Electronic Supplementary Information (ESI)

Green Synthesis of Bio-Compatible Carboxylate-Functionalized Carbon Layer of 4 to 26 nm Thickness on Gold Plasmonic Nanoparticles

Mike Rozenberg[a], Avi Huri[a], Eli Varon[b], Anya Muzikansky[a], Orit Shefi[b], Eli Sloutskin[c] and David Zitoun[a*]

*Corresponding Author Email: David.Zitoun@biu.ac.il

a. Department of chemistry and Bar-Ilan Institute of Nanotechnology and Advanced Materials (BINA), Bar-Ilan University, Ramat Gan 5290002, Israel

b. Faculty of Engineering and Bar-Ilan Institute of Nanotechnology & Advanced Materials (BINA), Bar-Ilan University, Ramat Gan 529002, Israel

c. Physics Department and Institute of Nanotechnology & Advanced Materials(BINA), Bar-Ilan University, Ramat Gan 529002, Israel

Table S1. Summarized experimental details and product annotations

Sample Annotation	Au@Citrate Volume (ml)	Buffer (ml)	Glucose 0.2M (ml)	ddH2O (ml)	Resulting Thickness (nm)	StD (nm)
Au@C_4nm	10	0.1	0.25	2.15	4.11	0.99
Au@C_6nm	10	0.1	0.5	1.9	6.76	1.25
Au@C_8nm	10	0.1	0.75	1.65	8.53	1.65
Au@C_9nm	10	0.1	1	1.4	9.61	1.81
Au@C_13nm	10	0.1	1.25	1.15	13.49	2.54
Au@C_14nm	10	0.1	1.5	0.9	13.87	2.10
Au@C_26nm	10	0.1	2.5	0	26.24	3.20
Fructose*	10	0.1	0.25	2.15	3.86	0.71
Sucrose**	10	0.1	0.25	2.15	6.83	1.20

*Fructose used instead of glucose as the carbon source at the same concentration

**Sucrose used instead of glucose as the carbon source at the same concentration.

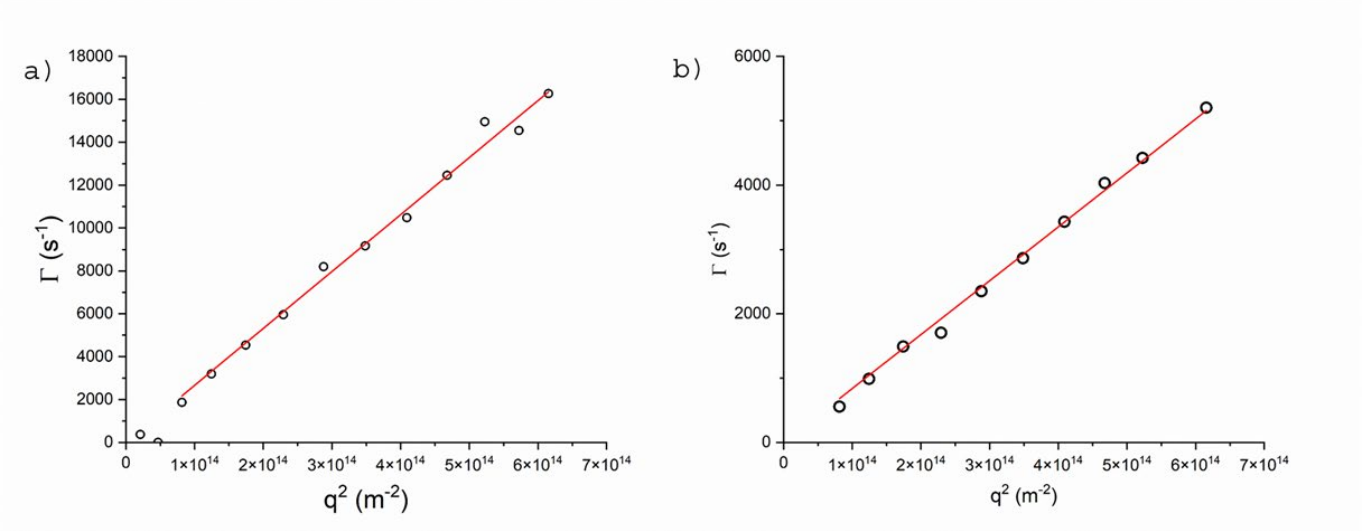

Figure S1. DLS measurements of a) Au NPs and b) Au@C_10 nm.

