

Marangoni mixed convection boundary layer flow in a nanofluid

ABSTRACT

The problem of Marangoni mixed convection boundary layer flow and heat transfer that can be formed along the interface of two immiscible fluids in a nanofluid is studied using different types of nanoparticles. Numerical solutions of the similarity equations are obtained using the shooting method. Three types of metallic or nonmetallic nanoparticles, namely copper (Cu), alumina (Al₂O₃) and titania (TiO₂) are considered by using a water-based fluid to investigate the effect of the solid volume fraction or nanoparticle volume fraction parameter ϕ of the nanofluid. The influences of the interest parameters on the reduced velocity along the interface, velocity profiles as well as the reduced heat transfer at the interface and temperature profiles were presented in tables and figures.

Keyword: Marangoni mixed convection; Nanofluid; Boundary layer.