Center for Molecular Spectroscopy and Dynamics, IBS-Korea University

IBS Center for Molecular Spectroscopy and Dynamics

COLLOQUIUM

- **SPEAKER**
  Prof. Julie S. Biteen (University of Michigan)

- **TITLE**
  Single-Molecule Imaging and Plasmon-Enhanced Fluorescence: Understanding Bacterial Function on the Nanoscale

- **ABSTRACT**
  By beating the diffraction limit that restricts traditional light microscopy, single-molecule fluorescence imaging is a precise, noninvasive way to sensitively probe position and dynamics. We are broadly interested in answering open questions about function and mechanism in microbiology by measuring structure, dynamics, and cooperativity in live bacterial cells via next-generation super-resolution imaging tools. I will discuss how we are measuring and understanding the dynamical interactions essential for DNA mismatch recognition and DNA replication in living cells, as well as our ongoing work to extend our targets from single cells to microbial communities. Still, the resolution of single-molecule imaging, and thus our ability to understand subcellular dynamics, is limited by the fluorescent probes. Thus, we take advantage of the localized surface plasmon resonances that result from the interaction of light with metal nanoparticles to improve the brightness and photostability of nearby fluorescent labels. We have measured the fundamental properties of plasmon-enhanced fluorescence with single-molecule detection, and we have discovered how coupling leads to a predictable shift of the emission position. Finally, we are applying this understanding to biocompatible enhancement of fluorescent protein emission, extending the advantages of metal-enhanced fluorescence to live-cell bio-imaging, and creating a flexible technology for high-resolution, real-time imaging.

- **DATE AND VENUE**
  June 23, 2017 (Friday, 11:00 a.m. - 12:00)
  Seminar Room 116, KU R&D Center

- **LANGUAGE**
  English

■ **INVITED BY**
Prof. Sang-Hee Shim

* If you want to discuss with Prof. Julie S. Biteen (from 1 to 5 pm) or have a lunch with her, please contact to Prof. Sang-Hee Shim (sangheeshim@korea.ac.kr).