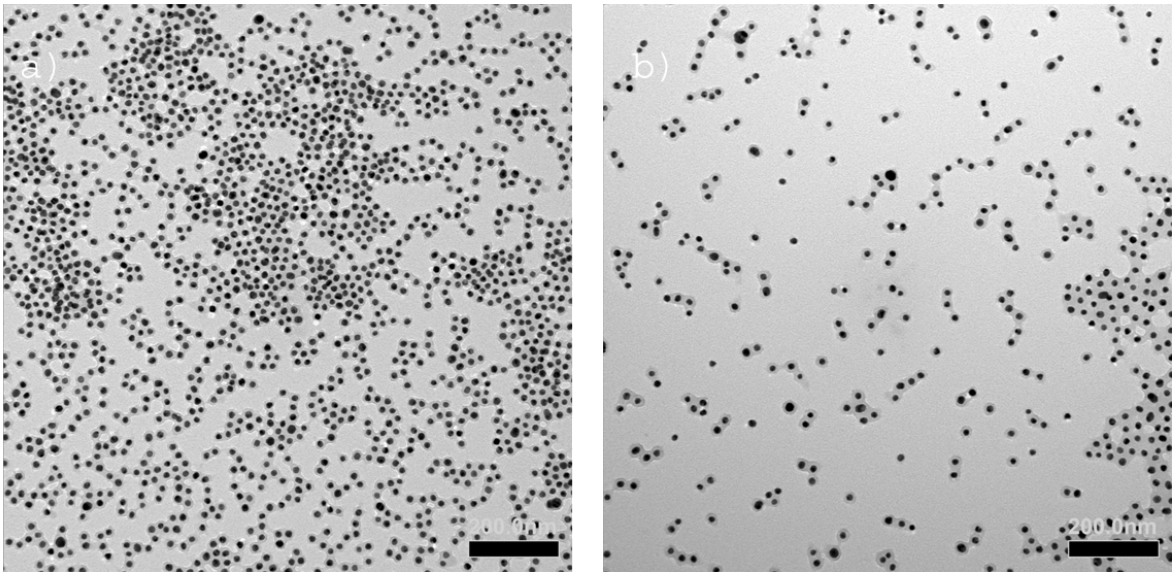

Figure S2. Low Mag TEM image of Au coated with carbonized a) fructose (~4 nm carbon layer) and b) sucrose (~7 nm carbon layer) (see Table S1 for the precise values)

