1046-65-76 **Javed I. Siddique*** (jsiddiqu@gmu.edu), 4400, University Drive, MS: 3F2, Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030, and **Daniel M. Anderson** (danders1@gmu.edu) and **Padmanabhan Seshaiyer** (pseshaiy@gmu.edu). *Mathematical modeling of blood-flow interaction with deformable arterial wall with applications in medicine.* Preliminary report.

In this work, we consider the mathematical and computational modeling of blood flow interactions with the arterial wall. The flow is modeled with non-newtonian effects that reflect the changes of viscosity in the blood stream. Within the arterial wall, coupled equations for the structural displacement and fluid velocity are derived via two-phase mixture theory. The coupled partial differential equations for the blood-flow and the arterial wall are then solved using suitable interface conditions between the fluid and deformable porous wall. The applications of the model to understand the rupture of aneurysms and the development of atherosclerosis will also be investigated. Stability and convergence results for the performance of the model will also be presented. (Received July 21, 2008)