

## ▶ NSI-PRC 공동 세미나 ◀

**Fundamental Study of Nanoscale Protein-Polymer Interactions  
and Potential Contributions to Solid-state Protein Nanoarrays**

- 연 사 : Prof. Jong-in Hahm (Georgetown University)
- 일 시 : 2015년 12월 29일 (화) 16:00 - 18:00
- 장 소 : 서울대학교 13동 119호
- 주 최 : 서울대학교 나노응용시스템연구센터
- 후 원 : 미래유망융합기술파이오니어  
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## ■ Abstract

This talk presents an overview of our on-going research, aiming to provide fundamental understanding on nanoscale protein adsorption behavior and to develop more advanced, next-generation protein arrays. Intriguing protein adsorption phenomena on nanoscale surfaces exhibiting varying degrees of chemical heterogeneity are directly probed at the individual biomolecule level.

Specifically, we elucidate protein adsorption characteristics on the templates of diblock copolymers, blends, and homopolymers. We also investigate location-dependent protein adsorption behavior with respect to the size and distance of the interfacial regions defined by different polymer blocks. We carry out activity measurements of polymeric surface-bound enzymes and compare quantitatively with their free-state activities. We also explore protein assembly on chemically modified, polymeric nanotemplates to provide a range of feature size/shapes in solid-state protein arrays. Our results demonstrate that self-assembling, chemically heterogeneous, nanoscale domains in diblock copolymers can be effectively used for high density biotemplates. Our approach will be particularly beneficial for fabricating periodic patterns of proteins on surfaces with nanometer sizes without the use of lithographic techniques based on electron beam or extreme UV. Insight gained from our study may be used to control the surface density, conformation, orientation, and biofunctionality of prebound proteins in highly miniaturized proteomic applications, now approaching nanoscale.

## ■ Bio

Professor Hahm received her B.S. from Seoul National University and Ph.D. in Physical Chemistry under the guidance of S. J. Sibener at the University of Chicago. She then completed her postdoctoral research with C. M. Lieber in the Department of Chemistry at Harvard University. She started her first faculty appointment in the Department of Chemical Engineering at Pennsylvania State University. Since then, she moved to the Department of Chemistry at Georgetown University where she is currently an Associate Professor. She is a recipient of national awards such as 2013 American Chemical Society Rising Star Award, 2008 Progress/Dreyfus Lectureship Award, and 2007 WISE Lectureship Award.

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