

## CBC SEMINAR ANNOUNCEMENT



**Dr Jong-in Hahm**  
**Georgetown University**

### **Engineering Bottom-up Protein Assembly at Nanoscale: Towards High Density, High Payload, Quantifiable Protein Arrays**

This talk presents an overview of our on-going nanobio research, aiming to provide fundamental understanding on nanoscale protein adsorption behavior and to develop more advanced, next-generation protein arrays. Specifically, we evaluate protein adsorption characteristics on chemically homogeneous and heterogeneous polymeric surfaces by employing diblock copolymers, homopolymers, and polymer blends as protein templates. We also investigate distance-dependent protein adsorption behavior on the interfacial region between the two blocks in the diblock and blend films. We carry out for the first time quantitative activity measurements of various enzymes immobilized selectively on one of the domains in microphase-separated block copolymer films. The exact number of adsorbed proteins on diblock copolymer surfaces is determined by measuring the size of the individual protein and the repeat spacing of the underlying polymeric nanodomain. The specific activity of enzymes adsorbed on the diblock copolymer surface can thus be measured and compared quantitatively to that of enzymes in free solution. Protein assembly on chemically modified polymeric nanotemplates is also explored in order to demonstrate the versatility of our new methods in providing a wide range of template size and shape. This approach will be particularly beneficial for fabricating periodic patterns of proteins on surfaces with a nanometer spacing without the use of lithographic techniques based on electron beam or extreme UV.

Our results demonstrate that a wide range of self-assembling, chemically heterogeneous, nanoscale domains in diblock copolymers can be used as basis for high payload, high density protein templates. Subsequently, the resulting protein nanoarrays can serve as novel, high density, high payload, biologically functional substrates in many proteomics applications.

<b>Date:</b>	<b>4<sup>th</sup> July 2012 (Wednesday)</b>
<b>Time:</b>	<b>11:00am – 12:30pm</b>
<b>Venue:</b>	<b>NTU SPMS CBC Building Level 2, Conference Room</b>
<b>Host:</b>	<b>Asst Professor Ling Xing Yi</b>