Electronic Supplementary Material (ESI) for Nanoscale.

Engineering Two-Dimensional Gold Nanostructures Using Graphene Oxide Nanosheets as Template

*Valeria S. Marangoni, Lucas D. Germano, Cecilia C. C. Silva, Eunézio A. de Souza, Camila M. Maroneze**

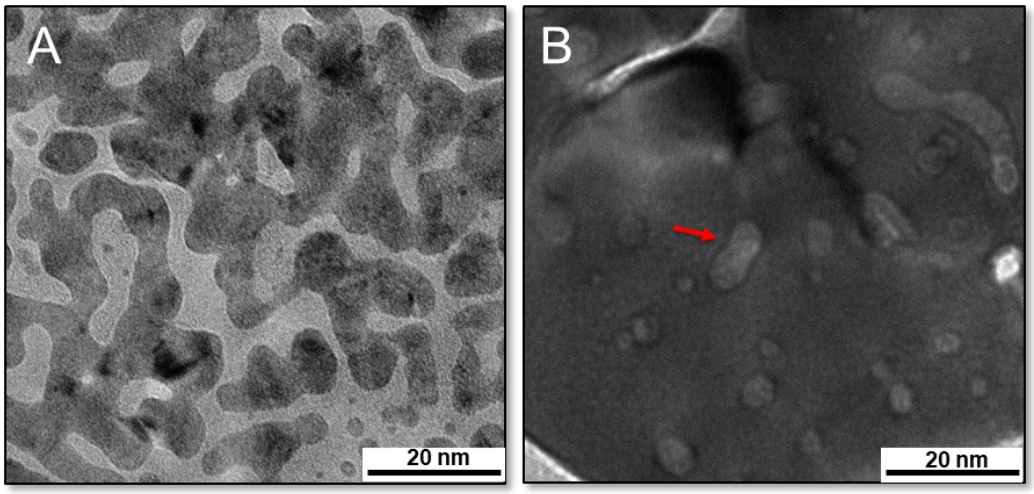

Figure S1. Evolution of the Au growth on GO-Bipy surface (GO-Bipy-Au-40). After **(A)** 1 hour and **(B)** 24 hours of reaction.

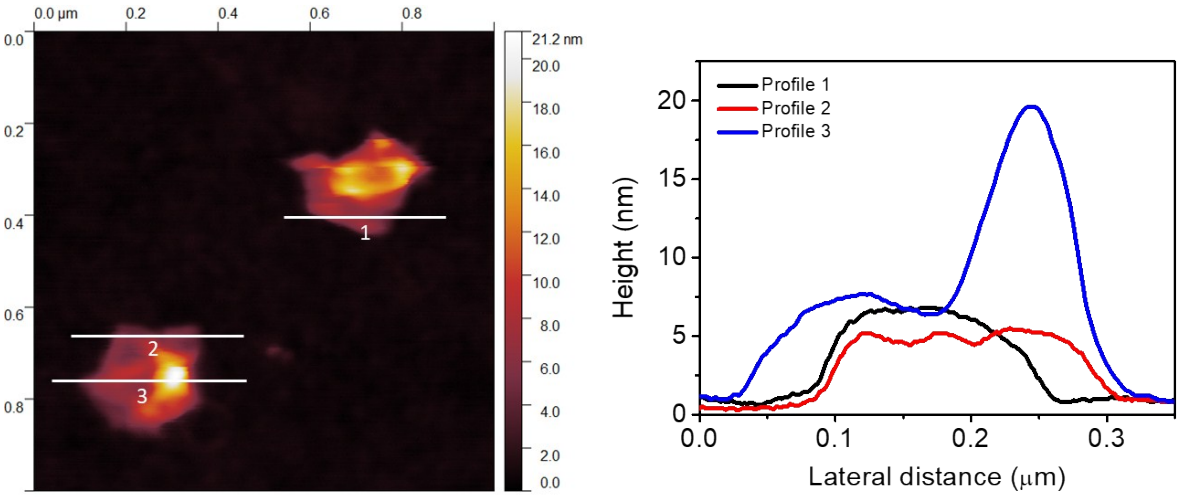

Figure S2. A representative atomic force microscopy (AFM) image and the correspondent height profiles (1,2,3) for GO-Bipy-Au-40.

