

Supplementary Information:

Synthesis and characterization of a quaternary nanocomposite based on TiO₂/CdS/rGO/Pt and its application in the photoreduction of CO₂ to methane under visible light

¹J. E. Benedetti, ¹D. R. Bernardo, ¹A. Morais, ²Jefferson Bettini and ¹A. F. Nogueira

¹Chemistry Institute, University of Campinas – UNICAMP, P.O. Box 6154, 13083-970, Campinas, SP, Brazil.

²National Nanotechnology Laboratory, National Center for Energy and Materials Research, CNPEM, 13083-970, Campinas, São Paulo, Brazil.

All images and EDS analyses were carried out in FEI HELIOS 660 at 30 Kv.

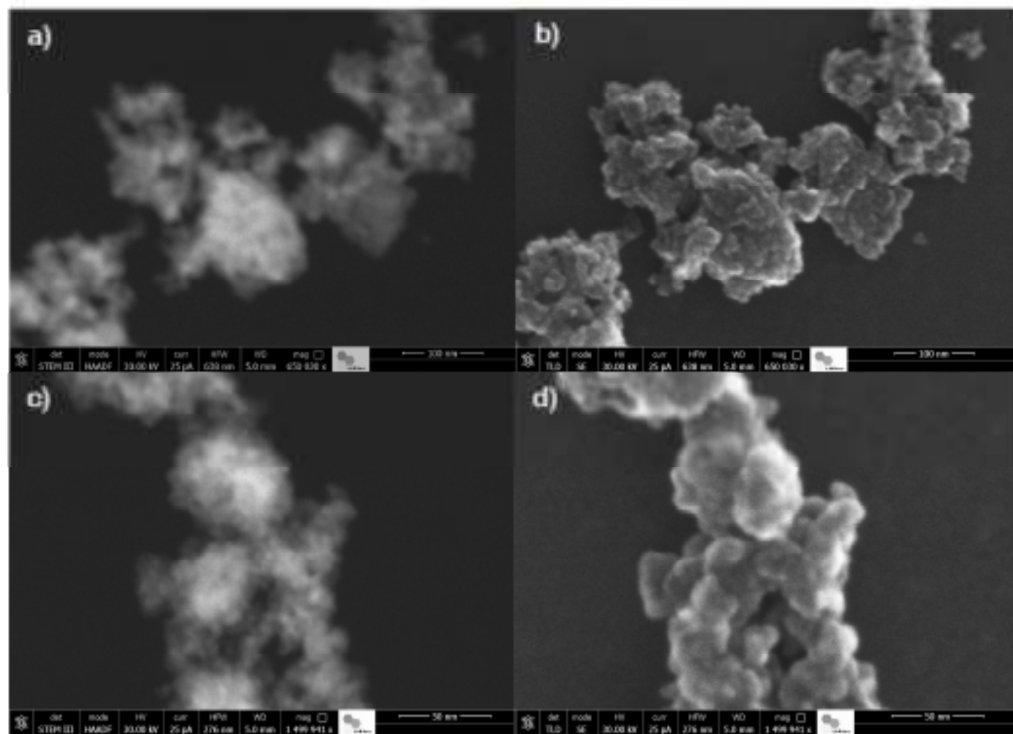


Figure 1S - Images of TiO₂/CdS nanoparticles, a) STEM HAADF image and b) corresponding SE Image, c) STEM HAADF image and d) corresponding SE Image.

The Secondary Electron (SE) images of TiO₂ show aggregated nanoparticles that can be confirmed by High Angle Annular Dark Field (HAADF) Images.

