

Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

AC Electrowetting and nanodrop ejection on Conducting Parallel Electrodes LU ZHANG, NISHANT CHETWANI, PETER MUSHENHEIM, YINGXI ELAINE ZHU, HSUEH-CHIA CHANG, University of Notre Dame — The variation of contact angle for a drop of size a on conducting parallel electrodes is shown via goniometry to be a strong function of the frequency of an applied electric field. While the contact line demonstrates the usual DC electrowetting behavior at low frequencies, no electrowetting was observed at frequencies higher than $\omega_c \sim \frac{D}{\lambda a}$, corresponding to the inverse RC time scale for electrode screening. Below this screening frequency, the electric field is focused towards the contact line and leads to nanodrop ejection at a threshold voltage that is frequency dependent. Because of electrode screening, this threshold voltage for nanodrop ejection corresponds to a unique threshold electric field, which is captured with an asymptotic analysis.

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Date submitted: 05 Aug 2008

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