



Supplementary information:

Fig. 4 HRTEM images of the H₂S-treated Au nanoparticles. The left image shows the 12-14 nm Au nanocrystals. The right image shows the same area of particles at higher magnification. The atomic resolution images show no evidence with respect to the structural change in the bulk Au nanocrystals following the H₂S adsorption, indicating that the chemical adsorption is only a surface phenomenon. The sample for the HRTEM observation was prepared by depositing the Au nanoparticles directly onto a TEM grid with a SiO₂ membrane, following the same procedure and at same conditions as those described in the deposition of the nanoparticles onto the electronic device (see paper text for details).