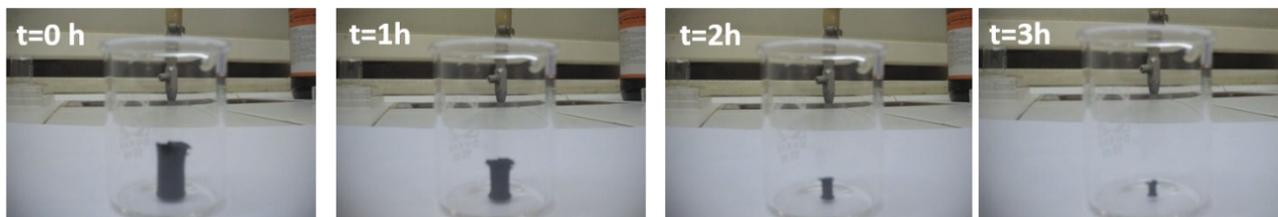
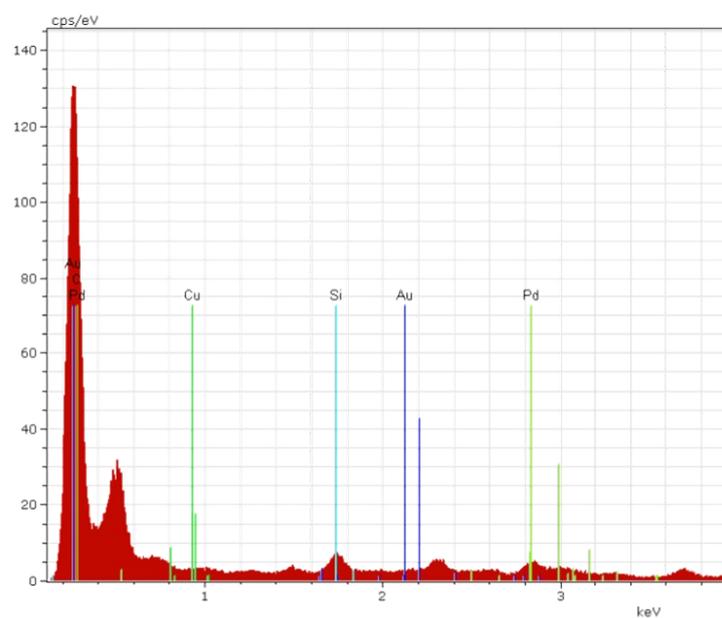