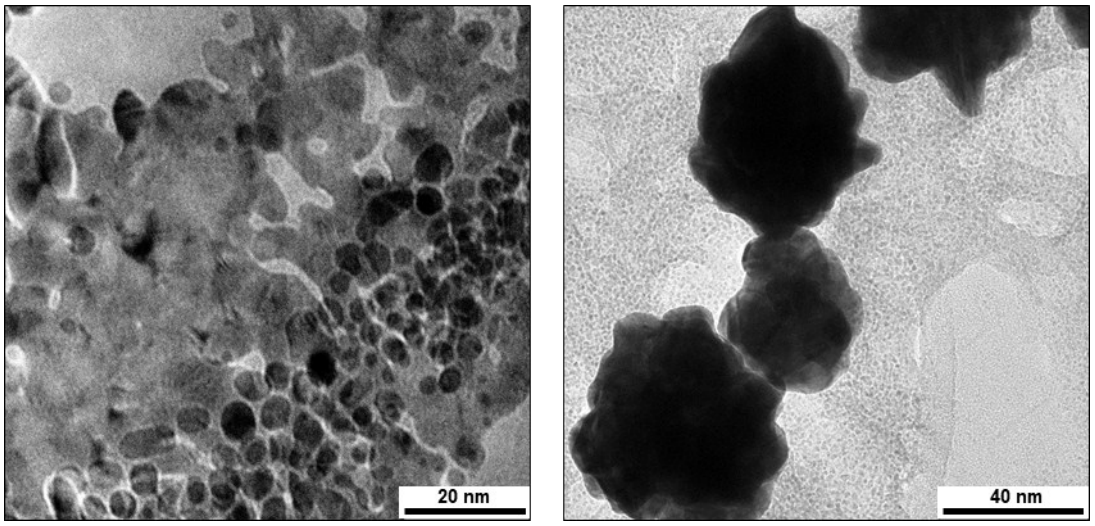

Figure S3. Transmission electron microscopy (TEM) images of the Au growth using prior prepared gold nanoparticles. The size and amount of the seeds plays an important role in the growth of the structures.

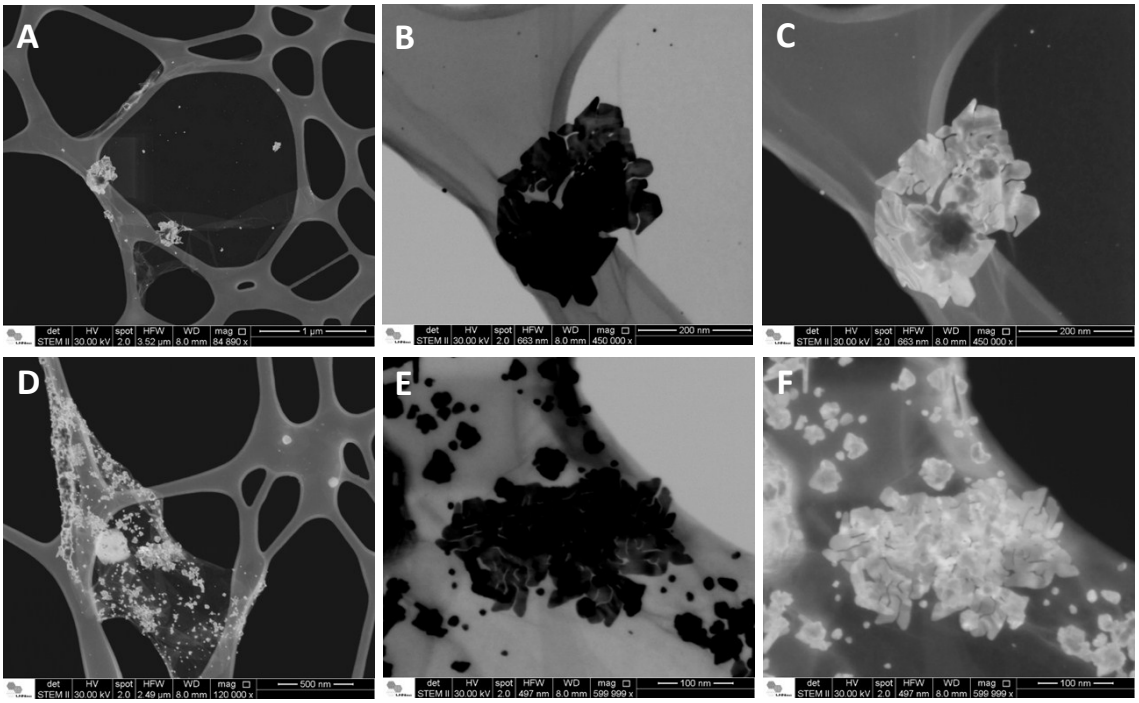

Figure S4. Bright field (BF) and dark field (DF) scanning transmission electron microscopy (STEM) images of GO-Bipy-Au with different degree of functionalization: (A), (B), and (C) the lower degrees of functionalization results in the production of less structures on the GO surface, compared to a higher degree of functionalization in (D), (E) and (F).

