

# SURFACE PLASMON RESONANCES AND THEIR MANIFESTATION IN THE OPTICAL PROPERTIES OF NANOSTRUCTURES OF NOBLE METALS

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## S u m m a r y

This review is devoted to the studies of the optical properties of nanoparticles of Cu and noble metals Au and Ag and nanoparticle systems. The response of such systems to the irradiation by electromagnetic waves is interpreted in terms of the excitation of distinct electronic quasiparticles named localized surface plasmons and surface electromagnetic waves named surface plasmon polaritons. The influence of the size, shape, and dielectric environment of isolated metal nanoparticles on the plasmon resonance frequency of nanoparticles is considered. Factors that lead to a significant enhancement of local electric and magnetic fields in particles' near-field are discussed. The effects originating from the interaction between nanoparticles in one-dimensional linear and planar systems of nanoparticles, as well as the substrate effect on the optical and spectral characteristics of the systems, are also discussed. Practical applications of metal nanoparticles and nanoparticle systems are illustrated by the example of important modern technologies such as sensorics and plasmonic photovoltaics.