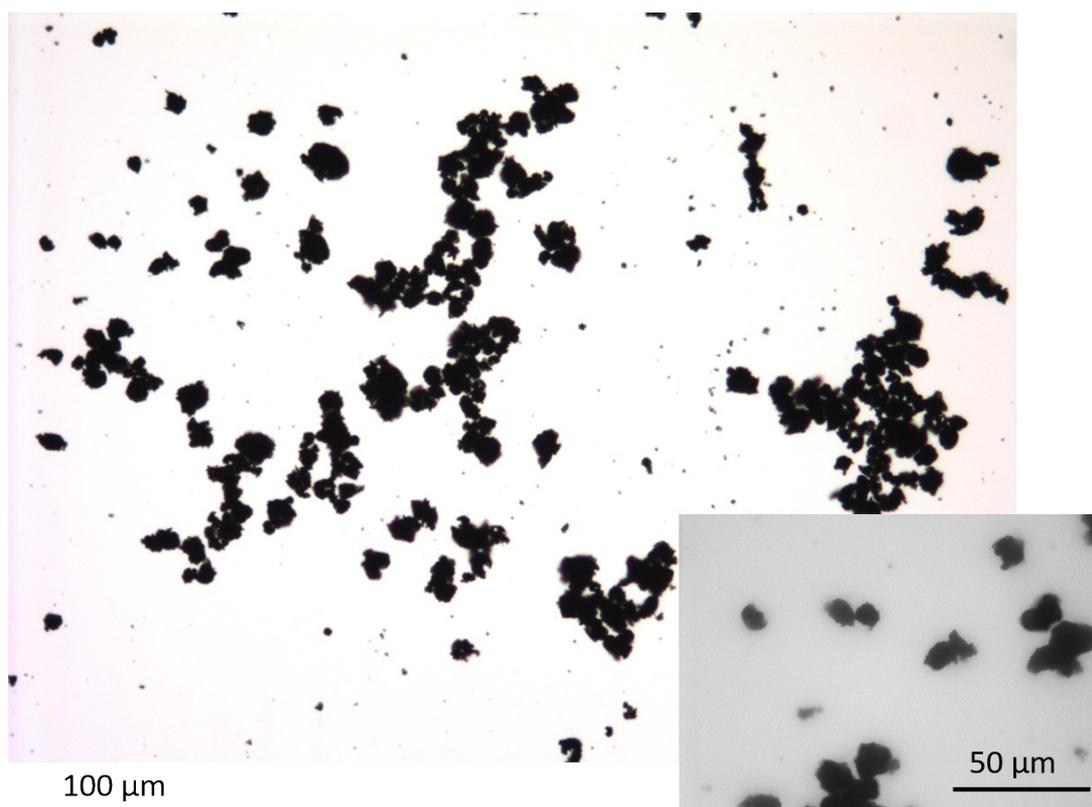
### Supporting information



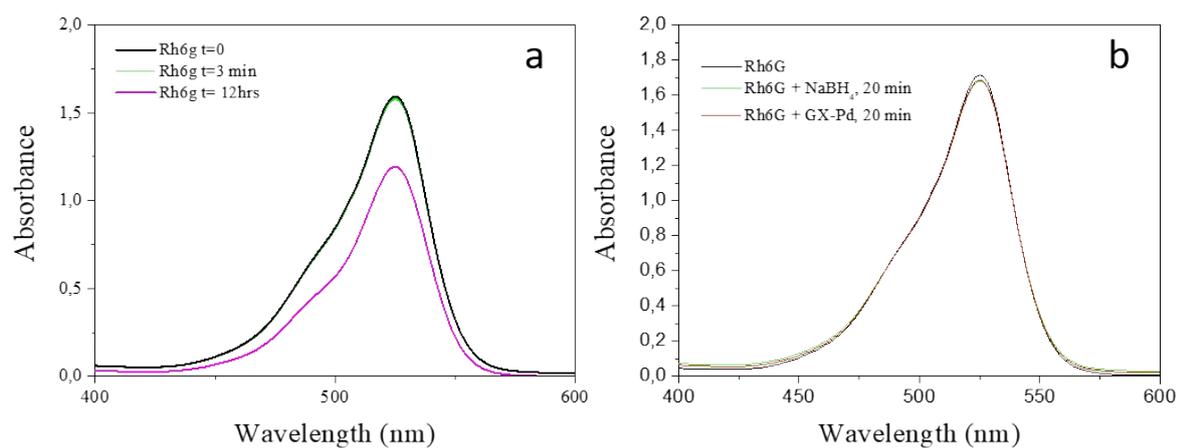
**Fig.S1.** Images of the graphene hydrogel shrinking at normal pressure as function of time.



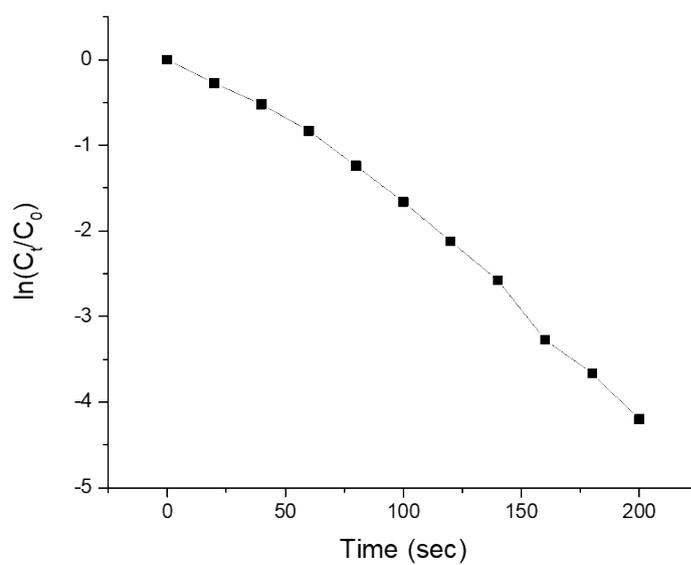
**Fig. S2** EDXS analysis of the GX-Pd sample.



