Distinguished Lecture Series in Nanoscience and Nanotechnology
Sponsored by the Center for High-Rate Nanomanufacturing

Applications of Microfluidics in Biology

Presented by

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Wednesday, September 23, 2009
4:00pm to 5:00pm
Egan Center 406
Northeastern University

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Abstract:

One of the major benefits of microfluidic technology is the possibility of using accurate and economical devices which only require very small amount of samples or reagents that are generally limited and expensive. Moreover, microfluidic technology gives the opportunity of using new tools including diffusion, laminar flow and surface tension that are usually less effective in macro scale. To date, most practical functions (e.g. pumping, valving, and sensing) have been demonstrated many times in microscale. However, those unique phenomena dominant in micro scale are not fully utilized yet.

In the presentation, a couple of important fabrication methods, including in-situ and interfacial polymerization, will be introduced to make microfluidic components which utilize microfluidic phenomena intelligently. Next, several integrated biological applications, including high-throughput conduit arrays and concentration gradient generators for tissue engineering and chemotaxis study, will be demonstrated.

Biographical Sketch:

Dr. Dongshin Kim received his Ph. D. in Mechanical Engineering from University of Wisconsin, Madison in 2006. After working for two years as an Animal Science Postdoc at University of Illinois, Urbana, Dr. Kim joined Brandeis University as a Senior Research Associate.