SUPPORTING INFORMATION

Synthetic and Postsynthetic Chemistry of $M_4Au_xAg_{44-x}(p\text{-}MBA)_{30}$ Alloy Nanoparticles

Brian E. Conn,[1] Aydar Atnagulov,[1] Badri Bhattarai,[1] Bokwon Yoon,[2]
Uzi Landman,[2] and Terry P. Bigioni[1,3]*

[1]Department of Chemistry, University of Toledo, Toledo, Ohio 43606, [2]School of Physics, Georgia Institute of Technology, Atlanta, GA 30332-0430, and [3]The School of Solar and Advanced Renewable Energy, University of Toledo, Toledo, Ohio 43606.

*E-mail: Terry.Bigioni@utoledo.edu

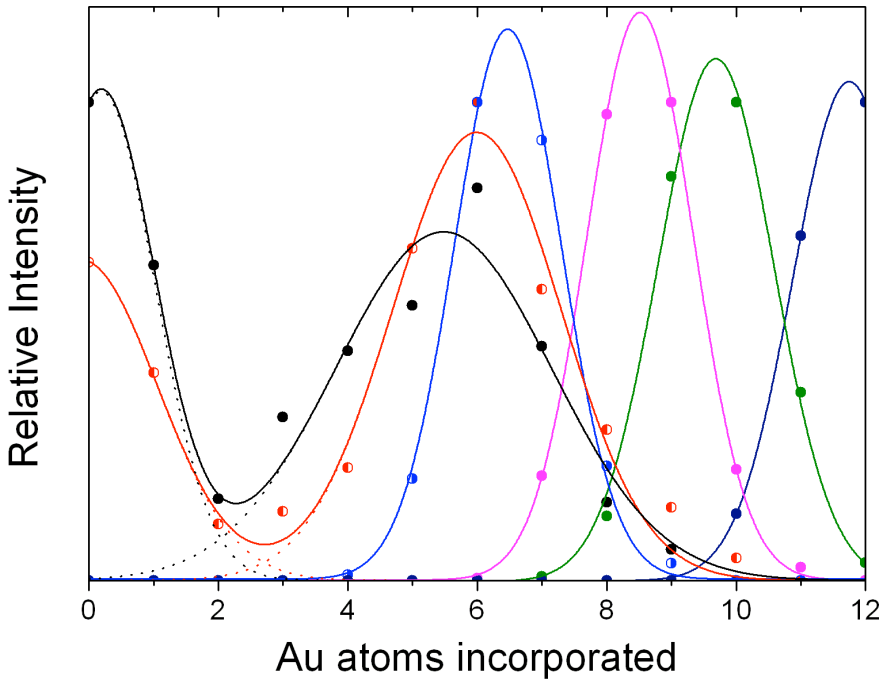

Figure S1. Distributions of $Au_xAg_{44-x}(p\text{-}MBA)_{30}^{4-}$ products formed during coreduction reactions with varying Ag/Au input ratios, corresponding to the MS data shown in Fig. 1. Note that only product distributions corresponding to reactions with high gold loadings (blue, magenta, green, purple) were well-fit by Gaussian distributions. Bimodal product distributions corresponding to reactions with low gold loadings (black, red) were not well-fit by a pair of Gaussians, indicating that gold incorporation was not random and that the reaction was complex.

