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Plasmonic properties of non-concentric nanoshells Y. WU, H. WANG, N.J. HALAS, P. NORDLANDER, Rice University — The plasmon hybridization method [1]is applied to nanoeggs, i.e., nanoshells with a non-concentric (offset) core. In contrast to concentric nanoshells, the particle exhibits a multitude of dipole active plasmon resonances. These resonances are formed by hybridization of the multipolar plasmon resonances associated with the inner and outer surfaces of the metallic shell. The reduced symmetry introduced by the offset of the core causes a significant admixture of dipolar components in all plasmon modes. The hybridization is shown to depend strongly on the asymmetry of the particle. The results compare very well with results from FDTD simulations. The non-concentric nanoshell particles are shown to provide large electric field enhancements on open-ended surfaces.

[1] E. Prodan and P. Nordlander, J. Chem. Phys. 120(2004)5444-5454

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