

Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Experiment and Modeling of Spatially Indexed Microbead Arrays for High-Throughput Screening Applications THOMAS LEARY, CHARLES MALDARELLI, ALEXANDER COUZIS, City College of New York — The development of platforms for multiplexed, high throughput screening of the binding interactions of target biomolecules against a library of potential binding probes enables progress in many areas in medicine and biology. Formats in which probes are linked to microbeads arrayed in a microfluidic channel offer high sensitivity, reduced reagent consumption and are easily parallelized for multiplexed detection. This presentation describes a microfluidically assembled microbead array in which beads are streamed through a channel with an array of wells inscribed in the floor of the channel. The beads are captured in the wells via gravity. We demonstrate that an array of beads displaying different receptors can be assembled in this format, indexed by sequential deposition and used for a prototype assay. Solutions for a two dimensional mass transfer model of the conjugation of the probe to the receptor on the bead surface identify kinetically limited regimes which are used to measure the binding kinetics of the prototype assay.

Thomas Leary
City College of New York

Date submitted: 08 Aug 2011

Electronic form version 1.4