The 245th MANA Special Seminar

Jointly with Academic Collaboration Office

Monitoring Plasmon-Assisted Photochemical Reaction in Ultra-Small Space by Surface-Enhanced Raman Scattering

Chair: Dr. Kohei Uosaki (MANA PI)

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Localized electromagnetic field induced by photo-illumination at a vicinity of plasmon active metal nano-structure can be considered as the exotic perturbation to modify/change photo-excitation and/or polarization process of molecules locates close to the metal surface. The field may give us a chance for photo-chemical/physical manipulation of a single molecule at ultra-small space. In the present study, an isolated single-walled carbon nanotube with the diameter less than 1.5 nm was used as the target molecule. We observed highly-intense SERS spectra showing single radial breathing mode (RBM) peak with narrow 3 ~ 5 cm^{-1} FWHM, indicating successful measurements on a single SWNT positioned at the gap of the nano-metal dimer. We also found that certain intermediate frequency modes (IFMs) increases drastically with the increase of the local defect density of the structure characterized by D-band. These results demonstrated that SERS measurement enable to prove and create the local defect and electronic properties of an individual SWNT at metal nano-gap.

Venue: Seminar Room #431, 4F, MANA Bldg.,

Date: January 26th, Thursday **Time:** 16:00-16:45

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