

Electronic supplementary information

Hierarchical mesoporous TiO₂ microspheres for enhanced photocatalytic oxidation of sulfonamides and the mechanism study

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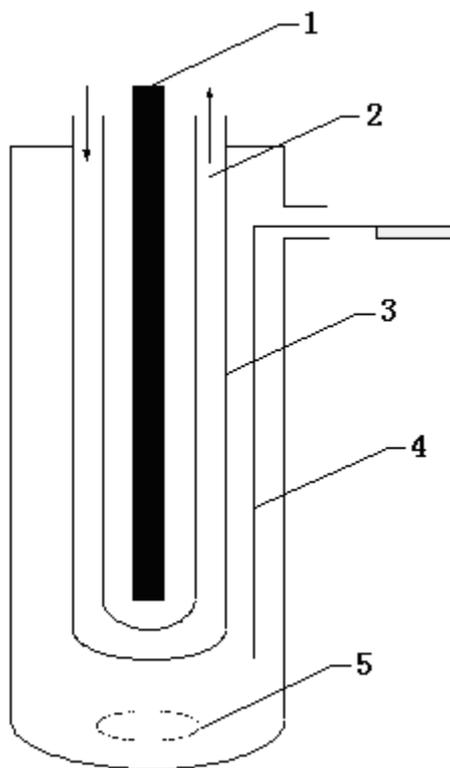


Figure S1. The experimental apparatus. (1) Xenon lamp; (2) cooling water; (3) immersion well; (4) sulfonamides solutions; (5) magnet.

