A Nanofluid Flow in a Non-Linear Stretching Surface Saturated in a Porous Medium with Yield Stress Effec

F. M. Hady, Mohamed R. Eid, Mostafa A. Ahmed

Abstract:

An analysis has been carried out to study a problem of the natural convective boundary-layer flow of a nanofluid past a non-linear stretching surface with convective boundary condition in the presence of yield stress in porous media. The model used for the nanofluid incorporates the effects of Brownian motion and thermophoresis. The local similarity solutions are obtained by using an efficient numerical shooting technique with a fourth-order Runge Kutta scheme (MATLAB package). The results corresponding to the dimensionless temperature profiles and the reduced Nusselt number, Sherwood number and skin friction coefficient are displayed graphically for various pertinent parameters. It was found that Nusselt number (Re 1 = 2 x Nu x) and Sherwood number (Re 1 = 2 x Sh x) is a decreasing function of the yield stress parameter and the porous media parameter , while the skin friction coefficient (Re 1 = 2 x C f) is an increasing function of the yield stress parameter and the porous media parameter

Keywords:

Nanofluid; Non-Linear stretching surface; Porous media; Yield stress

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