Heat Transfer for Flow of a Third-Grade Fluid between Two Porous Plates

Tasawar Hayat[a,b], Rahila Naz[a], and Muhammad Sajid[c]

[a] Department of Mathematics, Quaid-i-Azam University 45320, Islamabad 44000, Pakistan
[b] Department of Mathematics, College of Sciences, King Saud University, P. O. Box 2455, Riyadh 11451, Saudi Arabia
[c] Theoretical Plasma Physics Division, PINSTECH, P. O. Nilore, Islamabad 44000, Pakistan

Reprint requests to T. H.; Fax: +92 51 2601171; E-mail: pensy_t@yahoo.com

This article concentrates on the analytic solution for the heat transfer analysis of a third-grade fluid between two porous plates. The nonlinear problem for velocity profile is solved by employing the homotopy analysis method (HAM). Using the velocity profile, the energy equation with dissipation effects is solved for the series solution. The present solution demonstrates the dependency of the viscoelastic parameters. The obtained results are also sketched and discussed.