FALL 2017 LEHIGH CHEMISTRY SEMINAR SERIES

Wednesday
AUG 30

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4:10 PM

Snacks 3:50 PM

Micro-Assays for the Single Cell

The ability to assay and manipulate the microenvironment of cells or small cell clusters is one of the most promising applications for microengineered systems. The laboratory is developing a suite of technologies based on microengineered platforms and microfluidics to manipulate and analyze living cells. We have developed simple, inexpensive fabrication methods utilizing photoresists, plastics, and hydrogels for cell-based array. The fabricated devices include detachable, deformable or biodegradable array elements designed for cell analysis and sorting.

A second focus area develops new analytical tools to assess signaling pathways in large numbers of single cells to enable a better understanding of the complex circuitry within a cell. An integrated microelectrophoresis platform facilitates rapid separation and quantification of enzyme probes and their metabolic products from a cell to report the activity of kinases, lipases, and proteases. Automation in both areas yields sufficient single-cell assays to achieve statistically significant results with the end goal of creating diagnostic and prognostic assays for clinical medicine and biomedical researchers.