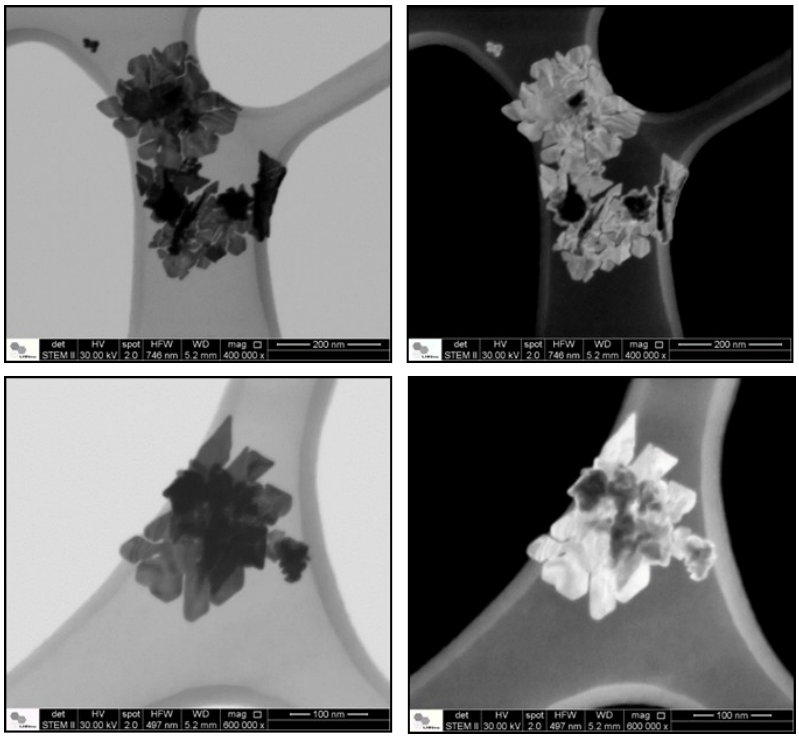

Figure S5. Bright field (BF) and the respective dark field (DF) scanning transmission electron microscopy (STEM) images of the GO-Bipy-Au.

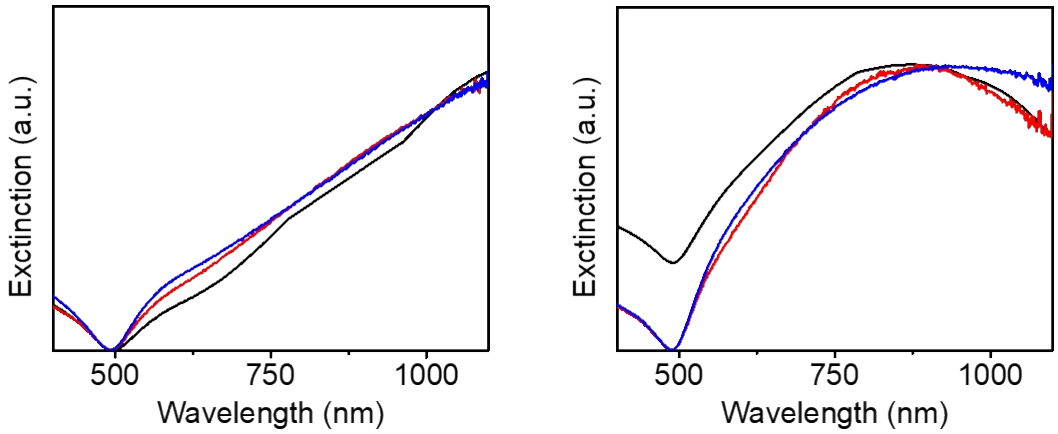

Figure S6. Reproducibility of the method: UV-Vis-NIR spectra of GO-Bipy-Au from three distinct reactions (black, blue and red).

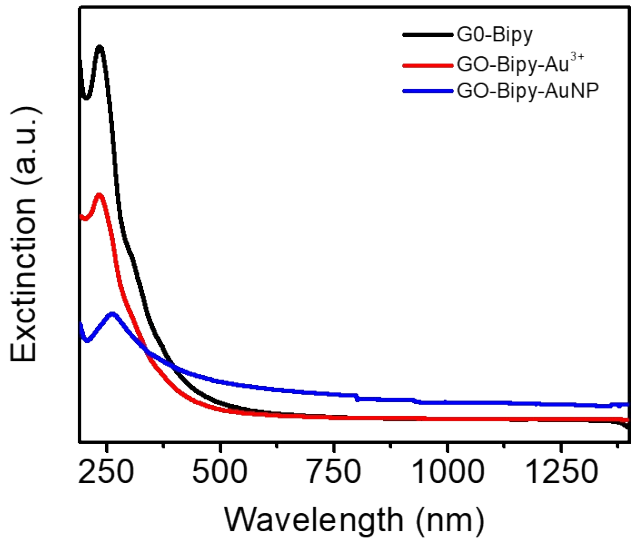

Figure S7. UV-VIS-NIR spectra of GO-Bipy, GO-Bipy-Au^{3+} and GO-Bipy-AuNP.