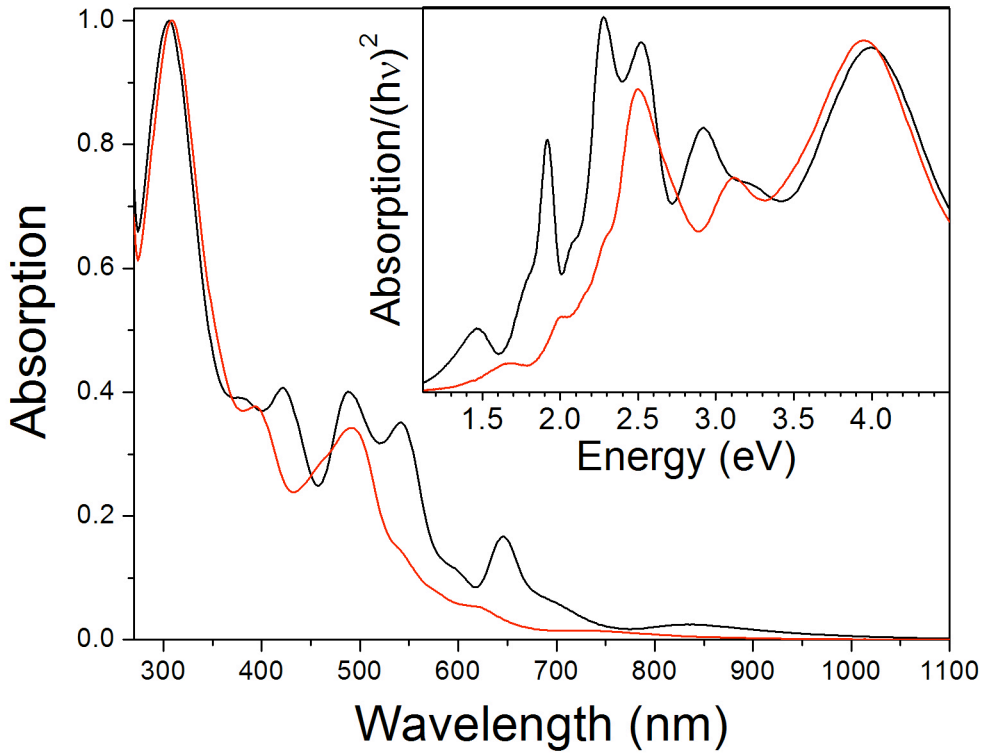

Figure S2. Optical absorption spectrum of M_4Ag_{44}(p-MBA)$_{30}$ (black line) and $M_4Au_{12}Ag_{32}$(p-MBA)$_{30}$ (red line) nanoparticles in DMF, showing the blue shifting of many of the peaks with the addition of gold atoms. Inset shows the same spectra as a function of energy. Note the blue shift of the absorption onset and of the first absorption peak, from 1.47 eV to 1.68 eV. Note also that the ligand absorption (near 300 nm, or 4.0 eV) was unaffected by gold addition.

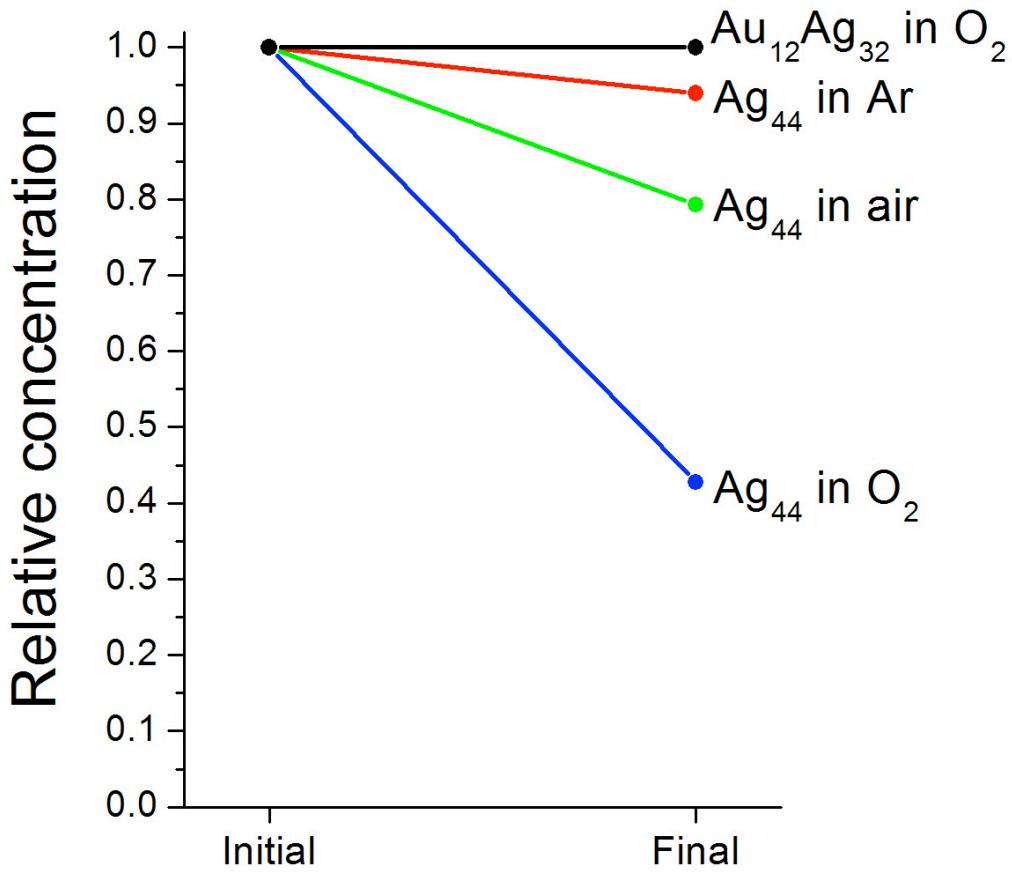

Figure S3. Concentration of nanoparticles after 6 minutes in a water bath at 60 °C. M_4Ag_{44}(p-MBA)$_{30}$ nanoparticles in Ar (red), in air (green), and in O_2 (blue) are shown with $M_4Au_{12}Ag_{32}$(p-MBA)$_{30}$ nanoparticles in O_2 (black) for comparison. Note that changes to the $M_4Au_{12}Ag_{32}$(p-MBA)$_{30}$ nanoparticle concentration were not measureable after 36 h.