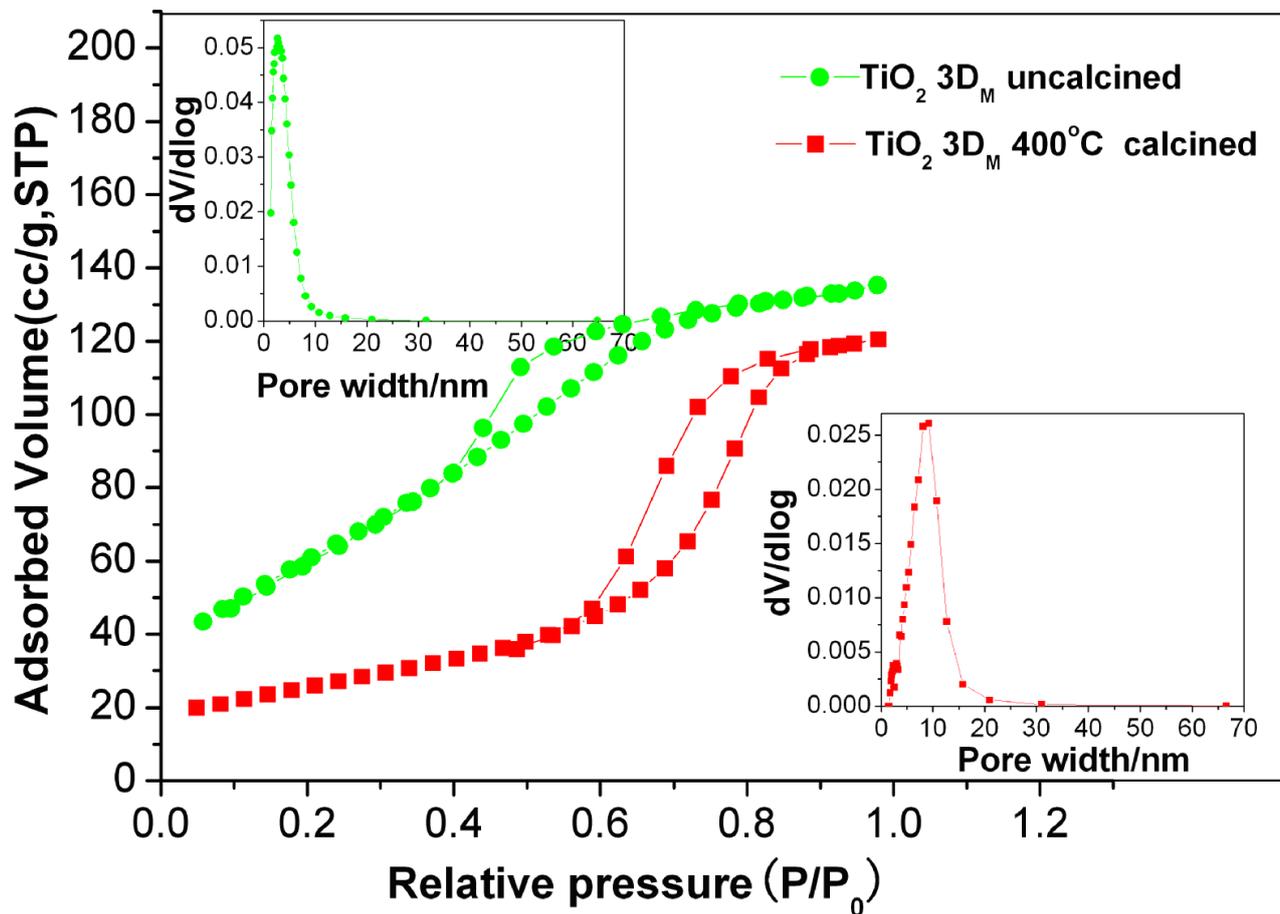


Figure S2 Nitrogen gas adsorption-desorption isotherms and corresponding pore size distribution curve calculated from adsorption branch of the nitrogen isotherm (inside) of mesoporous TiO_2 microspheres

