

# Raman Spectroscopy for Label Free Biological Imaging

At the University of Minnesota, the lab of Sang-Hyun Oh is working on using nanotechnology and optical methods to advance analytical and sensing method in particular for bio and life science applications. They developed a high-resolution micro Raman spectroscopy system for fast measurements (the researchers talk about a factor 100x advantage in speed over similar systems) where the biological nano particles do not have to be labelled.

The team build microscopic traps for the nanoparticles using an effect called dielectrophoresis on plasmonic nanostructures. The traps capture the bio structures along a small gap that is imaged to a spectrograph so Raman spectra of all captured particles can be collected simultaneously. In addition to this multiplexing advantage gold nanoparticles are used to create a SERS surface enhanced Raman effect to obtain even stronger signals.

The fast system allows for real time monitoring of bio particles in cells. Having such a system will improve capabilities for cell and biological analysis and could lead to development of more capable biosensors.

**Featured Paper/Publication:** [Integrated Nanogap Platform for Sub-Volt Dielectrophoretic Trapping and Real-Time Raman Imaging of Biological Nanoparticles](#), Nano Letters, 2018

**Reference Lab:** [Prashant Jain, University of Illinois Urbana-Champaign, USA](#)

**Featured Product:** [Isoplaner](#), [HRS](#), [PIXIS](#), [BLAZE](#)