Electronic Supplementary Information

Two-dimensional nanohybrid (RGS@AuNPs) as an effective catalyst for reduction of 4-nitrophenol and photo-degradation of methylene blue dye

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General measurements

Transmission electron microscopy (TEM) analyses were performed on a FEG-TEM (JEM-2100F, JEOL, Japan) operated at 200 kV. X-ray photon spectroscopy (XPS) analyses were carried out by SPECS HSA3500 plus spectrometer using Mg X-ray source. Energy dispersive X-ray spectrum (EDS) was collected using a HITACHI S-4500 instrument. Nitrogen sorption measurements were carried out by Brunauer–Emmett–Teller (BET) technique using a Micromeritics ASAP 2020M automated sorption analyzer at 77K. Electronic absorption spectra were recorded on a Shimadzu UV-3101 PC NIR scanning spectrophotometer. Liquid chromatography mass spectrometry (LCMS) measurements were conducted on a Waters Q-tof Premier MS.
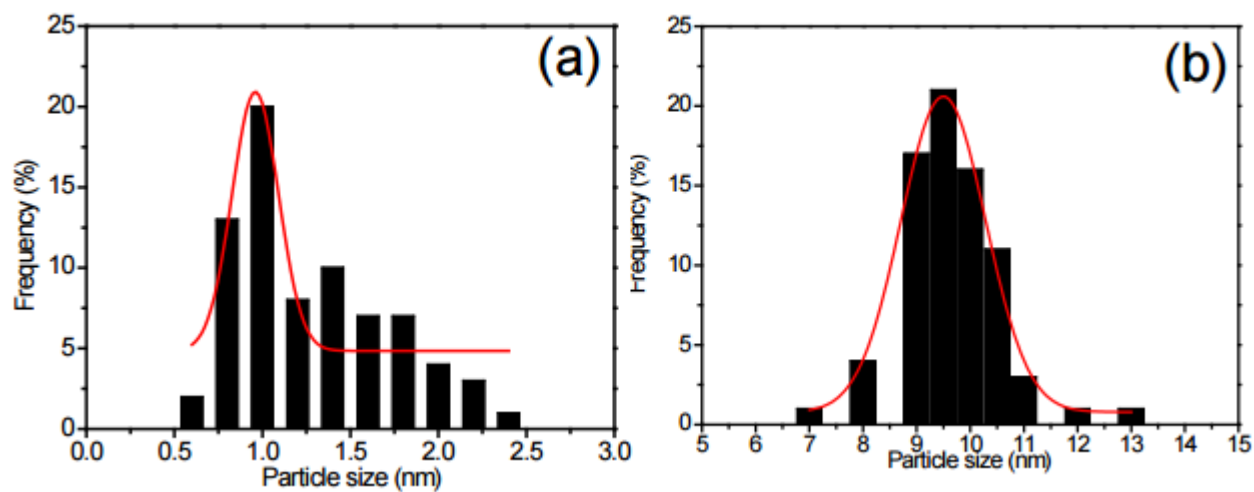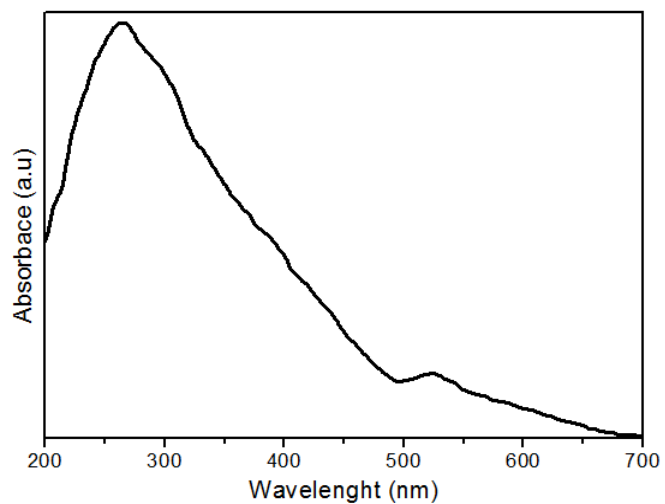
Fig. S1. Average size distribution plots for (a) RGS@PMS and (b) Au NPs deposited on RGS@PMS.
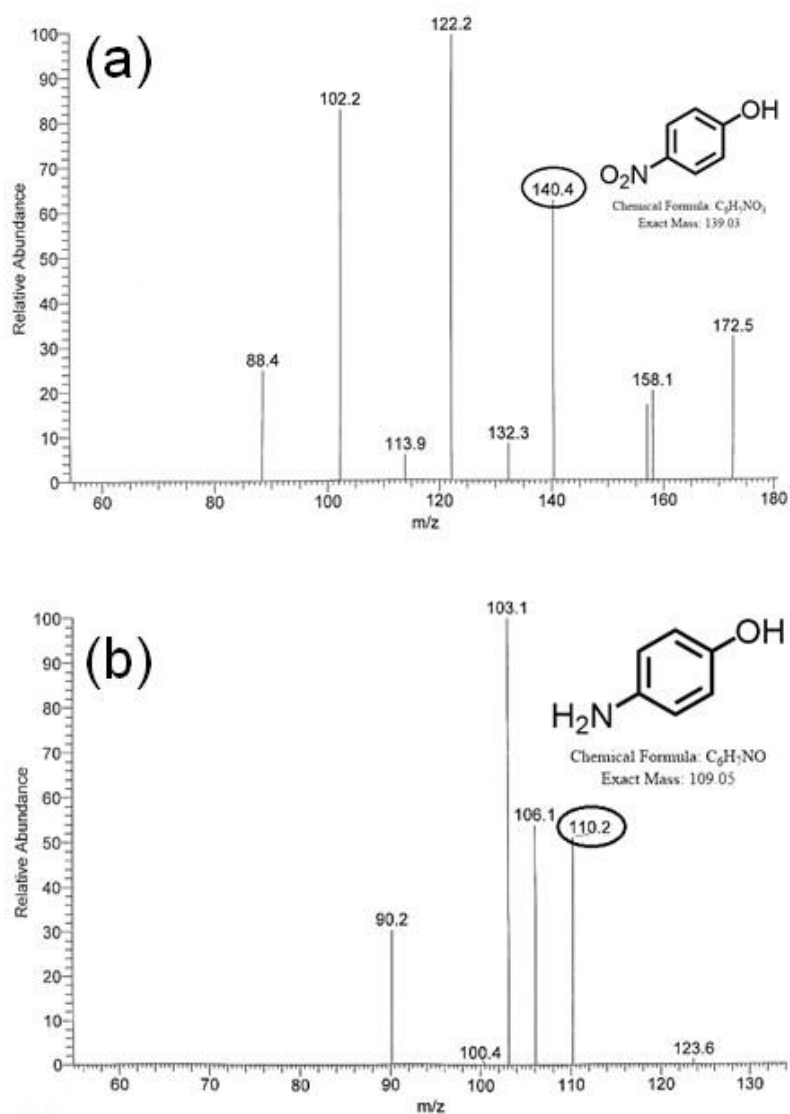
Fig. S2. LCMS of (a) 4-NP before reaction and (b) the converted 4-AP after reduction reaction.
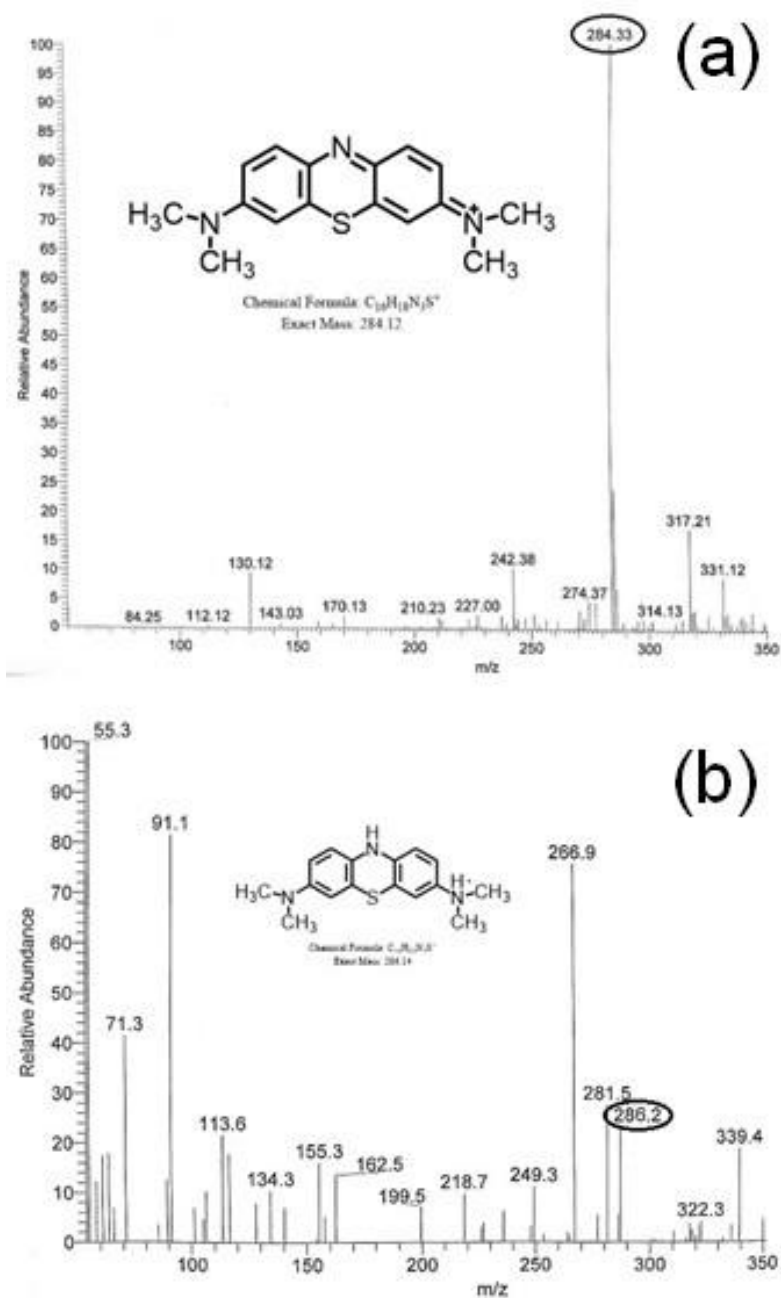
Fig. S3. LCMS of MB solution (a) before reaction and (b) after the reduction with NABH$_4$ in the presence of RGS@AuNPs.

Fig. S4. UV-vis absorbance spectrum of RGS@AuNPs.