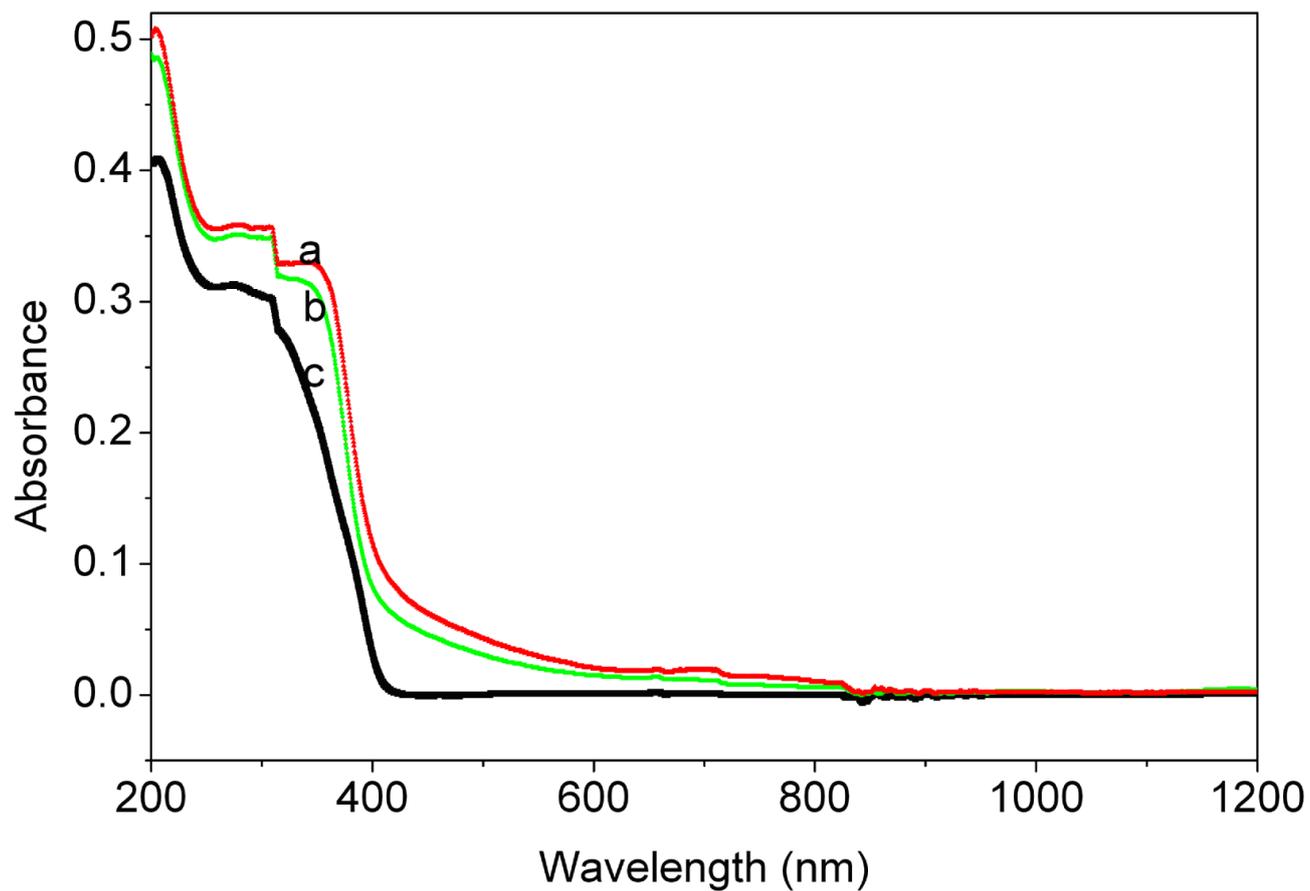


Figure S3. UV-vis reflection spectra of the catalysts (a TiO₂ 3DM calcined at 400 °C, b TiO₂ 3DM uncalcined, c P25 TiO₂)

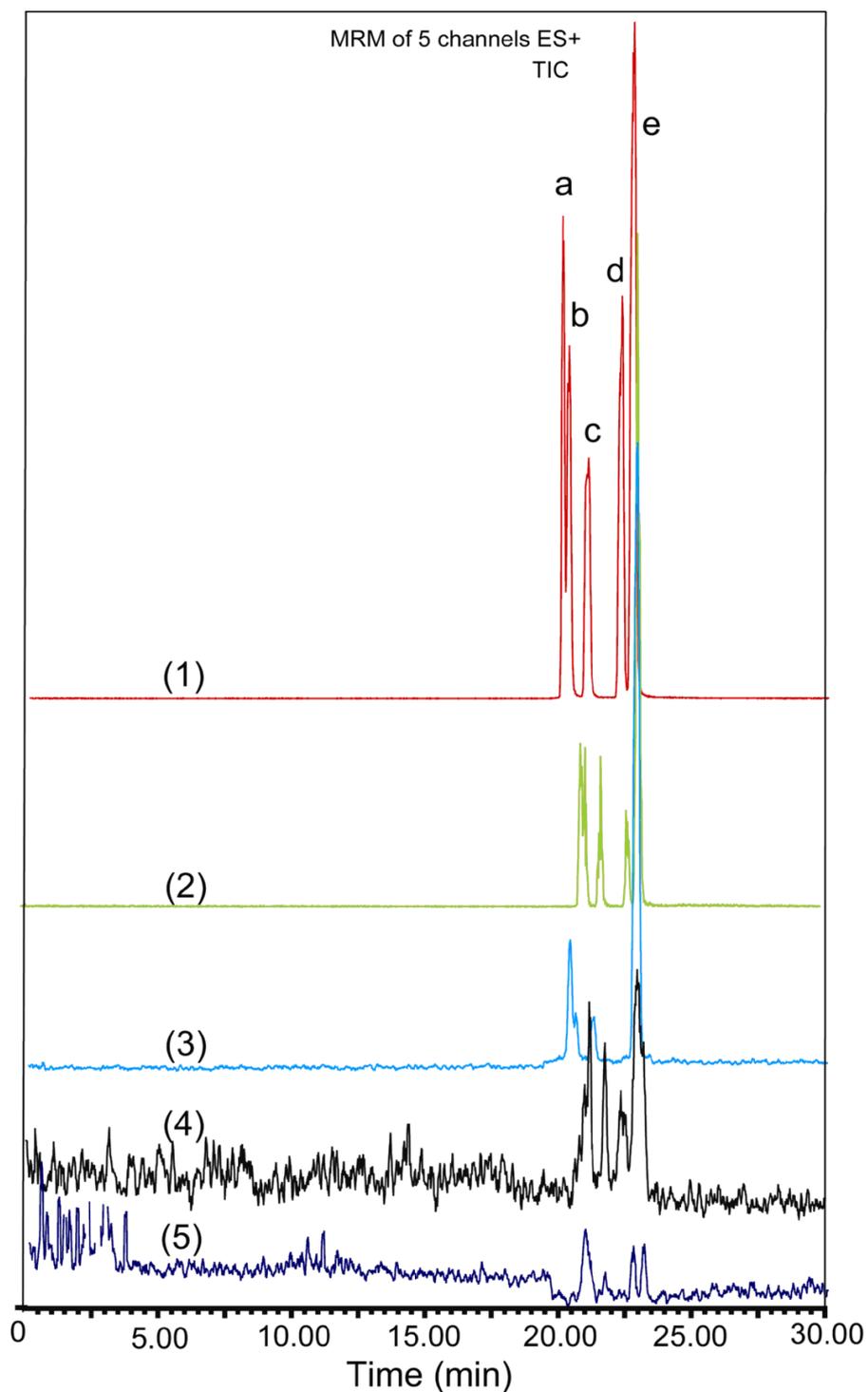


Figure S4. Mass chromatograms of five sulfonamides solutions after different simulated solar light irradiation time with TiO_2 3D_M: (1) 0min, (2) 10min, (3) 20min, (4) 40min, (5) 60min. (a SAAM; b SPD; c SMZ; d SIA; e SDM)

