Propagating and trapping light at subwavelength dimension with silver nanostructures. Haining Wang, Shengli Zou. Chemistry Department, University of Central Florida, 4000 Central Florida Blvd., Orlando, FL 32816

Surface plasmon is the collective oscillation of conduct electrons at the dielectric/metal interface. Novel optical properties of metal nanostructures could be obtained when surface plasmons are excited. Using numerical simulations, we demonstrated that electromagnetic wave could propagate along a hollow silver nanorod which has subwavelength dimensions with growing intensities. The resonance wavelength could be tunable by changing the shape and dimension of the hollow rod. We also showed that light could be efficiently trapped in a two-layer thin silver film with perforated holes in one layer facing the incident light. High absorption efficiency close to 100% could be obtained. The simulations showed that the geometries of conical frustum shaped holes in the first layer are critical for the improved absorption efficiencies.