

Intra-particle Surface Plasmon Coupling in Nanorods

Sungwan Kim¹, Kevin L. Shuford³, Hye-Mi Bok¹, Seong Kyu Kim^{1*} and Sungho Park^{1,2*}

¹Department of Chemistry, BK21 School of Chemical Materials Science

²SKKU Advanced Institute of Nanotechnology Sungkyunkwan University

³Chemical Sciences Division Oak Ridge National Laboratory

The optical properties of two-component nanorods consisting of Au and Ni blocks have been investigated. The optically inactive component Ni plays a relaying role in the surface plasmon coupling both for the dipole mode and for the higher-order modes of gold blocks. The experimental results exhibit that the free electrons in Ni participate in the optical coupling phenomenon, and that plasmon excitations in the Au blocks induce the free electrons in Ni to oscillate.