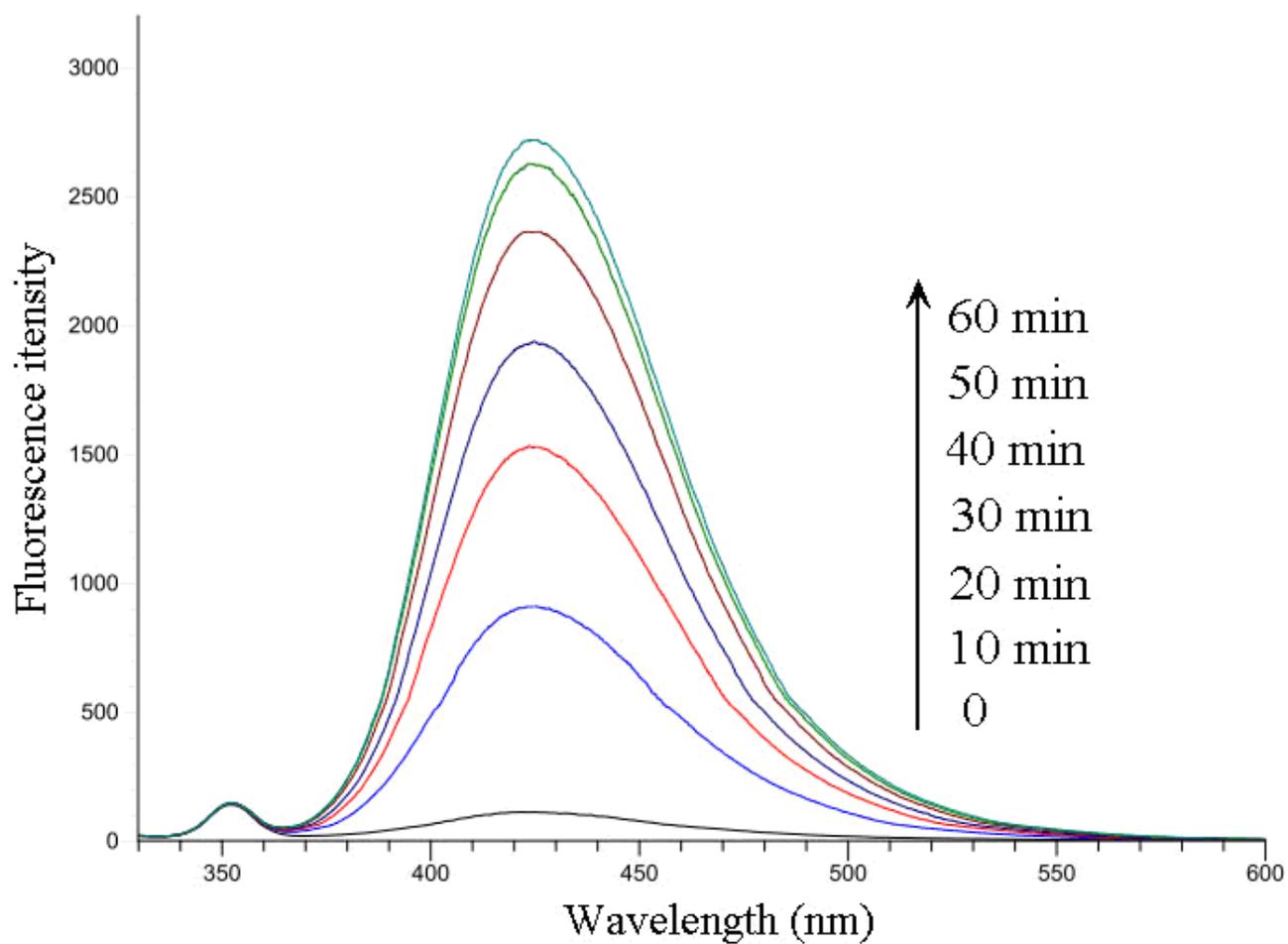


Figure S5. Temporal fluorescence spectral changes of 5×10^{-4} M terephthalic acid solution in 2×10^{-3} M NaOH with the presence of mesoporous TiO_2 microspheres under simulated solar light irradiation.

