Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Interconnectivity in Surface Wicking Structures[1] YONGKANG CHEN, DONALD BELL, Portland State University, SANTIAGO RODRIGUEZ, Portland Community College, BEN SEMERJIAN, LAWRENCE MELVIN, MARK WEISLOGEL, Portland State University — Surface wicking structures possessing strong interconnectivity are designed and examined. The designs aim to optimize the structure's ability to transport fluids by exploiting capillary driven flow in interior corners combined with interconnectivity and alignment. 'Waffle-like' structures consisting of vertical rectangular vanes at a variety of orientations are employed as the basic repeat unit. Due to this arrangement, such surfaces possess interconnectivity that is stronger than that of other existing designs such as those composed of micro posts. This strong interconnectivity provides several advantages. For example, it is found that the transport of fluid by wicking can be controlled by a clever choice of the interconnectivity and vane alignment. As a result, the shape of the moving front during wicking can be circular, elliptical, or rectangular. The observations as well as a study of the dynamics of the wicking flow will be presented.

[1]Supported by NSF

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Date submitted: 04 Aug 2008 Electronic form version 1.4