Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Coffee ring deposition in bands SHREYAS MANDRE, Brown University, NING WU, Colorado School of Mines, JOANNA AIZENBERG, LAKSHMINARAYANAN MAHADEVAN, Harvard University — Microscopic particles suspended in a liquid are transported and deposited at a contact line, as the contact line recedes due to evaporation. A particle layer of uniform thickness is deposited if the particle concentration is above a threshold; below this threshold the deposit forms periodic bands oriented parallel to the contact line. We present a model for the formation of these bands based on evaporation leading to the breakup of the thin liquid film near the contact line. The threshold results from a competition between evaporation speed and deposition speed. Using this model, we predict the thickness and length of the bands, making the control of patterned deposition possible.

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Date submitted: 06 Aug 2010 Electronic form version 1.4