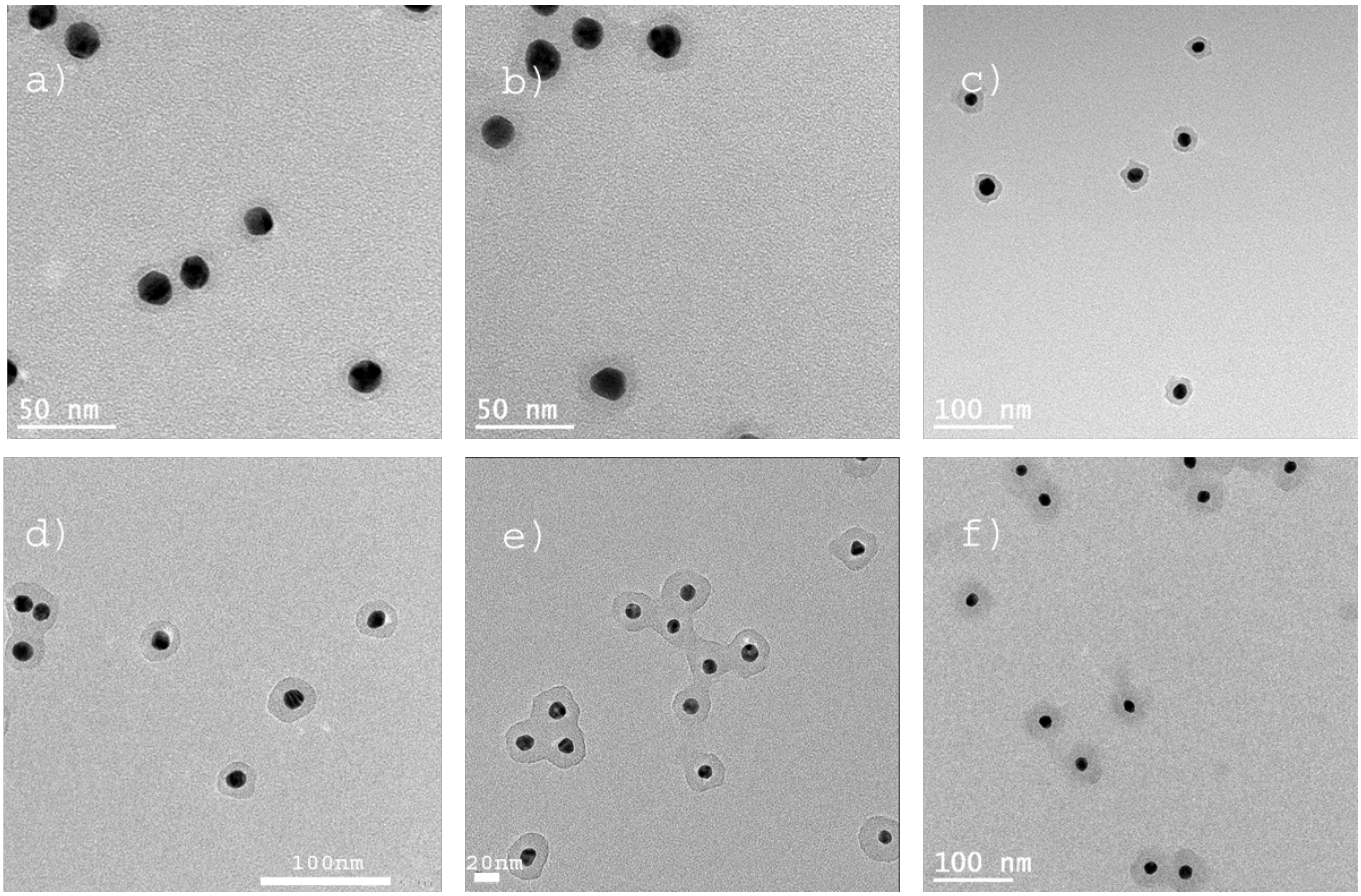

Figure S3. TEM images of Au@C from glucose with varying carbon coating thicknesses a) Au@C_4 nm, b) Au@C_7 nm, c) Au@C_8 nm, d) Au@C_10 nm, e) Au@C_13 nm, f) Au@C_14 nm.

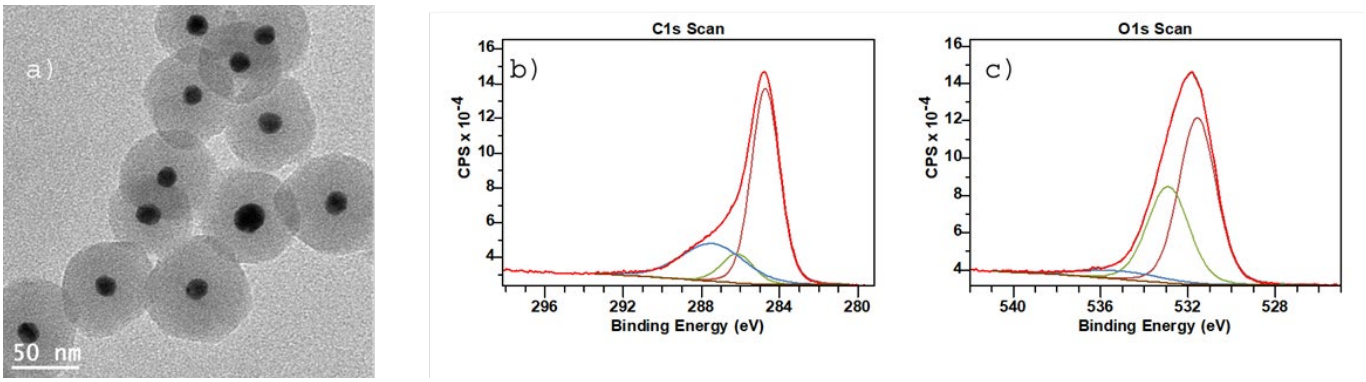

Figure S4. a) TEM image of Au@C_26 nm, XPS spectra of the same Au@C_26 nm for b) C1s and c) O1s orbitals.

