第226回 OPERA研究交流セミナー
第217回 ISIT有機光エレクトロニクス研究特別室セミナー
第284回 未来化学創造センターセミナー

日時：2023年10月16日(月) 17：00～
場所：ISI棟3階 セミナー室

Single-molecule spectroscopy using a gap plasmon

Dr. Yousoo Kim, RIKEN

When irradiated onto a nanoscale metal structure, light can be squeezed into an extremely small region of a few nm, far beyond the diffraction limit (several 100 nm) of visible light, due to the localized surface plasmon. The scanning tunneling microscope (STM) is a versatile and powerful tool for studying and controlling the chemistry of single molecules on solid surfaces. We have made spectroscopic measurements and controlled photochemical reactions of single molecules spatially fixed on solid surfaces at low temperatures using the near-field light localized in the tiny gap between a metal tip of an STM and a conducting substrate. The gap plasmon has a characteristic interaction with matter, especially with a single molecule. We have developed an original optical STM that combines the STM with light irradiation and detection technologies, allowing us to use the gap plasmon to explore novel chemical reactions and spectroscopy based on the interaction between the NFL and electronic/vibrational quantum states of a single molecule at the STM junction. In this talk, I will discuss recent issues focusing on single-molecule spectroscopy based on the excitation of molecular quantum states by the gap plasmon and future prospects.

主催：九州大学　最先端有機光エレクトロニクス研究センター
　　：財団法人九州先端科学技術研究所(ISIT)
共催：九州大学　未来化学創造センター