Supporting Information For

Ferrocenated Au Nanoparticle Monolayer Adsorption on SAM-Coated Electrodes

Rajesh Sardar, Christopher A. Beasley, and Royce W. Murray*

Kenan Laboratories of Chemistry, University of North Carolina, Chapel Hill, North Carolina, 27599

rwm@email.unc.edu

List of Figure Legends

Figure S-1. Cyclic voltammetry of electrode dipped in 0.05 mM AuFc NPs/CH_2Cl_2 for 15 minutes, rinsed and transferred to a 1.0 M Bu_4NClO_4/CH_2Cl_2 (NP-free) at potential scan rate of 0.5 V/s. The Au working electrodes were functionalized with SAMs of HSC_3SO_3Na.

Figure S-2. Cyclic voltammetry of adsorbed AuFc NPs on an electrode in NP-free 1.0 M Bu_4NClO_4/CH_2Cl_2 at 0.5 V/s. The Au working electrode was functionalized with a mixture of methyl/carboxylic acid-terminated (octanethiol: MUA; 7:1) alkanethiols, and then rinsed with 1.0 mM aq. NaOH solution before use in "scanning" potential adsorption experiment in NP solutions.

Figure S-3. From cyclic voltammetry of adsorbed MPC films transferred to MPC–free 1.0 M Bu_4NClO_4/CH_2Cl_2 solution. The Au electrode was functionalized by different alkanethiols, of varying chain length e.g., octanethiol (OT), dodecanethiol (DDT), and hexadecanethiol (HDT). The thickness (L) of self-assembled monolayer (SAM) of thiol was obtained from the equation,[1,] L (nm) = 0.25 + 0.127n, where n is the number of methylene groups.

Figure S-4. From cyclic voltammetry of adsorbed MPC films transferred to MPC–free 1.0 M Bu_4NClO_4/CH_2Cl_2 solution. The Au electrode was functionalized by different alkanethiols of varying chain-length e.g., octanethiol (OT), and hexadecanethiol (HDT). The values show decrease of surface coverage over a small number of cyclical potential scans. The loss of NP from the electrode surface roughly follows a first order rate law.

References:

(1) Bain, C. D.; Troughton, E. B.; Tao, Y. T.; Evall, J.; Whitesides, G. M.; Nuzzo, R. G. *J. Am. Chem. Soc.* **1989**, *111*, 321.

