

**Title:** Surface plasmons on nanostructures

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**Abstract:** An introduction to the field of (bio)sensors based on localized surface plasmons (LSP) on metallic nanoparticles is given. Description of theoretical approaches to modeling of localized surface plasmons on nanoparticles and nanostructures is given. These techniques are used to study the process of optical excitation of localized surface plasmons on individual metallic nanoparticles and to determine main performance characteristics of LSP-based sensors. Experimental study of LSP on spherical nanoparticles is reported. It is demonstrated that metallic nanoparticles supporting LSP can be used to detect changes in the refractive index or molecular binding events.

**Keywords:** surface plasmon, nanoparticles, surface plasmon resonance sensors