

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Universal Nanocolloid Deposition Patterns: Harmonics of a Taylor Cone and Separation of DNA-Hybridized Nanocolloids¹ XINGUANG CHENG, HSUEH-CHIA CHANG, University of Notre Dame — With judiciously placed far-field electrodes, harmonics of the Laplace equation are selected near a conducting Taylor cone with discrete polar angles for the field maxima. Charged nanocolloids ejected along the discrete electric field lines of these mode maxima are observed to deposit a universal spectrum of rings on an intersecting plane, with particles of different size occupying different spectral lines due to different residue charge. After an affine transformation, nanocolloids ejected into a microslit and deposited onto one substrate exhibit the same universal line spectra. The size-selective deposition pattern is used to quantify DNA hybridization yield onto oligo-functionalized nanocolloids.

¹This work was supported by the DTRA (HDTRA1-08-C-0016).

Xinguang Cheng
University of Notre Dame

Date submitted: 03 Feb 2009

Electronic form version 1.4