

# **Effect of nonlinear temperature profile and magnetic field on thermal convection in a binary fluid saturated an anisotropic porous medium**

## **ABSTRACT**

A linear stability analysis is applied to study the stationary thermal convection in a horizontal system consist of binary fluid saturated an anisotropic porous medium in the presence of nonlinear temperature profile and vertical magnetic field. The problem is solved numerically using the method of Galerkin with respect to rigid-rigid isothermal boundary condition. The effects of magnetic field, mechanical and thermal anisotropic parameter, solute Rayleigh number and Lewis number on the onset of stationary convection in the system for six models of basic state temperature profile are shown graphically. We found that the system can be stabilize by the effect of magnetic field, thermal anisotropic parameter, solute Rayleigh number and Lewis number and destabilize by mechanical anisotropic parameter.