

September 17th, 2010, 10.00 a.m. – DESY Bldg. 49, Room 108

Mohamed El-Amine Madjet

Free University Berlin, Institute of Chemistry and Biochemistry

Optical properties of gold nanoparticles and field enhancements using Time-Dependent Local Density Approximation

Using Time-dependent local density approximation, we investigated the optical properties of small gold nanoparticles. We show that the dynamical response of the valence electrons responsible for the collective excitations is strongly influenced by the polarization of the core electrons through screening effects.

This screening results in a shift of the surface plasmon to lower energy. The field enhancement factors were calculated for different nanoparticle sizes. We investigated also the dependence of the field enhancement factor on the distance from the surface of the nanoparticle and on the surrounding medium.

