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Sala de la Biblioteca

Plasmonics for Biosensing and Nanomedicine

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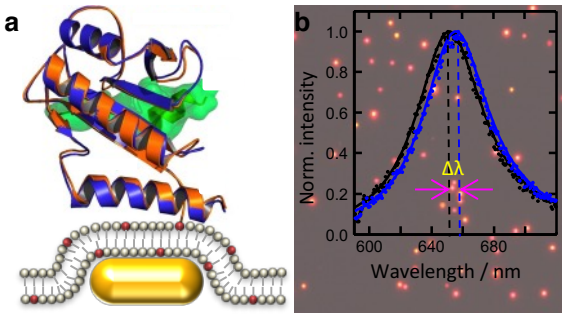
The optical excitation of surface plasmons in noble metal nanoparticles leads to nanoscale spatial confinement of electromagnetic fields. Recent advances in plasmonics have enabled novel applications in biology and nanomedicine. In this talk I will introduce surface plasmons for optical biosensing and photothermal therapy. Plasmonic nanoparticles are the smallest possible label-free sensors and allow the development of biochemical assays for molecular detection and quantification with high sensitivity. Plasmon resonance is exquisitely sensitive to changes that can be modulated by molecular adsorption, desorption or even conformational changes that induce variations in the refractive index.[1] Besides, in photothermal therapeutics, nanoparticles function like nanoscale lenses. By focusing external laser energy at the nanoparticles' LSPR generates high EM energy density that is converted into very intense thermal energy that heats the metal nanoparticles locally and induces cell apoptosis.[2]



1. *Ahijado et al. Nano Lett.* **2014**, 14, 5528–5532.
2. *Ahijado et al.* **2016**, 1, 388–395.