

## **Modeling and non-similar analysis for Darcy-Forchheimer-Brinkman model of Casson fluid in a porous media**

### **ABSTRACT**

In this study non-Newtonian Casson fluid is examined by using non-similar modeling of Darcy-Forchheimer-Brinkman model in non-Darcy porous media. The local non-similarity method upto 2nd order of iteration on non-similar partial differential equations (PDE's) via bvp4c is performed. The effects of different parameters are studied locally for skin friction and Nusselt numbers. Furthermore, widen to both porous resistance and non-Newtonian Casson parameter increases heat transfer. Furthermore, the increasing porosity decreases the rate of heat transfer. The graphs of dimensionless velocity and dimensionless temperature boundary layer profiles are plotted. At the end, it is found that the increasing numerical values of Prandtl number enhances the rate of heat transfer.

**Keyword:** Non- Darcy-Forchheimer-Brinkman; Porous media; Non-similar; Casson fluid; Bvp4c