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Calculation of plasmon resonance shifts for dielectrically-coated proximate gold nanoparticles<sup>1</sup> DARRAGH ROONEY, C. RANGAN, University of Windsor. Canada., S. MITTLER, University of Western Ontario. Canada — Noble metal nanoparticles exhibit surface plasmon resonances that are sensitive to particle shape. Arrays of gold hemispherical particles can be self-assembled on the surface of a waveguide, whose evanescent fields can be used to probe these resonances. The optical response is sensitive to dielectric ligands bound to the particle surface, giving the system a sensing functionality. Using the discrete dipole approximation (DDA), extinction spectra are calculated for pairs of particles separated by small distances for polarizations transverse and parallel to the waveguide surface. It is found that parallel fields yield spectra highly sensitive to particle separation, and that these spectra are shifted by the presence of dielectric coatings. Transverse fields do not show this behavior.

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