Supporting Information

Classical electromagnetic simulation

Electromagnetic simulations of the metastructures were performed using COMSOL, assuming standard boundary conditions and using literature values for the dielectric functions of the materials. Calculations assumed a normally incident beam (z-direction) polarized in the x-direction and periodic boundary conditions in x and y directions. The nanocubes has a corner radius of 15 nm. Polymer coatings were involved like in the experiment [25]: a 3 nm PVP coating on the NC and a 1 nm PAH layer on the surface of the Al_2O_3 spacer. See Figure S1. The refractive indices for the polymers and spacer (PVP, PAH, and Al_2O_3) were taken to be 1.52, 1.4, and 1.77, respectively. These parameters and conditions describe very well the experiment [25] which was performed using Ag NCs.
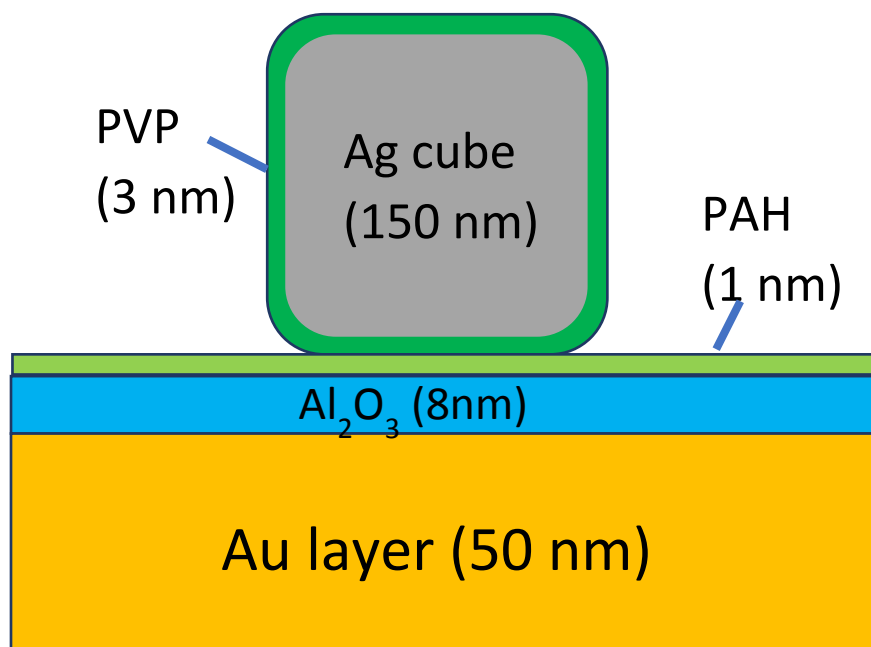
PVP
(3 nm)

Ag cube
(150 nm)

PAH
(1 nm)

Al_2O_3 (8nm)

Au layer (50 nm)

Figure S1: Electromagnetic model of the metastructure. The NC and substrate are covered with the polymers shown in this figure, like in the experiment [25]. The spacer Al$_2$O$_3$ was taken to be the 8 nm thick and the total gap became 12 nm.
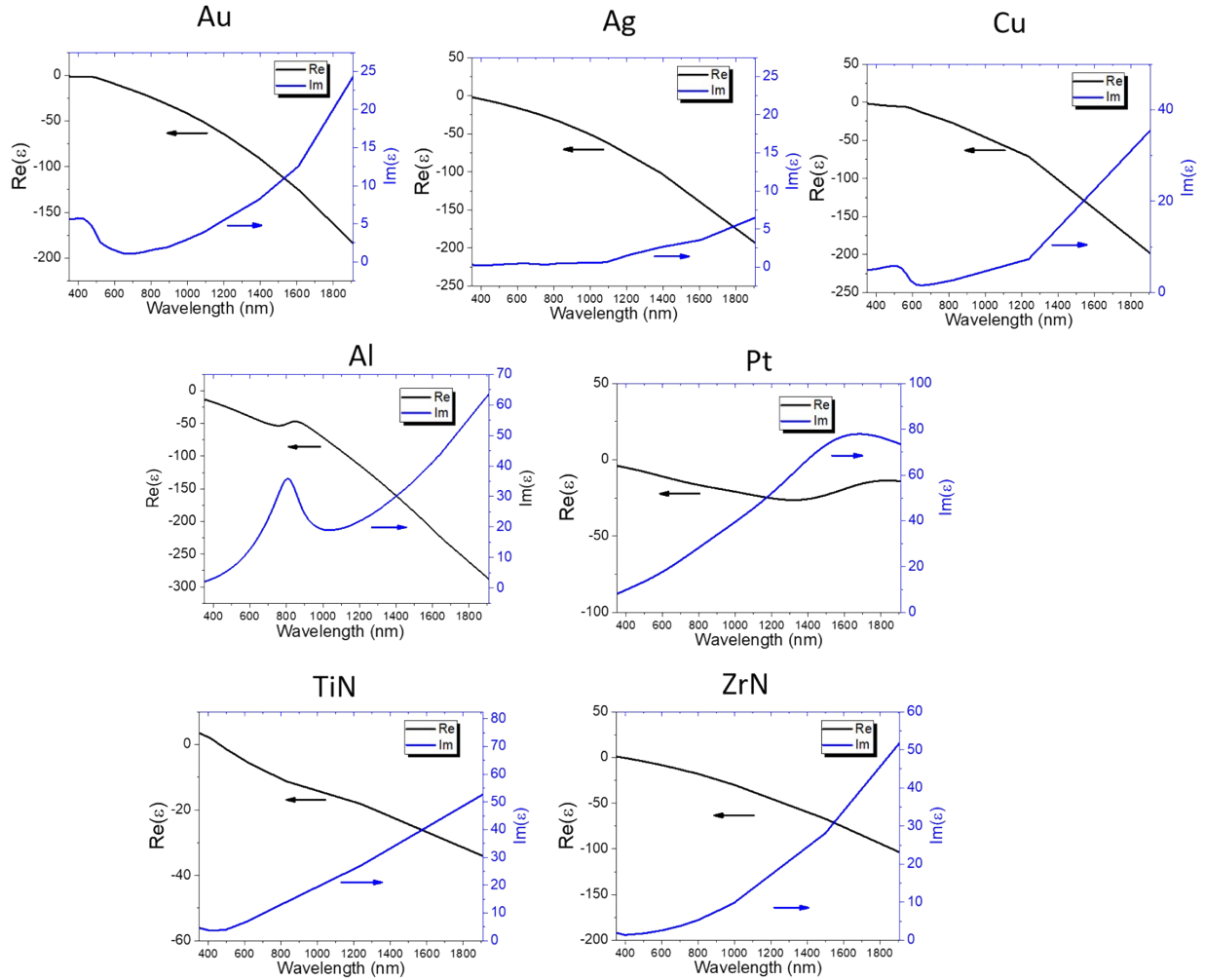

Figure S2: Dielectric functions of the materials used in the calculations.