ELECTRONIC SUPPLEMENTARY INFORMATION

THE pH-DEPENDENT PHOTOCHEMISTRY OF ANTHRAQUINONE-2-SULPHONATE

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Figure ESI1. Time evolution of the spectrum of 0.1 mM AQ2S, excited by a 30 mJ laser pulse at 355 nm, in the 50-1800 ns time scale, in Milli-Q water (pH = 6.5). The absorption maxima of the three identified transient species are also highlighted.

Figure ESI2. Time evolution of the spectrum of 0.1 mM AQ2S, excited by a 30 mJ laser pulse at 355 nm, in the 1.7-150 µs time scale, in Milli-Q water (pH = 6.5). The absorption spectrum of B is also highlighted.
**Figure ESI3.** Time evolution of the spectrum of 0.2 mM AQ2S at pH 2.5, excited by a 30 mJ laser pulse at 355 nm, in the 50-1800 ns time scale. The absorption maxima of the three identified transient species are also highlighted.

**Figure ESI4.** Time evolution of the spectrum of 0.1 mM AQ2S at pH 9.0, excited by a 30 mJ laser pulse at 355 nm, in the 50-1800 ns time scale. The absorption maxima of the three identified transient species are also highlighted.
Figure ESI5. pH trend of the pseudo-first order degradation rate constants of the three identified transients species. Note that $k_A$ and $k_C$ are around two orders of magnitude higher than $k_B$. Laser pulse: 30 mJ, 355 nm, 0.1 mM AQ2S.

Figure ESI6. Trend of $k_C$ as a function of [AQ2S]. The linear part is highlighted, together with the 95% error bounds to the regression line. Laser pulse: 30 mJ, 355 nm.
Figure ESI7. Trend of $k_A$ as a function of the concentrations of $\text{Fe}^{2+}$ and $\text{N}_3^-$. The second-order reaction rate constants between $A$ and the competitors are also reported. They were derived as the slope of the experimental lines. Laser pulse: 30 mJ, 355 nm.
Figure ESI8. Pseudo-first order degradation rate constant of the transient species A, produced upon irradiation of 0.1 mM AQ2S, as a function of the concentration of added benzene. The pH was adjusted by addition of HClO₄. The reported values of $k_{A,Benzene}$ are derived from the slopes of the relevant lines ($k_{A,Benzene} = k_A [\text{Benzene}]^{-1}$). Laser pulse: 30 mJ, 355 nm.

Figure ESI9. Pseudo-first order degradation rate constant of the transient species C, produced upon irradiation of 0.1 mM AQ2S, as a function of the concentration of added benzene. The pH was adjusted by addition of HClO₄. The reported values of $k_{C,Benzene}$ are derived from the slopes of the relevant lines ($k_{C,Benzene} = k_C [\text{Benzene}]^{-1}$). Laser pulse: 30 mJ, 355 nm.
Figure ESI10. Pseudo-first order degradation rate constant of the transient species A, produced upon irradiation of 0.1 mM AQ2S, as a function of the concentration of added nitrobenzene (NBz). The pH was adjusted by addition of HClO₄. The reported values of $k_{A,NBz}$ are derived from the slopes of the relevant lines ($k_{A,NBz} = k_A [NBz]^{-1}$). Laser pulse: 30 mJ, 355 nm.

Figure ESI11. Pseudo-first order degradation rate constant of the transient species C, produced upon irradiation of 0.1 mM AQ2S, as a function of the concentration of added nitrobenzene (NBz). The pH was adjusted by addition of HClO₄. The reported values of $k_{C,NBz}$ are derived from the slopes of the relevant lines ($k_{C,NBz} = k_C [NBz]^{-1}$). Laser pulse: 30 mJ, 355 nm.