INSIDE ACTIVATES COMPLEX GOLD NANOPARTICLES FOR MEDICAL APPLICATIONS

SAMIR TALOUB, FARIDA HOBAR

Laboratory of microelectronics and instrumentation (LMI), Electronic department, faculty of sciences engineering, Constantine 1 University, 25000, Algeria

ABSTRACT. The optical scattering and absorption of gold nanorods (GNRs) depends on its size, shape, andsurroundings. This dependence is due to both intrinsic and extrinsic effects. A good understandingof this dependence is needed for applications of GNRs in photo-thermal therapy, optical and opto-acoustic imaging, biosensing, and other photonic areas. We have modeled, by finite element analysis, the process of absorption of a simple gold nanorod and gold coated Tio2 nanorod in the same surrounding medium (water), and we have calculated and compared the absorption cross section of simple and complex GNRs. Finally we have modeled a dipolar excitation; the nanoshell is illuminated via a dipole excitation source (the dipole source placed inside the gold nanoshell).

KEYWORDS: *Gold nanorods, plasmon resonance, Tio2, dipole source.*