**Developments of Raman scattering spectroscopy and coherent phonon spectroscopy at nanoscale**

Prof. Dr. Shuyi Liu

*Huazhong University of Science and Technology, Wuhan, China*

Recent state of-the-art experimental and theoretical studies showed that plasmonic fields can be confined to few nanometers and even down to atomic scale. Sophisticated experiments combining scanning tunneling microscopy with local optical detection and excitation (LT-photon-STM) now allow us to perform optical spectromicroscopy at unprecedented spatial resolution.

In this talk, I will introduce the development of our home-built LT-photon-STM and discuss our recent studies on tip enhanced Raman spectroscopy [[[1]](#endnote-1), [[2]](#endnote-2), [[3]](#endnote-3)] and near atomic scale coherent phonon spectroscopy [[[4]](#endnote-4)].

1. S. Liu *et al.* *Nano Lett.* 20, 5879 (2020). [↑](#endnote-ref-1)
2. S. Liu *et al. Nano Lett.* 21, 9, 4057–4061 (2021). [↑](#endnote-ref-2)
3. S. Liu *et al. Phys. Rev. Lett.* 128 (20), 206803 (2022). [↑](#endnote-ref-3)
4. S. Liu *et al. Science Advances* 8, eabq5682 (2022). [↑](#endnote-ref-4)