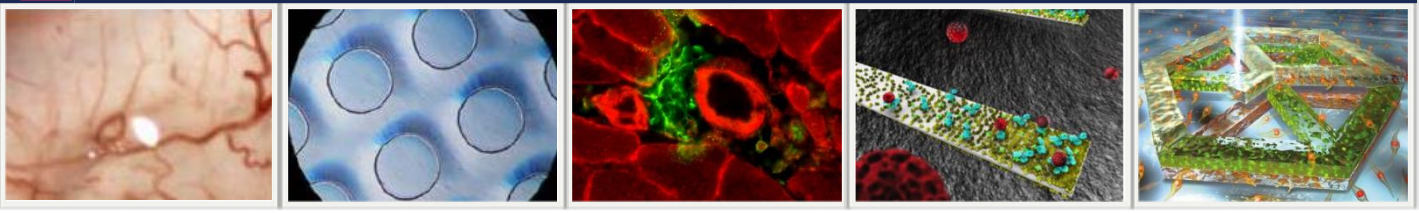
BioNanotechnology Seminar Series

Fall 2014



Modular Assembly of Nanoparticle-Coated Polymeric Microbubble for Ultrasound imaging and Vascular Drug Delivery

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Date: **Wednesday, October 29, 2014**
Time: **12:00 – 12:30 p.m. Central (10:00 – 10:30 a.m. Pacific)**
Location: **1000 MNTL at Illinois (KL 361 at UC Merced)**

Abstract:

In recent decades, nanoparticles have been extensively used as reliable carriers for drug delivery by prolonging life time of therapeutic drugs and reducing side effects. However, for local drug delivery, nanoparticles will be rapidly displaced following injection due to residual momentum caused by injection pressure. This study demonstrates that coupling vascularization drug-loaded poly(lactic-co-glycolic acid) (PLGA) nanoparticles with self-assembled polymeric microbubbles made of alkylated polyaspartamide by spontaneous van der Waals attraction would significantly reduce residual velocity and subsequent displacement of associated nanoparticles. The vasculature study by loading Angiopoietin 1 (Ang 1) into PLGA nanoparticles showed that more evenly distributed blood vessels were found by incorporating PLGA nanoparticles with microbubbles. Mutually, coating with nanoparticles reduced direct contacts between bubbles, thus prolonging lifetime of microbubbles. No significant difference of the contrast enhancement under ultrasound was found between plain microbubbles and PLGA-coated microbubbles. The resulting, hybridized nano/micro particle would greatly serve to improve quality of both imaging and treatment of vascular diseases.

Seminar Presented by:

Center for Cellular Mechanics
University of Illinois at Urbana-Champaign

IGERT Integrative Graduate Education and Research Traineeship
Cellular and Molecular Mechanics and BioNanotechnology

M-CNTC NCI Alliance for Nanotechnology in Cancer
Midwest Cancer Nanotechnology Training Center

CNST University of Illinois Center for Nanoscale Science and Technology