Electronic Supplementary Material (ESI) for Photochemical & Photobiological Science

Supporting information

Gelatin-templated mesoporous titania for photocatalytic air treatment and application in metal-chalcogenide nanoparticle-sensitized solar cells

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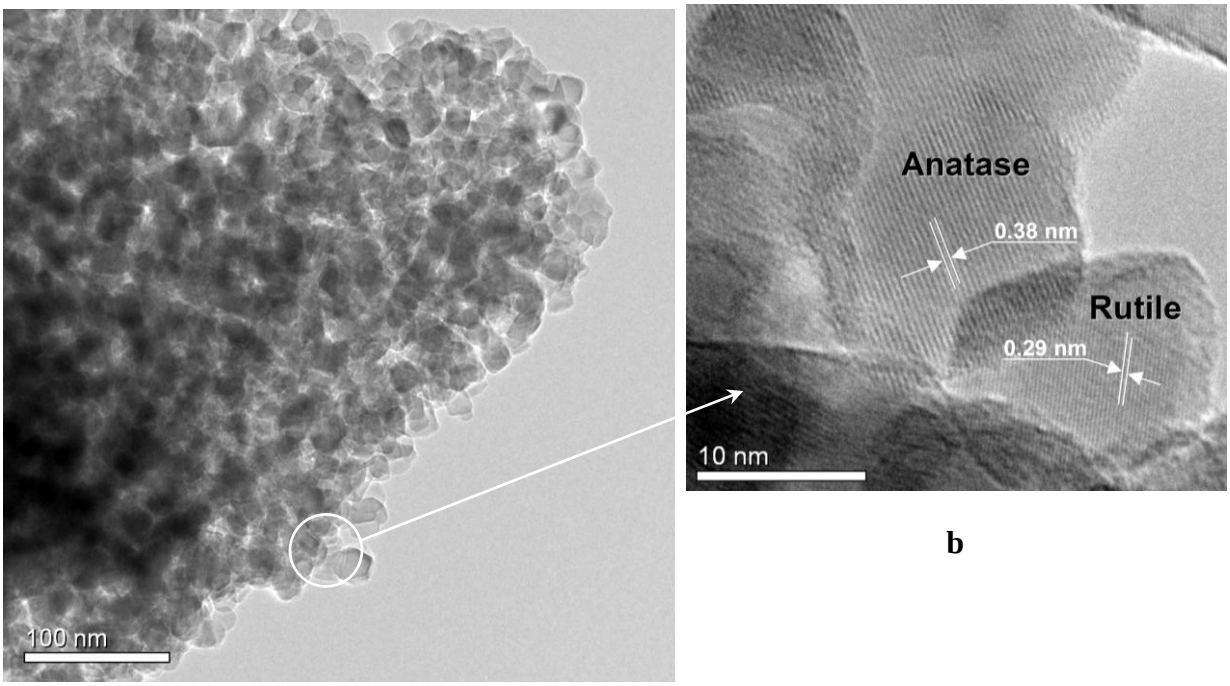


a **b**

Fig. S1. TEM (a) and HRTEM (b) images of the gelatin-templated mesoporous TiO_2.

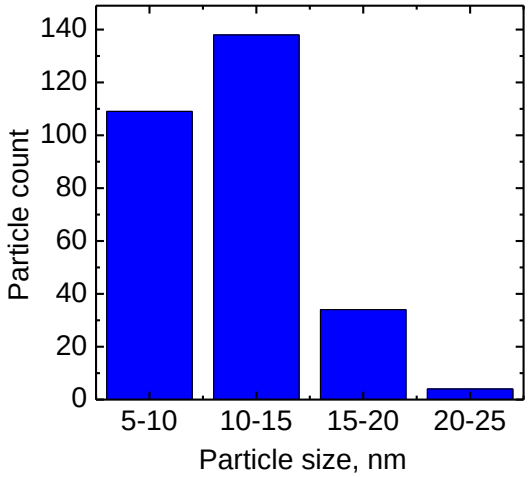


Fig. S2. Size distribution of TiO_2 nanocrystallites in the gelatin-templated mesoporous titania (from TEM data).