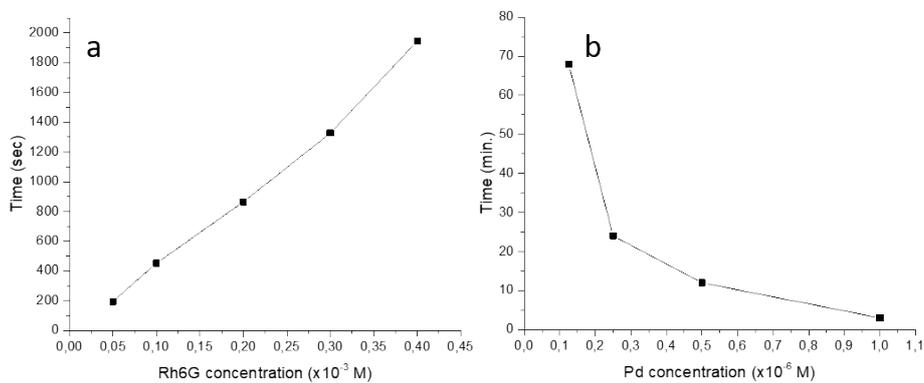
**Fig. S3** Optical microscopy image of GX-Pd microparticles.



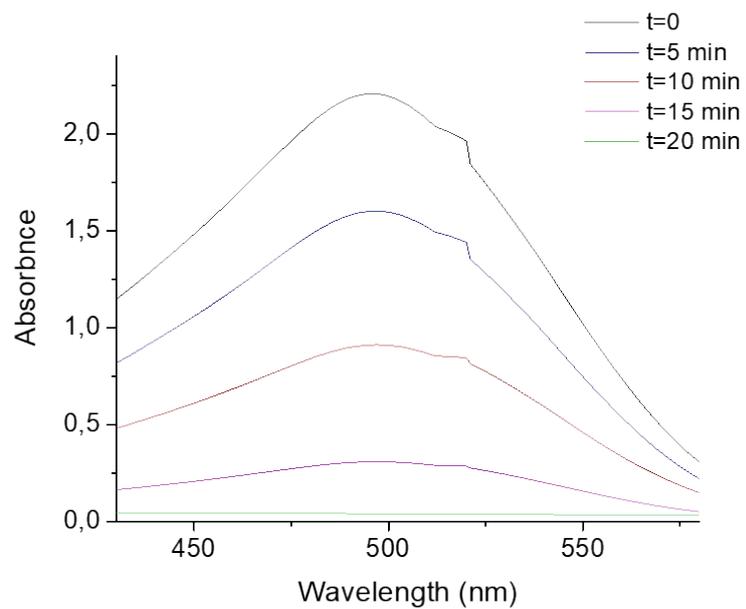
**Fig. S4 a:** Rhodamine 6G absorption spectra after incubation with GX-Pd particles for different times. **b:** Rhodamine 6G absorption spectra after 20 minutes incubation with NaBH<sub>4</sub> and GX-Pd alone respectively..



**Fig. S5** Kinetic analysis of Rhodamine 6G reduction by GX-Pd.



**Fig. S6 a)** Dependence of the reaction times with the Rh6G concentration. **b)** Dependence of the reaction times with the Pd concentration.



**Fig. S7.** Uv-vis spectra of a 0.1mM Congo red solution with NaBH<sub>4</sub> and GX-Pd at different incubation times.