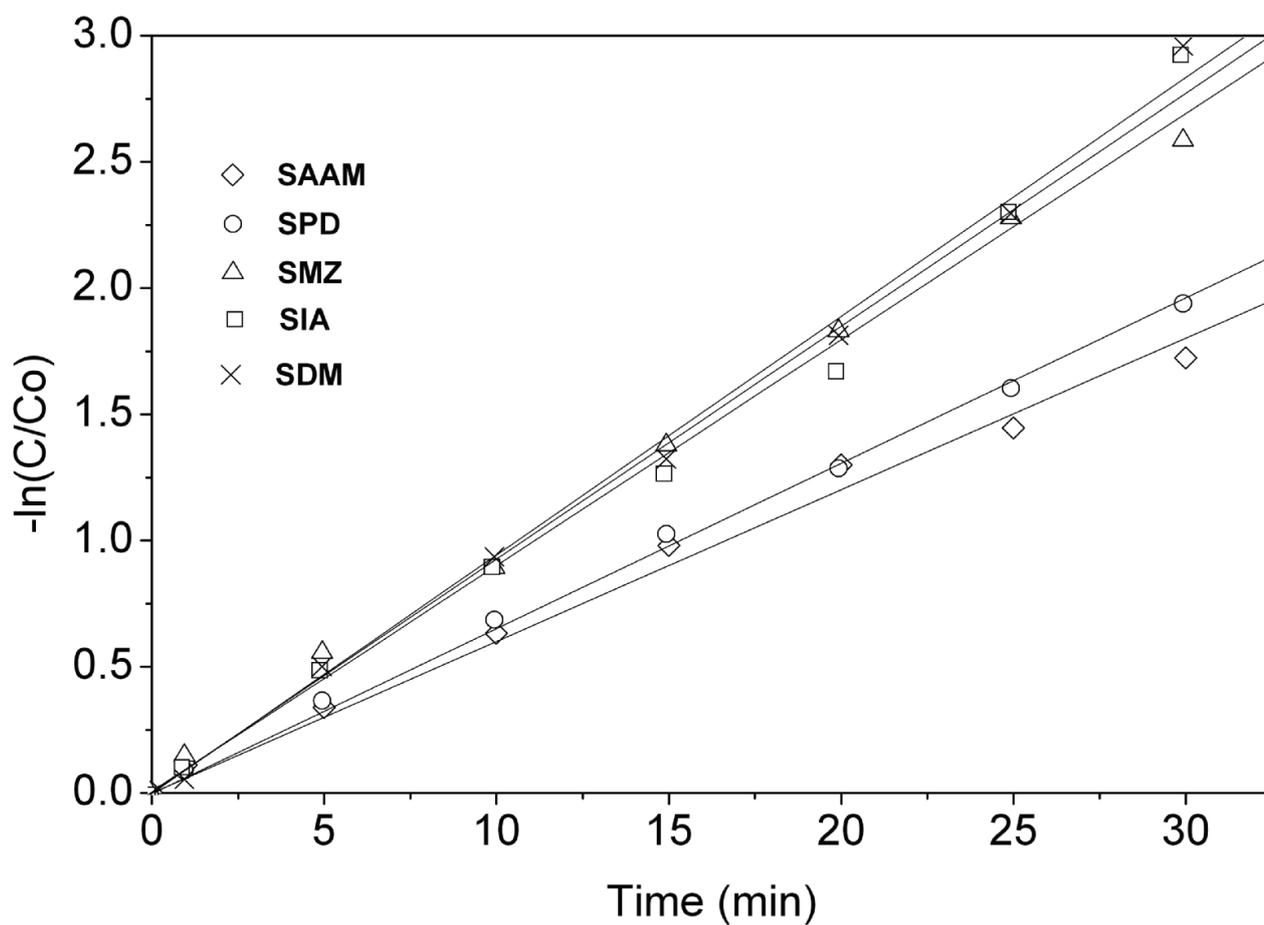


Figure S6. Kinetic linear simulation curve of five sulphonamides (0.1 mM) photocatalytic degradation by mesoporous TiO_2 microspheres (0.5 g L^{-1}) under simulated solar light irradiation with the assistance of H_2O_2 (5.88 mM)

