Self-organizing flow through a porous medium with slit: an interacting lattice gas simulation JOE GETTRUST, Naval Research Laboratory, RAS PANDEY, Naval Research Laboratory and University of Southern Mississippi — Flow of driven, interacting particles through a porous medium is complex and highly restricted especially at low porosity. How does a slit of higher porosity within the medium affect the flow and patterns in such a matrix? Computer simulations are performed to address this question using an interacting lattice gas model. A mixture of dissimilar particles (A,B) is driven by a hydrostatic pressure bias (H) and their concentration gradient upward against gravity from a source at the bottom. Density and mobility profiles are examined as a function of bias (H). Increasing the bias (H) seems to introduce long-range correlations among the constituents; this has considerable effect on their density profiles around the slit.

Ras Pandey
University of Southern Mississippi