Supporting Information for: Correlated Rayleigh Scattering Spectroscopy and Scanning Electron Microscopy Studies of Au-Ag Bimetallic Nanoboxes and Nanocages

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TEM Measurements of Wall Thickness for Nanocages:

Because it is difficult to measure the wall thickness of the nanocages with SEM, TEM was used to determine a relationship between edge length (L) and wall thickness (w) for these particles. Figure S1 shows typical TEM images of type I and type II nanocages, along with SEM images of similar particles. The way the wall thickness is measured from the TEM images is indicated in this Figure. Figure S2 shows a plot of the wall thickness versus edge length for 19 nanocages. Fitting the data into a linear relationship yields $w = 0.11 \times L - 2.4$ (in nm). This formula was used to determine the volume of the type I and type II nanocages in our linewidth analysis, see main text for details.

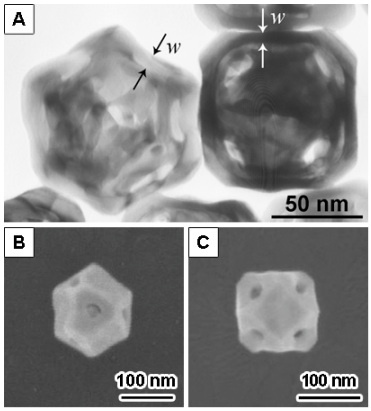

Figure S1. (A): TEM images of nanocages (both type I and type II). (B) and (C): SEM images of similar nanoparticles.

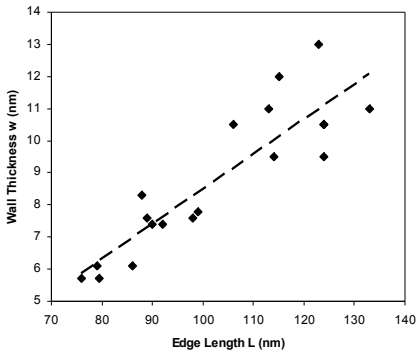

Figure S2. Relationship between wall thickness (w) and edge length (L) determined from TEM images.

Dimensions, Resonance Energies and Linewidths for Nanoboxes and Nanocages:

Table S1: Data for Nanocages: L = edge length, w = wall thickness, E_{res} = resonance energy, and Γ_{hom} = linewidth. The errors for the averages are the standard deviation.

Particle	L (nm)	w (nm)	E_{res} (eV)	Γ_{hom} (meV)
1	75	8.5	1.78	316
2	91	12.6	1.80	332
3	93	13.1	1.71	353
4	97	11.3	1.71	509
5	98	11.3	1.76	328
6	99	14.4	1.72	324
7	99	12.6	1.72	338
8	99	12.6	1.67	365
9	99	12.2	1.68	388
10	101	10.4	1.73	351
11	102	14.0	1.68	314
12	105	13.5	1.66	387
13	107	17.1	1.71	288
14	109	12.2	1.67	361
15	110	10.4	1.68	389
16	111	12.2	1.61	410
average	99.7 ± 8.8	12.4 ± 1.9	1.71 ± 0.05	360 ± 52

Table S2: Data for Type I Nanocages: L = edge length, d = hole diameter, E_{res} = resonance energy, and Γ_{hom} = linewidth. The wall thickness is given by the relationship determined by TEM analysis. The errors for the averages are the standard deviation.

Particle	L (nm)	d (nm)	E_{res} (eV)	Γ_{hom} (meV)
1	112	26.6	1.76	324
2	114	20.7	1.68	470
3	118	21.0	1.64	348
4	118	23.0	1.69	490
5	119	26.6	1.68	476
6	124	20.7	1.66	282
7	126	24.8	1.71	443
8	127	23.4	1.79	405
9	131	20.7	1.62	467
10	131	19.4	1.69	521
11	133	27.0	1.61	466
12	134	18.0	1.66	460
13	134	22.5	1.61	384
14	135	20.7	1.63	328
15	137	22.5	1.66	438
16	137	23.0	1.65	455
17	138	21.6	1.63	392
18	139	25.2	1.59	503
19	153	20.3	1.62	396
average	129.5 ± 10.2	22.5 ± 2.6	1.66 ± 0.05	424 ± 67

Table S3: Data for Type II Nanocages: L = edge length, d = hole diameter, E_{res} = resonance energy, and Γ_{hom} = linewidth. The wall thickness is given by the relationship determined by TEM analysis. The errors for the averages are the standard deviation.

Particle	L (nm)	d (nm)	E_{res} (eV)	Γ_{hom} (meV)
1	131	23.0	1.58	290
2	135	25.7	1.68	337
3	137	26.1	1.65	406
4	138	23.0	1.66	388
5	140	21.2	1.66	316
6	141	24.8	1.55	273
7	143	23.0	1.61	290
8	143	24.8	1.62	436
9	147	24.8	1.67	423
10	150	23.0	1.7	481
11	151	23.9	1.55	318
12	155	27.9	1.67	406
13	158	23.0	1.59	350
14	159	20.3	1.703	409
15	160	32.9	1.59	492
16	163	29.7	1.70	400
17	164	24.8	1.68	386
average	147.9 ± 10.5	24.8 ± 3.1	1.64 ± 0.05	376 ± 65