1. H. A. Attia, M. A. M. Abdeen, W. Abd El-Meged "Transient Generalized Couette Flow of Viscoelastic Fluid Through a Porous Medium with Variable Viscosity and Pressure Gradient" Arabian Journal for Science and Engineering, Vol. 38, No. 12, pp. 3451-3458, September 2013.

Abstract:

The transient generalized Couette flow througha porous medium of a non-Newtonian viscoelastic fluidbetween two parallel porous plates is studied with heat transfer.A uniform suction from above and injection from beloware applied perpendicular to the plates which are maintainedat two fixed, but different, temperatures while the viscosity ofthe fluid is assumed to vary exponentially with temperature.The fluid is driven by a uniform horizontal exponential decayingpressure gradient. The coupled set of equations of motionand the energy equation is solved numerically using finitedifferences. The influence of the different physical parametersof the model on the velocity and temperature fields isinvestigated and presented.