Contribution ID: **60** Type: **not specified**

Unsteady Flow of Micropolar Nanofluid over a Stratified Stretching Surface with Riga Plate

Monday, 27 May 2024 17:05 (10 minutes)

The research investigated energy and mass transport of fluids, particularly analysing the flow behavior of unsteady micro rotational Nanofluid over a Riga Plate. The influence of suction and magnetic field along with the thermophoresis and Brownian motion on the stratified flow of Micropolar nanofluids was examined. The governing equations to describe the flow scenario are given by a system of partial differential equations. Some suitable similarity variables were introduced to reduce the number of independent variables to one and thereby obtain a set of Ordinary Differential Equations (O.D.E.). The derived O.D.E. were then solved numerically and analysed using Runge-Kutta Fehberg method along with shooting technique on Maple 18.0 mathematical software. The effects of some important parameters on velocity, micro rotation, energy and concentration profiles were described graphically. The velocity profile increased with an increase in the modified Hartmann number, Grashof number and modified Grashof number parameters but decreased for increases in Unsteadiness and suction parameters. The temperature profile was enhanced with increasing values of the thermophoresis and Brownian motion parameters but diminished for increases in Prandtl number and Unsteadiness parameters. The concentration profile also increased with increasing thermophoretic values but decreased when Brownian motion parameter was increased.

Primary author: Dr ADEGBITE, Peter

Co-authors: Mr OLAWOORE, Cornelius Oluwapelumi (Ladoke Akintola University of Technology, Ogbomoso); Ms ISHOLA, Elizabeth Oluwatoosin (Ladoke Akintola University of Technology, Ogbomoso); Prof. AJALA, Olusegun Adebayo (Ladoke Akintola University of Technology, Ogbomoso)

Presenter: Dr ADEGBITE, Peter

Session Classification: Technical session 1