1086-65-1357 **Xin Yang*** (xin.yang@rice.edu), 2410 Shakespeare ST, Unit 102, Houston, TX 77030. *A coupled finite volume and discontinuous Galerkin method for convection-diffusion problems.*

This work formulates and analyzes a new coupled finite volume (FV) and discontinuous Galerkin (DG) method for convection-diffusion problems. DG methods, though costly, have proved to be accurate for solving convection-diffusion problems and capable of handling discontinuous and tensor coefficients. FV methods have proved to be very efficient but they are only of first order accurate and they become ineffective for tensor coefficient problems. The coupled method takes advantage of both the accuracy of DG methods in the regions containing heterogeneous coefficients and the efficiency of FV methods in other regions. Numerical results demonstrate that this coupled method is able to resolve complicated coefficient problems with a decreased computational cost compared to DG methods. This work can be applied to problems such as the transport of contaminant underground, the CO_2 sequestration and the transport of cells in the body. (Received September 21, 2012)