Electronic Supplementary Information


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**Fig. S1.** AFM image of graphene-H$_2$P and profile analysis showing the height for a specific region.
Fig. S2. a) ATR-IR spectra of graphene oxide (black) and graphene-H$_2$P (blue) and b) enlarged area of 1500 – 2000 cm$^{-1}$ of graphene oxide (black) and graphene-H$_2$P (blue).
Fig. S3. Differential pulsed voltammogram of the oxidations of graphene-H$_2$P (black) and free H$_2$P-NH$_2$ (red), obtained in DMF.
**Fig. S4.** Nanosecond transient absorption spectra of H$_2$P-NH$_2$ observed by 532 nm (ca. 1 mJ/pulse) laser irradiation on film. Inset: Absorption-time profiles.
Fig. S5. Absorption spectrum of electrochemically reduced graphene oxide at -2 Volt, in DMF, with Bu$_4$NPF$_6$ as electrolyte. Working, pseudo-reference and counter electrodes: Pt wire.
Fig. S6. Absorption-time profiles of GO–H$_2$P at 1300 nm.
Fig. S7. Absorption spectrum of OTE/SnO$_2$/graphene–H$_2$P.