Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

The de-pinning transition of periodically vibrated sessile drops. CRAIG CAYLOR, COLIN CAMPBELL, Westminster College, VIATCHESLAV BEREJNOV, ROBERT THORNE, Cornell University — We studied dynamics of the shape and contact line of sessile drops under horizontal linear periodic vibrations. We observed a transition between two general regimes of drop behavior. The first is controlled by the contact angle hysteresis, when the drop's contact line remains pinned by the substrate. In this case, only the drop shape varies with respect to the amplitude and frequency of vibrations. Beyond a critical acceleration, the drop's contact line de-pins partially or completely and the drop's dynamics transfer to a second regime. In this regime the contact line dynamics and the advancing and receding contact angles strongly depend on the instantaneous velocity of the substrate. Within this second regime i) only the receding angle is strongly affected by the vibrations, ii) the contact angle hysteresis becomes dynamical and depends on the vibration characteristics.

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Date submitted: 10 Aug 2005 Electronic form version 1.4