Petrochemistry-2013

OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Petrochemistry and Chemical Engineering

November 18-20, 2013 Hilton San Antonio Airport, USA

Diffusion-thermo and radiation effects on unsteady MHD flow through porous medium past an impulsively started infinite vertical plate with variable temperature and mass diffusion

Jagdish Prakash

Department of Mathematics, University of Botswana, Botswana

Abstract

The objective of the present study is to investigate diffusion-thermo (Dufour effect) and radiation effects on unsteady MHD free convection flow past an impulsively started infinite vertical plate with variable temperature and uniform mass diffusion in the presence of transverse applied magnetic field through porous medium. At time t > 0, the plate is given an impulsive motion with constant velocity u_0 in the vertical upward direction against to the gravitational field. At the same time the plate temperature is raised linearly with time t and the level of concentration near the plate is raised to C'_w. A magnetic field of uniform strength B_0 is applied normal to the direction to the flow. The dimensionless governing equations are solved in closed form by Laplace-transform technique. The effect of flow parameters on velocity, temperature, concentration, the rate of heat transfer and the rate of mass transfer are shown through graphs.

Biography

Jagdish Prakash received his master's degrees in Mathematics from Agra University in 1965 and in Statistics from Meerut University in 1972. He completed his PhD from Garhwal University in 1984 in Biomechanics. He is Associate Professor in Mathematics at the University of Botswana. He has published more than 100 papers in reputed journals and reviewer of over 35 reputed Journals and an editorial board member of repute. He received the prestigious C V Raman International Fellowship Award for African Scientists for research in 2012 by the Government of India tenable at the host institution VIT University, Vellore, India for 3 months.