1067-65-2212 **Shelly M McGee*** (mcgee@findlay.edu), 1000 N Main St, Department of Mathematics, Findlay, OH 45840, and **Padmanabhan Seshaiyer**. *A two domain discontinuous solution to chemical transport in a small artery and arterial wall.*

In this presentation, a computational finite difference model of the Navier-Stokes equation in cylindrical coordinates is used to simulate blood flow in a small artery and is coupled to the advection diffusion equation in cylindrical coordinates to model chemical transport through the artery. Chemical transport through the arterial wall is modeled using diffusion, and coupled with the advection diffusion equation. This leads to a discontinuous two-domain solution of the chemical transport model in the artery and arterial wall. Additive Schwarz methodology is applied the two domain problem. An explicit finite difference scheme is used for the Navier-Stokes equation, and an implicit finite difference scheme is used on the advection diffusion equation. Error estimates for the chemical transport will be discussed, and numerical results will be presented. (Received September 22, 2010)