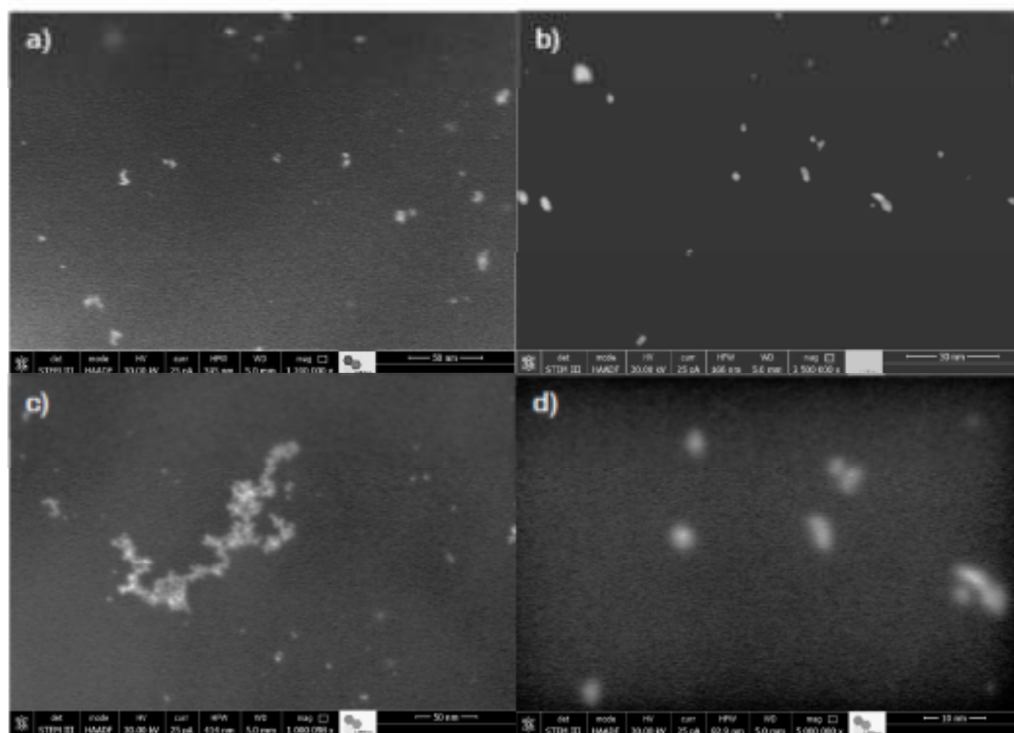


Figure 2S – Pt Nanoparticles supported on graphene images observed by HAADF detector. All images show small Pt nanoparticles supported on graphene, both can be observed aggregated and isolated ones. The average size is around 3-4 nm.

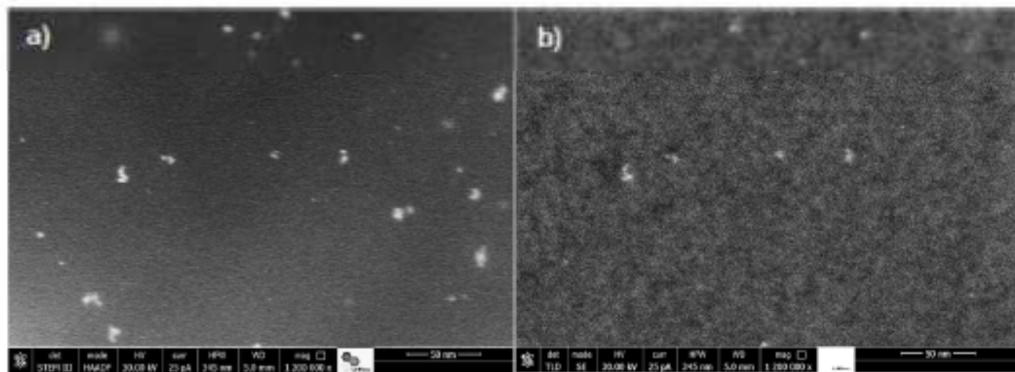


Figure 3S - Pt Nanoparticles supported on graphene, a) HAADF image and b) corresponding SE image.

Both images were taken at the same time, it can be observed that some Pt nanoparticles are not observed in the SE image, this fact suggest that these particles are on the bottom of graphene sheet.

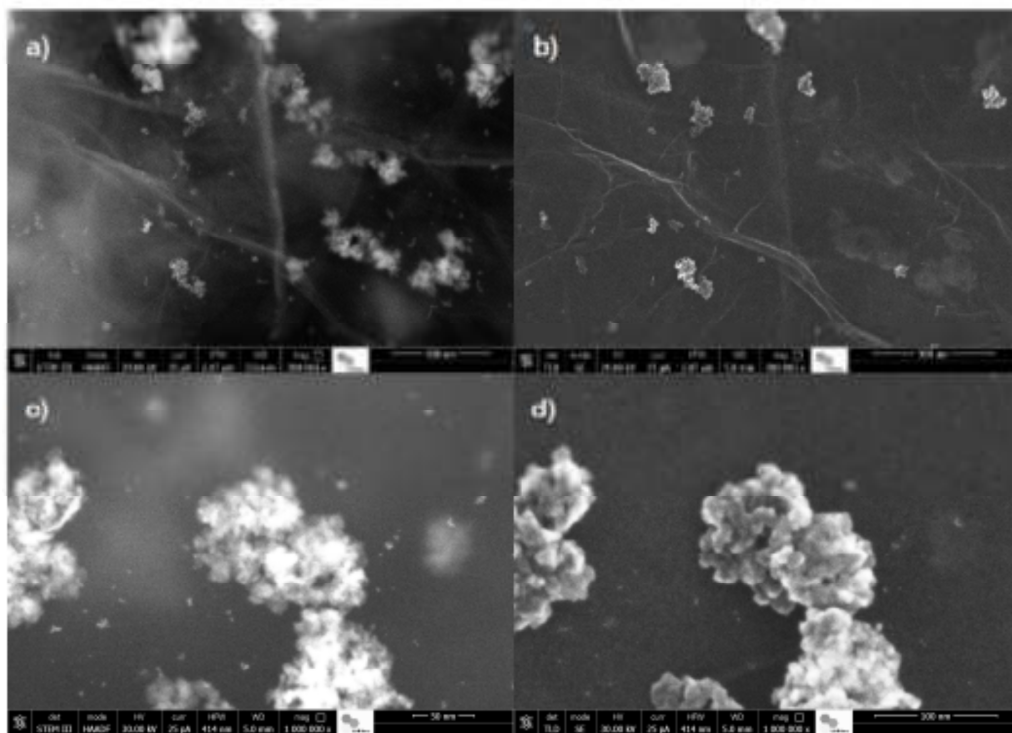


Figure 4S - Images of TiO₂/CdS/Pt nanoparticles on graphene, a) STEM HAADF image and b) corresponding SE Image, c) STEM HAADF image and d) corresponding SE Image

The images show both Pt and TiO₂/CdS nanoparticles supported on graphene. In addition, the Pt and TiO₂/CdS nanoparticles are in both (upper and bottom) sides of graphene