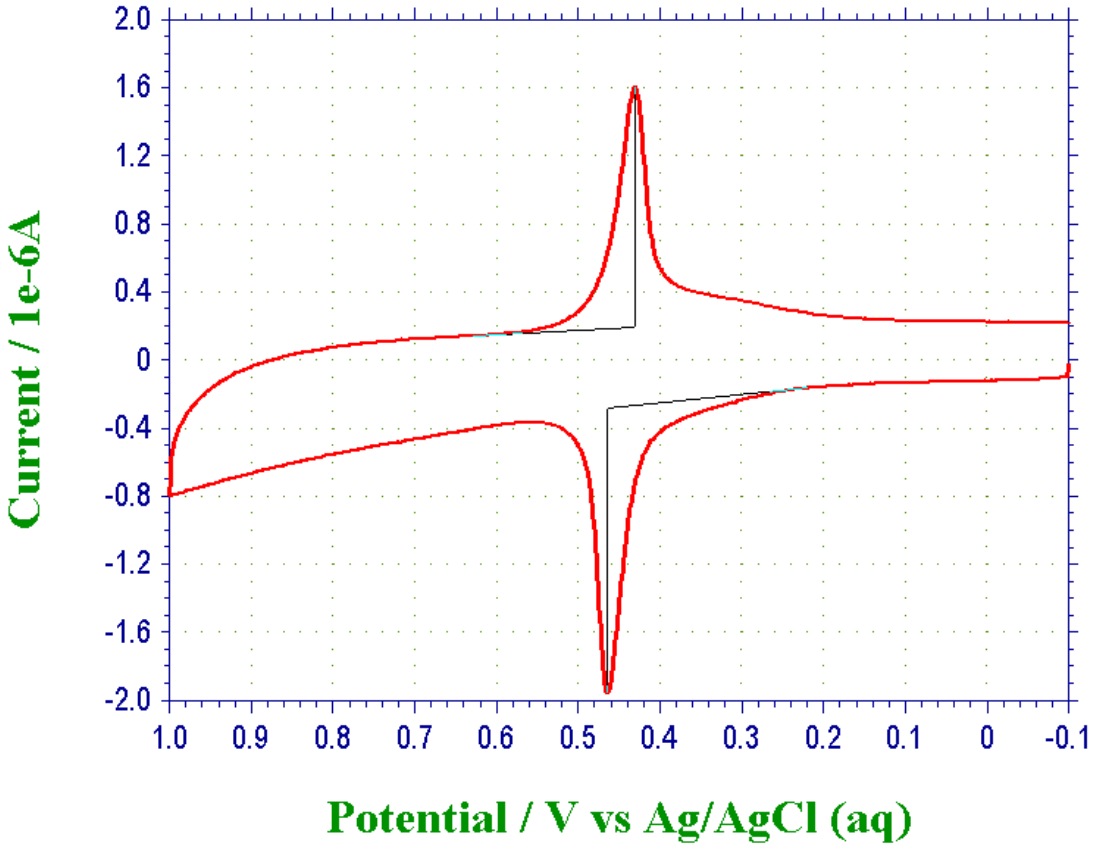

Figure S-1. Cyclic voltammetry of electrode dipped in 0.05 mM AuFc NPs/CH_2Cl_2 for 15 minutes, rinsed and transferred to a 1.0 M Bu_4NClO_4/CH_2Cl_2 (NP-free) at potential scan rate of 0.5 V/s. The Au working electrodes were functionalized with SAMs of HSC_3SO_3Na.

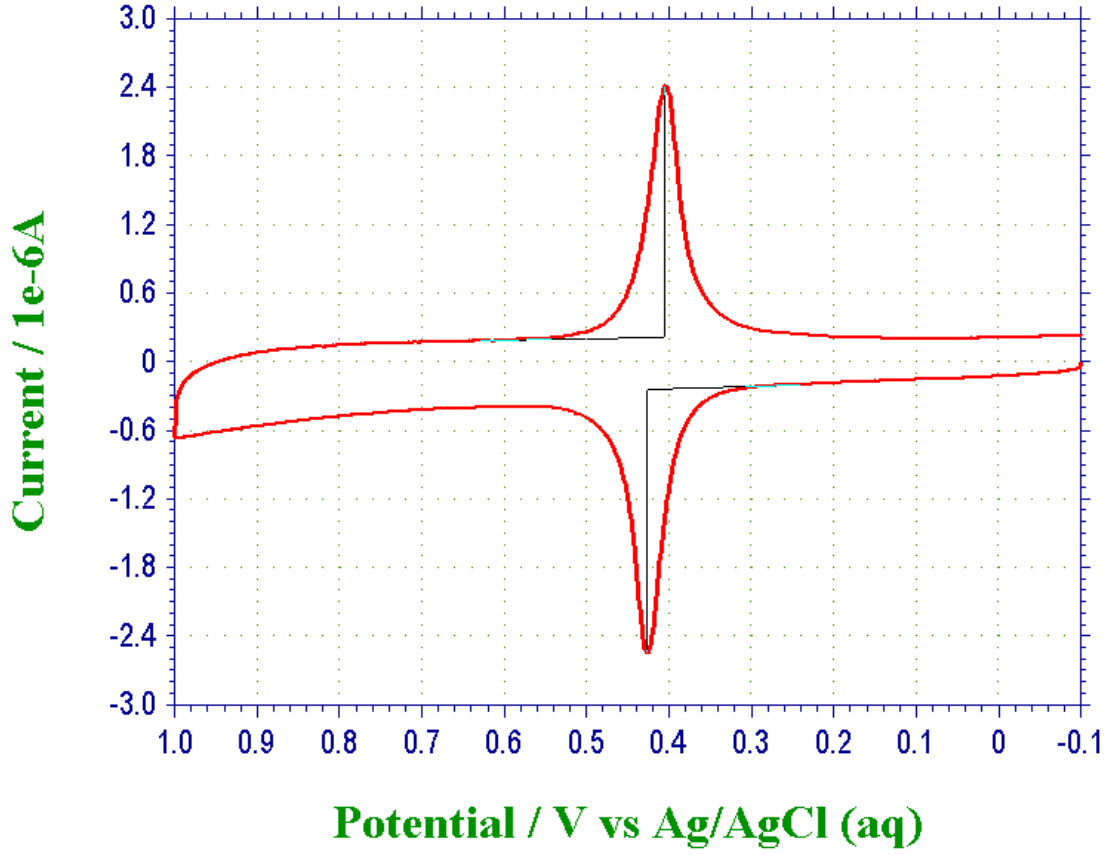

Figure S-2. Cyclic voltammetry of adsorbed AuFc NPs on an electrode in NP-free 1.0 M Bu_4NClO_4/CH_2Cl_2 at 0.5 V/s. The Au working electrode was functionalized with a mixture of methyl/carboxylic acid-terminated (octanethiol: MUA; 7:1) alkanethiols, and then rinsed with 1.0 mM aq. NaOH solution before use in "scanning" potential adsorption experiment in NP solutions.

