20 YEARS OF EXCELLENCE IN INTERNATIONAL MEETINGS
alliedacademies.com

2nd International Conference on

MAGNETISM AND MAGNETIC MATERIALS

September 24-26, 2018 | Budapest, Hungary

Mater Sci Nanotechnol 2018, Volume 2

COMBINED EFFECTS OF SQUEEZE AND SLIP FLOW OF AN MHD CASSON FLUID THROUGH A NON-DARCY POROUS MEDIUM

Akinbowale T Akinshilo
University of Lagos, Nigeria

This present study considers the effects of squeezing electrically conducting Casson fluid flowing through a non-Darcy porous medium. Since the Casson fluid finds useful applications in flow processes such as jelly processing, tomato sauce production, drilling mud, paint solutions amongst other applications. Nonlinear models developed describing the transport phenomena of the Casson fluid is transformed using similarity variables to ordinary differential equations, which is analyzed adopting the homotopy perturbation method (HPM). Solutions generated from the higher order non-linear equation arising from the mechanics of the fluid utilizing the HPM are used to investigate effects of rheological parameters. Parameters effects such as non-Darcy and slip parameter on fluid flow are examined. Results reveals increasing velocity distribution as slip parameter increases quantitatively when plates are receding and collapsing while for non-Darcy parameter decrease in velocity distribution is observed for quantitative increase in non-Darcy parameter. Comparison of analytical solution obtained against numerical solution proves to be in good agreement. Therefore, present study provides good insights to applications such as hydraulic lifts, electric motors, nasogastric tube and syringe flow amongst other application.