

# 화학고 세미나

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## Development of Vibrational Microscopy for Biomolecular Investigation

For many years, scientists have utilized molecular vibrational motions in spectroscopy and microscopy to conveniently observe target specimens. This observation allows for the measurement of the interaction between light and matter, as shown by phenomena like Raman scattering and infrared absorption. However, practical measurements using Raman scattering have been challenging due to its low signal intensity. While the signal strength in infrared absorption is relatively higher than Raman scattering, progress in imaging techniques has been limited by the diffraction limit. Furthermore, both methods have faced significant restrictions when measuring samples with complex scattering and variations, such as skin.

Developing vibrational microscopy is crucial for future optical investigations of biomolecules and material structures. We continuously strive to develop novel techniques to address these issues. Our team has developed super-resolution mid-infrared photothermal microscopy and sensitive stimulated Raman scattering microscopy close to the shot-noise limit. We were able to describe tiny biomolecular vesicles and polymer beads with visible spatial resolution and reached unprecedented noise levels. Additionally, we investigated the unprecedented penetration depth of coherent Raman scattering microscopy using the wavefront correction technique.

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Location : 과학관 B131호

Host : 연세대학교 화학과

