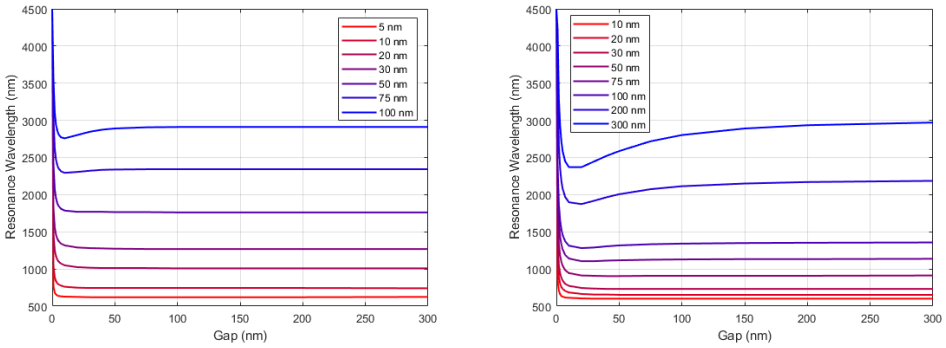
Near-Field Coupling in Plasmonic Nanoarrays: Tailoring Radiative and Non-Radiative Losses Through Gap Engineering: Supporting Information

Benedict Morris[1*] and Bruno Palpant[1]

[1*]Université Paris-Saclay, CNRS, ENS Paris-Saclay, CentraleSupélec, LuMIn, Gif-sur-Yvette, 91190, State, France.

*Corresponding author(s). E-mail(s): benedict.morris@centralesupelec.fr;
Contributing authors: Bruno.palpant@centralesupelec.fr;

1 Figures



(a) (b)

Fig. S1: Resonance wavelength extracted from FDTD simulations of the longitudinal dipolar localised surface plasmon resonance for different nanorod geometries as a function of interparticle edge-to-edge distance (gap). **(a)** Gold nanorods are 2 nm in height, **(b)** gold nanorods are 20 nm in height.

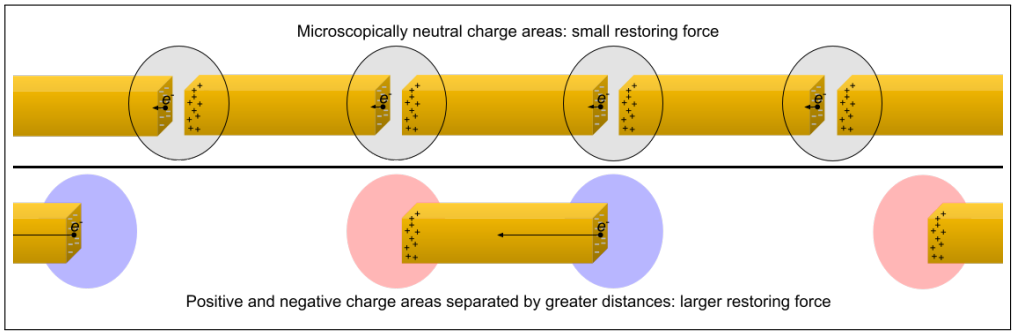


Fig. S2: Illustration of the charge screening for small gaps that leads to a smaller restoring force, red-shifted resonance, and reduced absorptance.

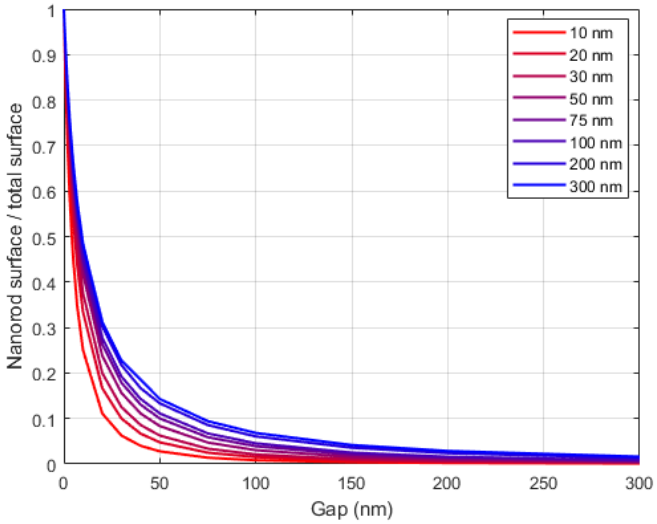


Fig. S3: Ratio of gold nanorod surface area to total surface area as a function of gap for different gold nanorod lengths.

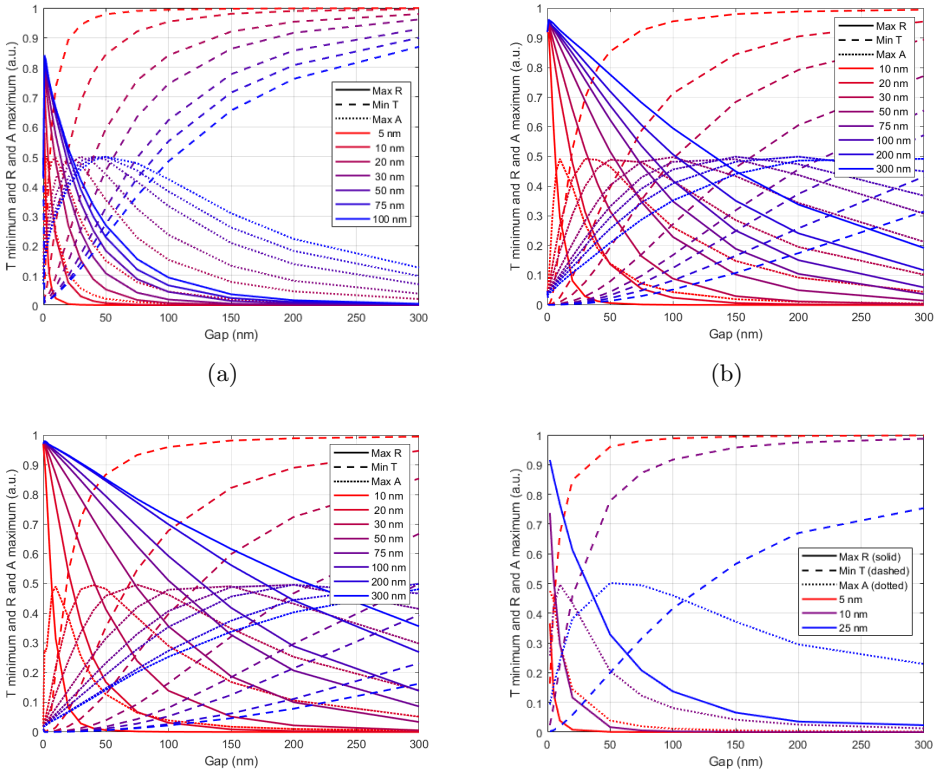


Fig. S4: Minima of transmittance (dashed lines), maxima of reflectance (solid lines) and maxima of absorptance (dotted lines) for different gold nanorod lengths as a function of gap from FDTD simulations. There are less lengths in the 2 nm high nanorod arrays due to resonance wavelength being out of our range for lengths above 100 nm. **(a)** 2 nm high nanorods, **(b)** 10 nm high nanorods, **(c)** 20 nm high nanorods, **(d)** spheres of radii 5, 10 and 25 nm.