

# The 280<sup>th</sup> MANA Special Seminar



## Remote excitation of SERS/Fluorescence on sub-diffraction limited plasmonic waveguide

Chair: Dr. Katsuhiko Ariga (MANA PI)



### Prof. Hiroshi Uji-i

*(Department of Chemistry,  
Katholieke Universiteit Leuven, Belgium)*

Metal nano-structures have attracted a lot of attention these decades because of the exceptional optical properties arising from localized surface plasmons resonances. The optical response of metal nano-structures strongly depends on their structure, size, shape, aggregation state, and local environment. The extraordinary properties of surface plasmons have resulted in the use of metal nano-structures for waveguides, plasmonic optics, etc. Furthermore, the confined localized electromagnetic field connected to LSPRs leads to a highly effective enhancement of both surface enhanced fluorescence (SEF) and Raman scattering (SERS). This has resulted in the development of ultra-sensitive SERS-based bio-sensing schemes. Recently also SEF has been exploited for fluorescence-based sensing in biology. It will be demonstrated that SPPs launched by optical excitation at an end of silver nanowire can excite SERS or SEF at many micrometers along the wire due to the SPPs waveguide effect. This remote excitation of SERS (RE-SERS) and SEF (RE-SEF) provides signal with very little background compared to when using direct excitation. The ability to transfer SERS/SEF excitation over several microns, through a sub-diffraction limited structure, will be discussed with respect to potential super-resolution imaging applications.

**Venue: Auditorium, 1F, WPI - MANA Bldg.**

**Namiki site**

**Date: Tue, August 28<sup>th</sup>, 2012 Time: 11:00am-11:45am**

Contact: International Center for Materials Nanoarchitectonics (MANA), Nakata (ex. 8806)