

Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

The Effect of Secondary Flows on Taylor-Aris Dispersion HUI ZHAO, HAIM BAU, University of Pennsylvania — We study theoretically the effects of secondary (transverse) flows on the Taylor-Aris dispersion of pressure-driven, open column flow in a conduit with a rectangular cross-section and account for the interaction of solutes with the retentive coating on the conduit's surface. A few plausible means of inducing secondary flows (that are independent of the primary, pressure-driven, axial flow) are described. The Taylor-Aris dispersion coefficient is computed as a function of the secondary flow's pattern and intensity. We show that dispersion can be significantly reduced in the presence of secondary flows.

Haim Bau
University of Pennsylvania

Date submitted: 31 Jul 2007

Electronic form version 1.4