Marangoni boundary layer flow in micropolar fluid with suction/injection

ABSTRACT

In this paper, the problem of Marangoni boundary layer flow in micropolar fluid is studied with suction/injection effect. The assumption of interface temperature to be a quadratic function of the distance x along the interface is taking into account. The technique of similarity transformations is used to transform the general governing partial differential equations into a set of nonlinear ordinary differential equations. The numerical solutions of ordinary differential equations are obtained by using shooting method for each profiles and presented in the form of tables and figures along with the results of surface heat transfer. The problem is considered for two different values of microrotation n, which is n = 0 and n = 0.5 where it is represented the strong and the weak concentration of microelements, respectively.

Keyword: Micropolar fluid; Suction/injection; Boundary layer; Marangoni convection