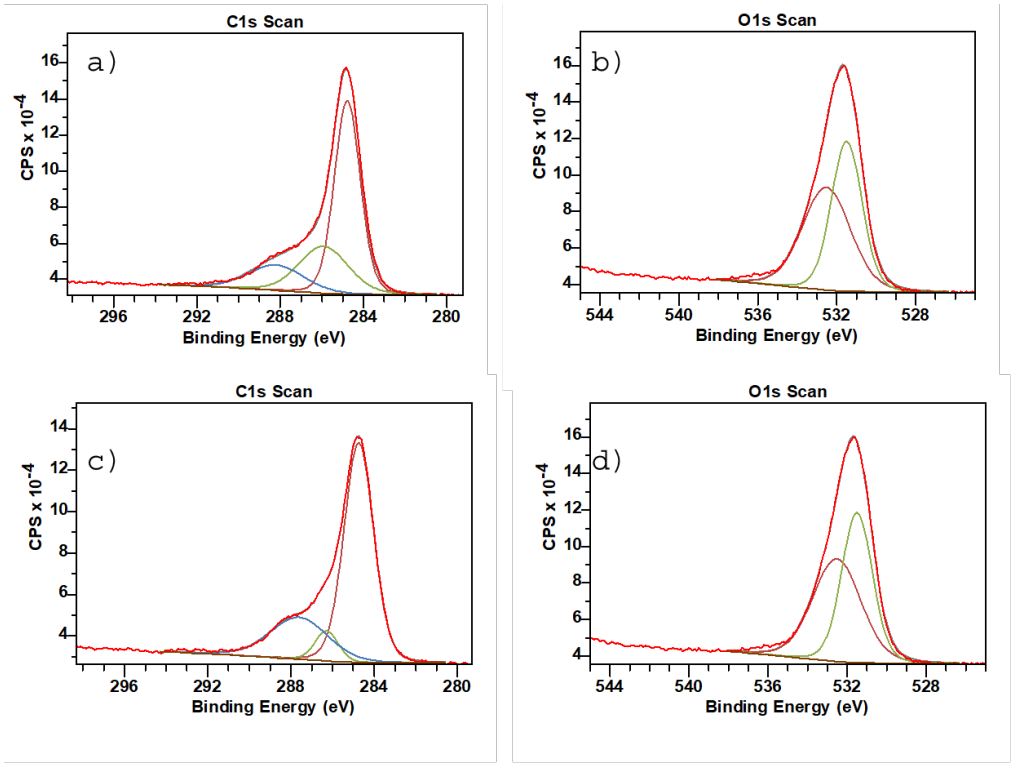

Figure S5. XPS spectra of Au@C_8 nm for a) C1s and b) O1s orbitals and for Au@C_13 nm carbon coating for c) C1s and d) O1s orbitals.

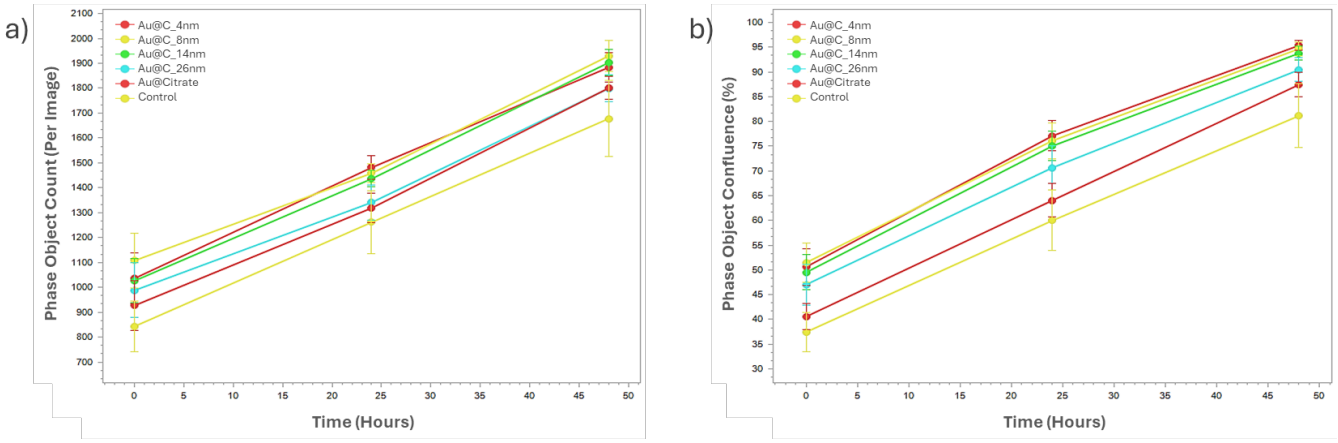

Figure S6: Numerical analysis of the phase-contrast images of SH-SY5Y cells, either untreated, incubated with Au NPs, or with Au@C_4 nm ,Au@C_8 nm ,Au@C_13.87 nm Au@C_26 nm, acquired at 0, 24, and 48 h. a) Phase object counts per image. b) Phase object confluence in percentage.