

Abstract Submitted
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Some Remarks on the flow of Viscoelastic Fluids in Porous Media PURNA KALONI, Dept.of Math. and Stat. — Flow of porous media plays important roles in many branches of science and engineering .Because of the complications involved, studies in porous media have, largely, been experimental and the progress in theoretical modeling has been very slow Thus the one dimensional empirical model of Darcy, proposed in 1856,was extended to a non-linear empirical model by Forcheimer in 1901,and a diffusive term was added by Brinkman in 1949. In sixties and seventies, Whitaker, Slattery and Lundgren applied volume averaging technique to Navier-Stokes equation and gave heuristic account of the above models. Apart from some minor issues,the flow of viscous fluids in porous media is now well understood. This is, however, not the case in viscoelastic fluid flows in porous media. The empirical models are being employed without recognizing their empirical nature. Linear models are being used which do not reduce to the viscous model as the elastic parameters are set equal to zero. There are serious issues with the averaging process. Our purpose is to elaborate on the above problems and hopefully, suggest a reasonable model equation.

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