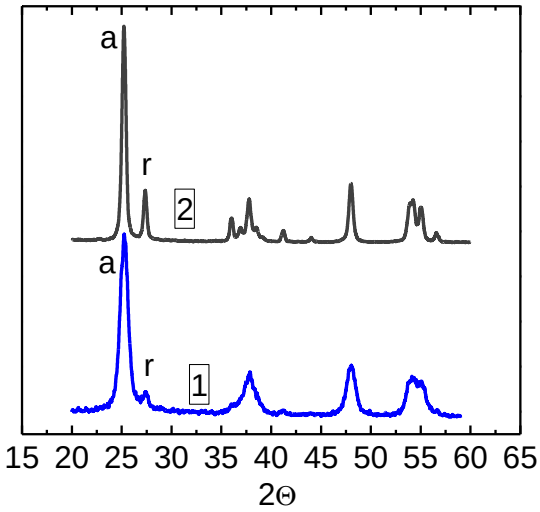
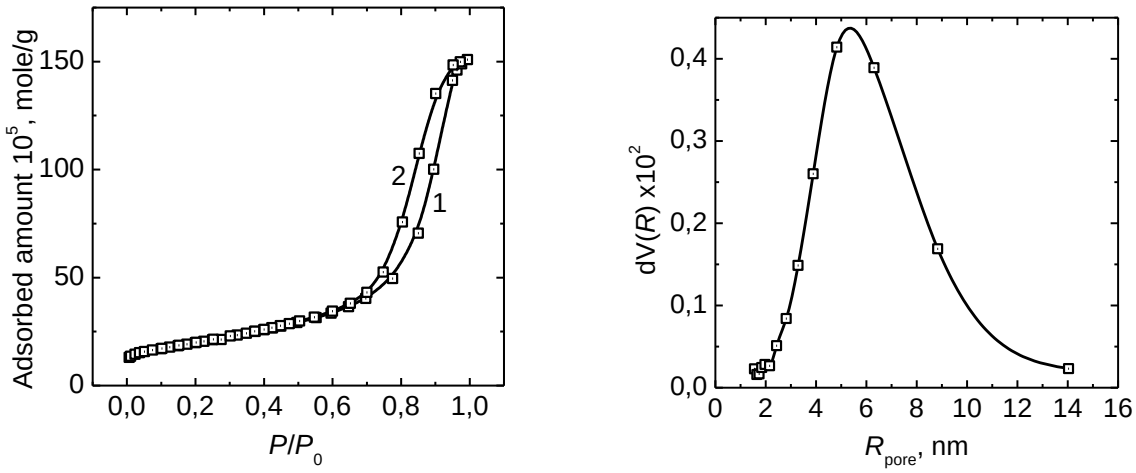
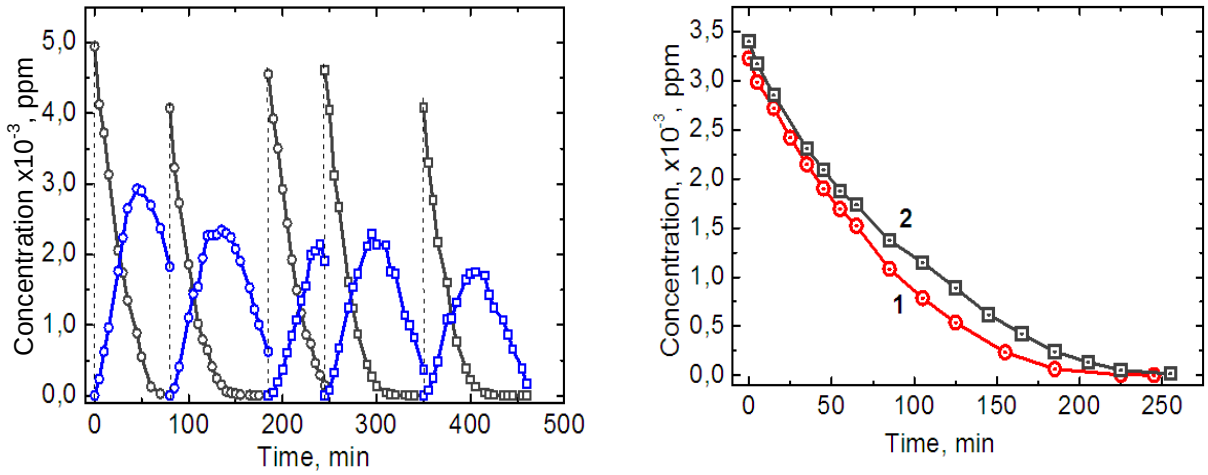


Fig. S3. X-ray diffractograms of the gelatin-templated mesoporous TiO_2 (curve 1) and the commercial TiO_2 Degussa P25 (curve 2). Symbols “a” and “r” denote the characteristic anatase and rutile reflections used to estimate the phase composition of the meso-TiO_2 relative to Degussa P25.



a **b**

Fig. S4. (a) Isotherms of nitrogen adsorption (curve 1) and desorption (curve 2) at 70 R for the gelatin-templated mesoporous titania. (b) Pore pore size distribution for the meso-TiO_2 (produced in BJH model).



a **b**

Fig. S5. (a) Kinetic curves of the photocatalytic ethanol oxidation (black curves) and acetaldehyde formation and oxidation (blue curves) repeated consequently 5 time on the same load of the gelatin-templated mesoporous TiO_2. (b) Kinetic curves for the photocatalytic oxidation of acetone in the presence of mesoporous TiO_2 (curve 1) and Degussa P25 (curve 2).

