

# Quantum-Enhanced Optical Sensing: From Remote to Near-Field Scenarios

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We discuss applications of quantum molecular coherence, as well as nonclassical states of light, such as entangled and squeezed light, to improved molecular spectroscopic sensing. We consider scenarios ranging from remote to near-field configurations, where enhanced sensitivity and resolution are further aided by plasmonic nanostructures and antennas. As one example, we have recently worked on ultrasensitive Raman-spectroscopic nondestructive label-free biosensing with molecular-level sensitivity and with spatial resolution down to a fraction of a nanometer.