LOW-COHERENCE INTERFEROMETRY OF PLASMONIC NANO STRUCTURES

Ignacio Iglesias, Lisa Almonte, Jaime Colchero
Departamento de Física
Universidad de Murcia
Campus de Espinardo, 30100 Murcia, SPAIN
E-mail: ignacio.iglesias@um.es

KEY WORDS: Far field detection of nanoparticles. Total Internal Reflection; Plasmons. Low-coherence interferometry.

Single nanoparticles cannot be resolved using conventional optical microscopy but if the concentration is low and does not aggregate, can be individually localized in the sample by blocking the excitation light to prevent the sensor saturation. The first condition can be attained by controlling the concentration and the solvent, the second, using special illumination modes as dark-field or total internal reflection (TIR). If such conditions are met, the light scattered by individual particles can be spectroscopically analyzed to obtain information about its characteristics and the environment [1]. In this presentation a custom made TIR microscope is described which uses a supercontinuum laser as plasmonic excitation source coupled with an interferometer that permits the analysis of the scattered light. Given that, in addition to enhance the SNR of the scattered light, the TIR configuration allows launching longitudinal plasmons modes [2], the system is applied to the characterization of the plasmon propagation in multimetal nanowires by low-coherence interferometry.

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