Numerical Investigation of Heat Transfer Enhancement with CuO Nanofluid Flowing in a Circular Tube Fitted with Twisted Tape Inserts

Abstract- The present paper investigates numerically the enhancement of heat transfer with CuO nanofluid flowing in a horizontal circular tube fitted with different shapes of twisted tape. Finite volume method with ANSYS FLUENT in three dimensions is used in numerical investigation. The effect of twist ratio, concentration of nanofluid, twisted tape type with single phase flow on values of Nusselt number and friction factor are investigated. Heat transfer is enhanced as Reynolds number increases and twist ratio decreases.

Keywords: Heat transfer enhancement; Twisted tape; Nanofluid; Nusselt number