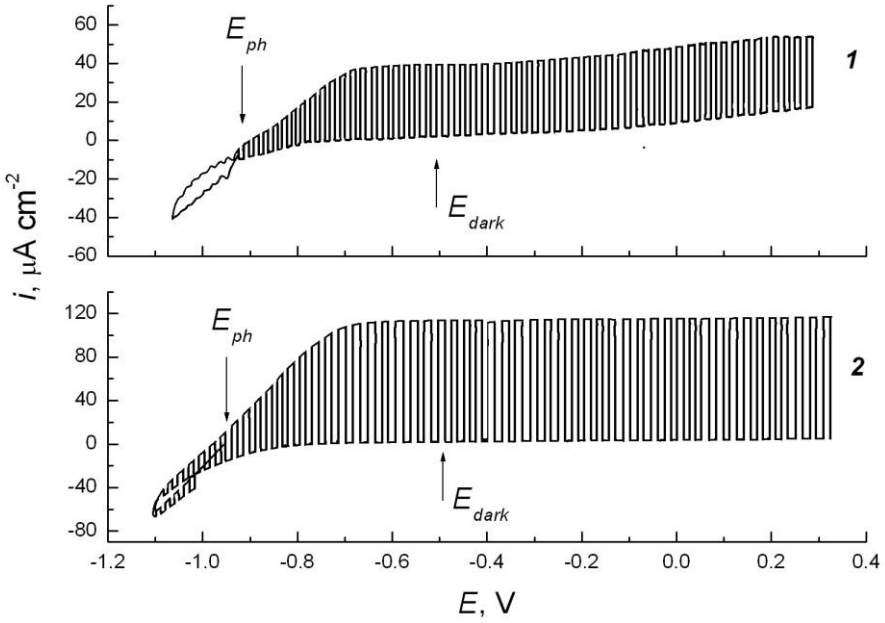


Fig. S6. Current–voltage characteristics of the samples of ITO/TiO_2/CdS-4 (curve 1) and ITO/TiO_2/CdS-10 (curve 2) registered in aqueous 0.1 M Na_2S solution with the modulation of illumination. E_{dark} and E_{ph} – the stationary potentials of the samples in the dark and under the illumination, respectively. The samples were illuminated by the unfiltered ("white") light of a xenon lamp.

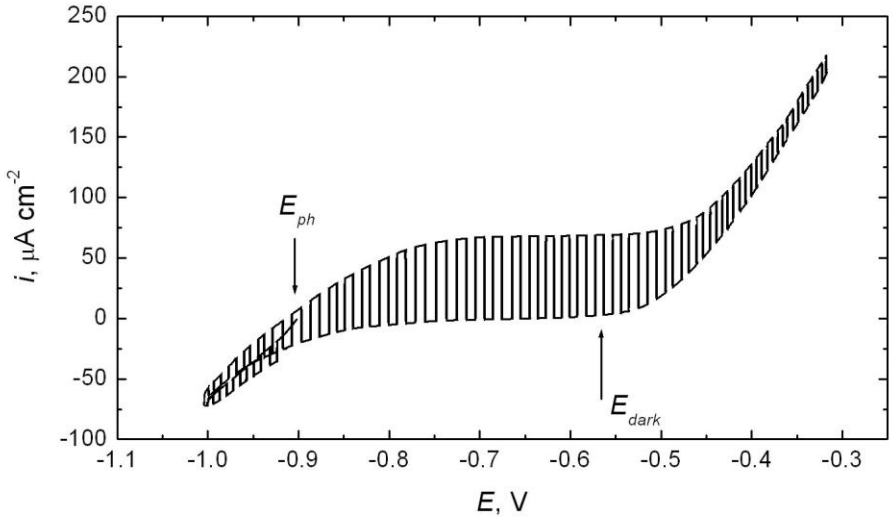


Fig. S7. Current–voltage characteristics of the sample of ITO/TiO_2/PbS-10 registered in aqueous 0.1 M Na_2S solution with the modulation of illumination. The sample was illuminated by the unfiltered ("white") light of a xenon lamp.