

# Mapping nanoscale electric field hotspots of a plasmon–molecule system: A theoretical study

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## Abstract

The coherent interaction between localized surface plasmon resonance modes and excitons of a single or a collection of quantum emitters have fueled the development of novel applications in quantum optics and material science. In this work, using first-principles simulations, I analyze the modifications in absorption spectra and electric near-field enhancements in a structure consisting of an aluminum nanotriangle interacting with a varying number of pyridine molecules (placed at the nanotriangle tips) in close proximity. What is more, I find very interesting spatial variation in induced electron density and electric near-field enhancements with a remarkable dependence on the number of interacting pyridine molecules and the direction of light illumination. The obtained results may help to improve our understanding of the light–matter interaction at the sub-nanometer scale.