

Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

Capillary flow in weakly 3-dimensional conduits¹ RYAN JENSON, YONGKANG CHEN, MARK WEISLOGEL, Portland State University — A large literature exists for capillary driven flows along simple conduits of uniform cross section (i.e. right circular and regular polygonal cylinders). In this work flows along several conduits of increased geometric complexity are considered that also possess a taper or some other geometric change along the primary flow path. Experimental, numerical, and analytical results will be presented for select transient flows in such conduits where power law time dependencies transition between regimes depending on the time dependent boundary conditions. Such flows may be exploited for the passive manipulation of liquids in microfluidic systems on Earth and microgravity fluid systems aboard spacecraft.

¹NASA NNC05AA29A, Glenn Research Center

Mark Weislogel
Portland State University

Date submitted: 04 Aug 2006

Electronic form version 1.4