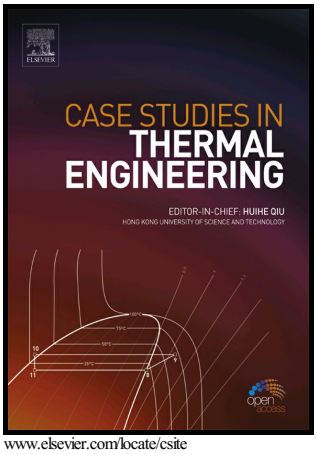

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A numerical investigation on ethylene glycol-titanium dioxide nanofluid convective flow over a stretching sheet in presence of heat generation/absorption

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Abstract

In this article, TiO_2-ethylene glycol nanofluid flow over a porous stretching sheet in presence of non-uniform generation or absorption of heat and convective boundary condition is investigated. The concentration of solute is set by the means of an isothermal model of homogeneous-heterogeneous reactions. The governing equations were simplified to ordinary differential equations and solved using Runge-Kutta-Fehlberg shooting method of fifth order. Effects of different variables such as nanoparticle volume fraction, porosity variable, and Schmidt number were studied and the results are graphically presented. The results showed that the stretching rate ratio has inverse effect of velocities in both directions. According to plots, nanoparticle volume fraction as well as convective heat intensity has a direct relation with wall heat flux, in the contrary, heat generation has an inverse effect on it.

Keywords: ethylene glycol; titanium dioxide; heat generation/absorption; Nonlinear stretching sheet