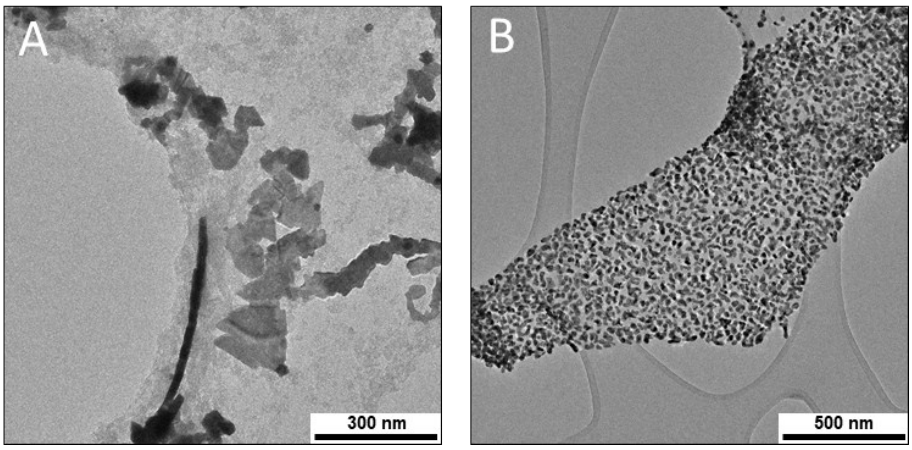

Figure S8. Lower magnifications TEM images for the GO-Bipy-Au structures shown on Figures 4B and 4C, respectively.

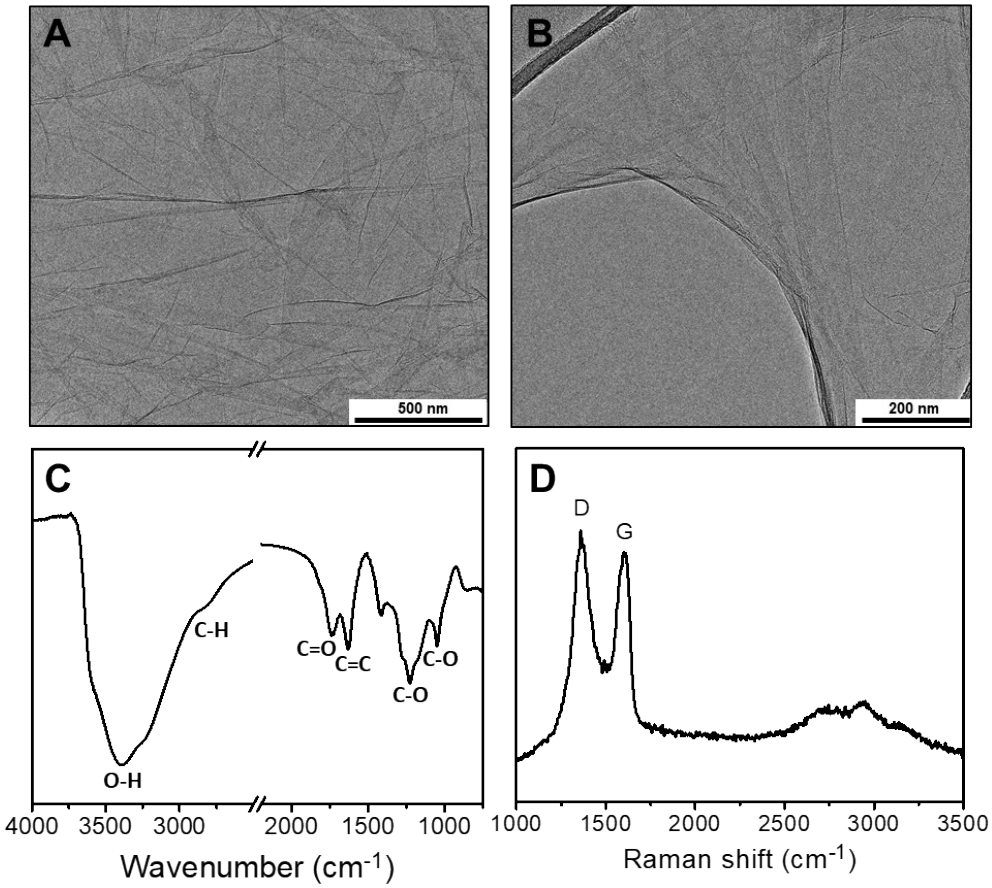

Figure S9. (A), (B) Transmission electron microscopy (TEM) images, **(C)** Fourier Transform Infrared (FTIR) and **(D)** Raman spectroscopy using a 532 nm laser of graphene oxide (GO).