

# 9<sup>th</sup> Nano Congress for Next Generation

August 01-02, 2016 Manchester, UK



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### Further perspectives on nanostructures for single-molecule vibrational spectroscopy

The concept of “Single-molecule spectroscopy” becomes widely known in recent days, particularly after the nobel lecture in chemistry in 2014, which is entitled “Single-molecule spectroscopy, imaging, and photocontrol: Foundations for super-resolution microscopy” by the novel laureate W.E. Moerner. This talk focused on the development of super-resolved fluorescence microscopy using fluorescent tags attached to specific molecules. While, as a spectroscopist, one can expect the phrase “single-molecule spectroscopy” to directly obtain the vibrational information from any type of single specific molecule by this technique, since we know that the important technical backgrounds for it may already exist as i.e., surface-enhanced Raman scattering (SERS), tip-enhanced Raman scattering (TERS), surface-enhanced coherent anti-stokes Raman scattering (SE-CARS) or surface-enhanced hyper Raman scattering (SEHRS). These plasmon-enhanced vibrational spectroscopies have a certain potential to detect any type of molecules at single-molecule level. However, only few specific molecules were reported as target molecules at single-molecule level using SERS, TERS, SE-CARS and SEHRS, therefore, the conceptual steps remains to realize a further achievement on “Single-molecule spectroscopy”. In this meeting, we will discuss perspectives for what will be needed to complete the single-molecule vibrational spectroscopy. Every researchers working on plasmon-enhanced vibrational spectroscopy (SERS, TERS and SE-CARS), vibrational spectroscopy and/or plasmonics are all welcome to the meeting. Nanotechnology for plasmon-enhanced vibrational spectroscopy will also be discussed as an important topic.

### Biography

Yuko S Yamamoto is growing as a Spectroscopist particularly based on Raman Spectroscopy and Plasmon-Enhanced Spectroscopy. She studied Raman Spectroscopy and completed her PhD (2011) in Prof. Yukihiro Ozaki laboratory in Kwansei Gakuin University, Japan. Then she started surface-enhanced Raman scattering (SERS) under the supervision of Prof. Tamitake Itoh as a Post-doctoral fellow at National Institute of Advanced Industrial Science and Technology (AIST), Japan, and received the research fellowship for young scientists position of Japan Society for the Promotion of Science (JSPS) in Kagawa University, Japan (2014). Her specialties are Raman Spectroscopy and surface-enhanced Raman spectroscopy (SERS). Her current research interests are plasmon-enhanced single-molecule vibrational spectroscopies i.e., SERS, Tip-enhanced Raman spectroscopy (TERS), surface-enhanced coherent anti-stokes Raman spectroscopy (SE-CARS) and surface-enhanced hyper Raman scattering (SEHRS).

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