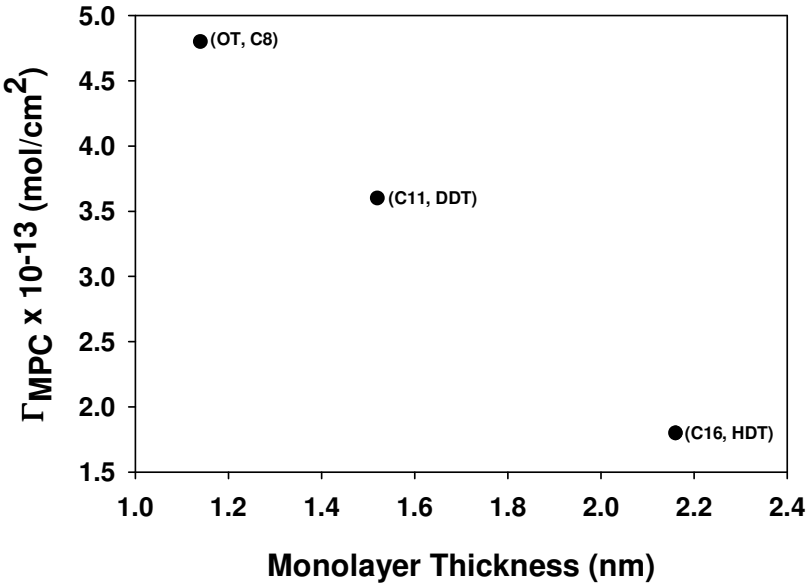

Figure S-3. From cyclic voltammetry of adsorbed MPC films transferred to MPC–free 1.0 M Bu_4NClO_4/CH_2Cl_2 solution. The Au electrode was functionalized by different alkanethiols, of varying chain length e.g., octanethiol (OT), dodecanethiol (DDT), and hexadecanethiol (HDT). The thickness (L) of self-assembled monolayer (SAM) of thiol was obtained from the equation,[1,] L (nm) = 0.25 + 0.127n, where n is the number of methylene groups.

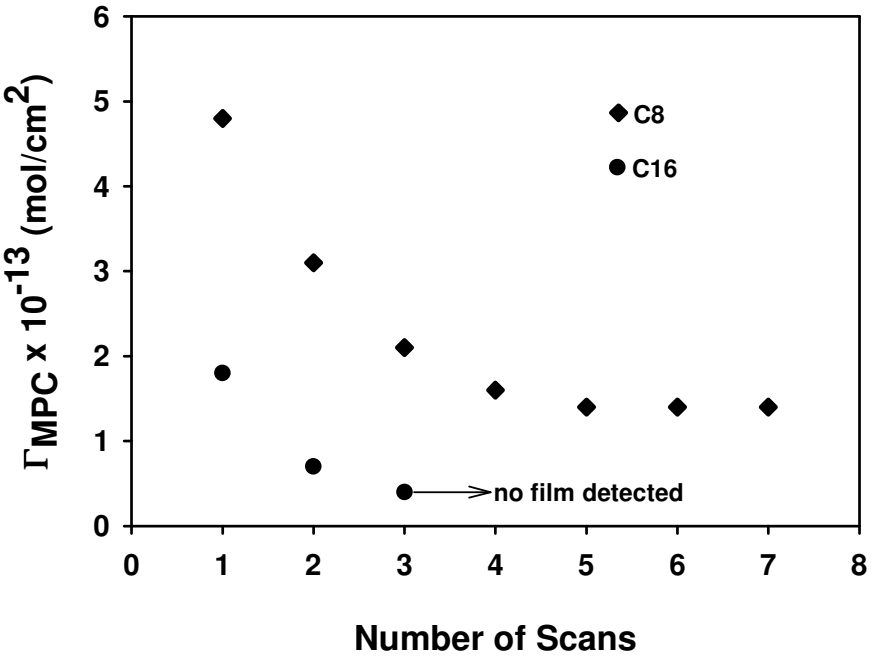

Figure S-4. From cyclic voltammetry of adsorbed MPC films transferred to MPC–free 1.0 M Bu_4NClO_4/CH_2Cl_2 solution. The Au electrode was functionalized by different alkanethiols of varying chain-length e.g., octanethiol (OT), and hexadecanethiol (HDT). The values show decrease of surface coverage over a small number of cyclical potential scans. The loss of NP from the electrode surface roughly follows a first order rate law.