottom wall of the conical container which is thermally insulated. A finite volume approach is used to solve the governing equations using the SIMPLE algorithm for different parameters such as Rayleigh number, inclination angle of inclined walls of the enclosure and heat source length. The results showed an enhancement in cooling system by using a nanofluid, when conduction regime is assisted. The inclination angle of inclined sidewall and heat source length affect the heat transfer rate and the maximum temperature.

Keywords : heat source, truncated cone, nanofluid, natural convection

Conference Title : ICTFE 2016 : International Conference on Thermal and Fluids Engineering

Conference Location : Venice, Italy

Conference Dates : April 11-12, 2016