Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

**Distributions and seeps of driven mixture around a slit in porous media - interacting lattice gas simulation** JOE GETTRUST, Naval Research Laboratory, RAS PANDEY, Naval Research Laboratory and University of Southern Mississippi — We consider a porous medium with a slit on a discrete lattice of size $L_x \times L_y \times L_z$. The porous matrix is generated by a random distribution of immobile barriers on a fraction of the lattice sites. A longitudinal slit of width $L_s$ spans from bottom to top through the center of the lattice. The source of particles specified by their molecular weight, interaction, and miscibility gap is connected to the bottom ($z = 1$) of the lattice with an open top ($z = L_z$). The Metropolis algorithm is used for stochastic moves of particles with a hydrostatic pressure bias ($H$). Periodic boundary conditions are used along the transverse directions with open longitudinal ends. Particles continue to enter the lattice from the source. Particles flow from bottom to top reaching a steady-state where we examine their seeps and distributions. We find that the steady-state distributions of constituents and their local mobility in the slit and the surrounding regions depend on bias and porosity with strong correlations at high bias.

Ras Pandey
University of Southern Mississippi

Date submitted: 21 Nov 2005 Electronic form version 1.4