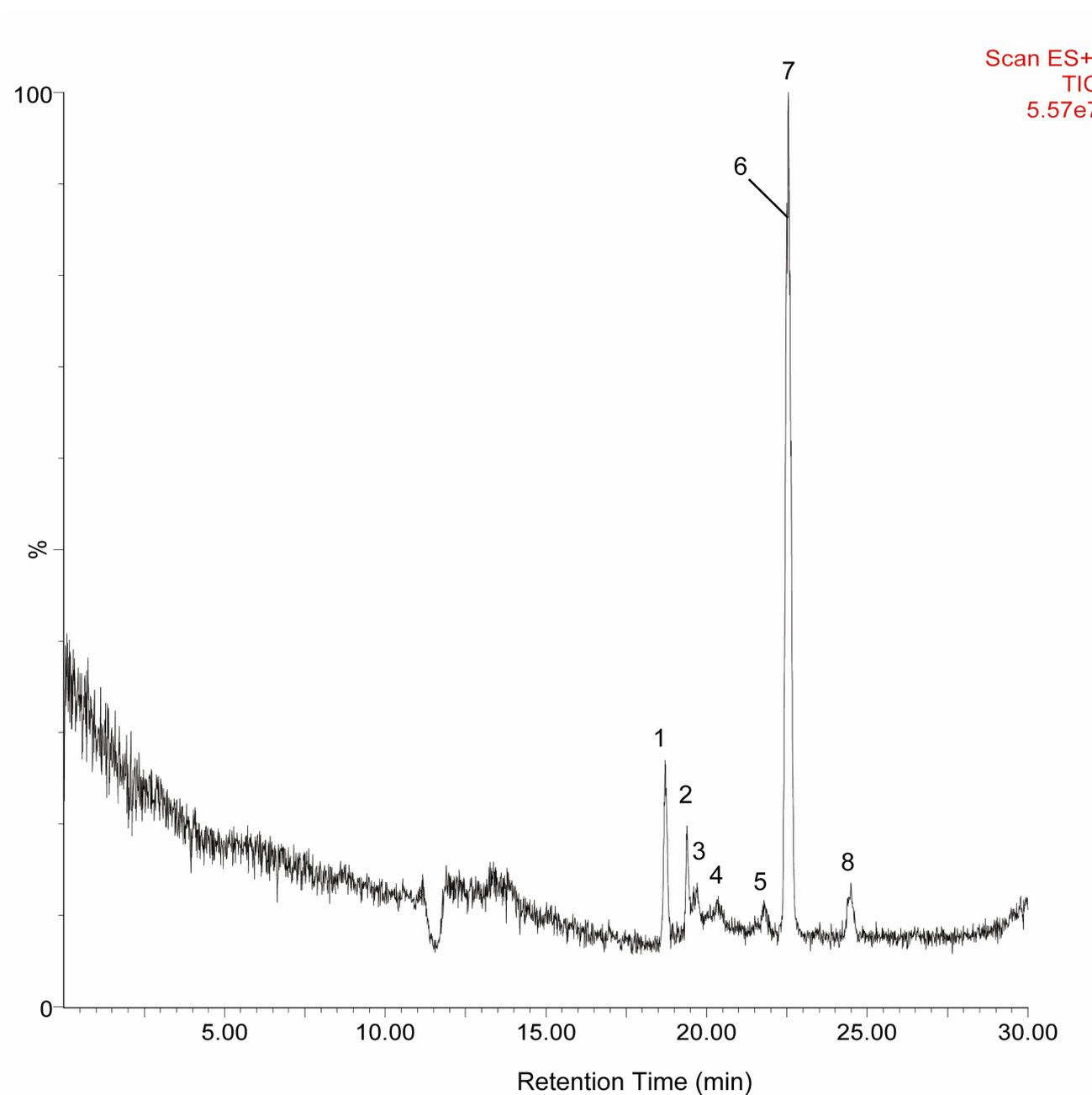


Figure S7. Liquid chromatography mass spectrometry (LC-MS) chromatogram for SDM photocatalysis after 10 min irradiation

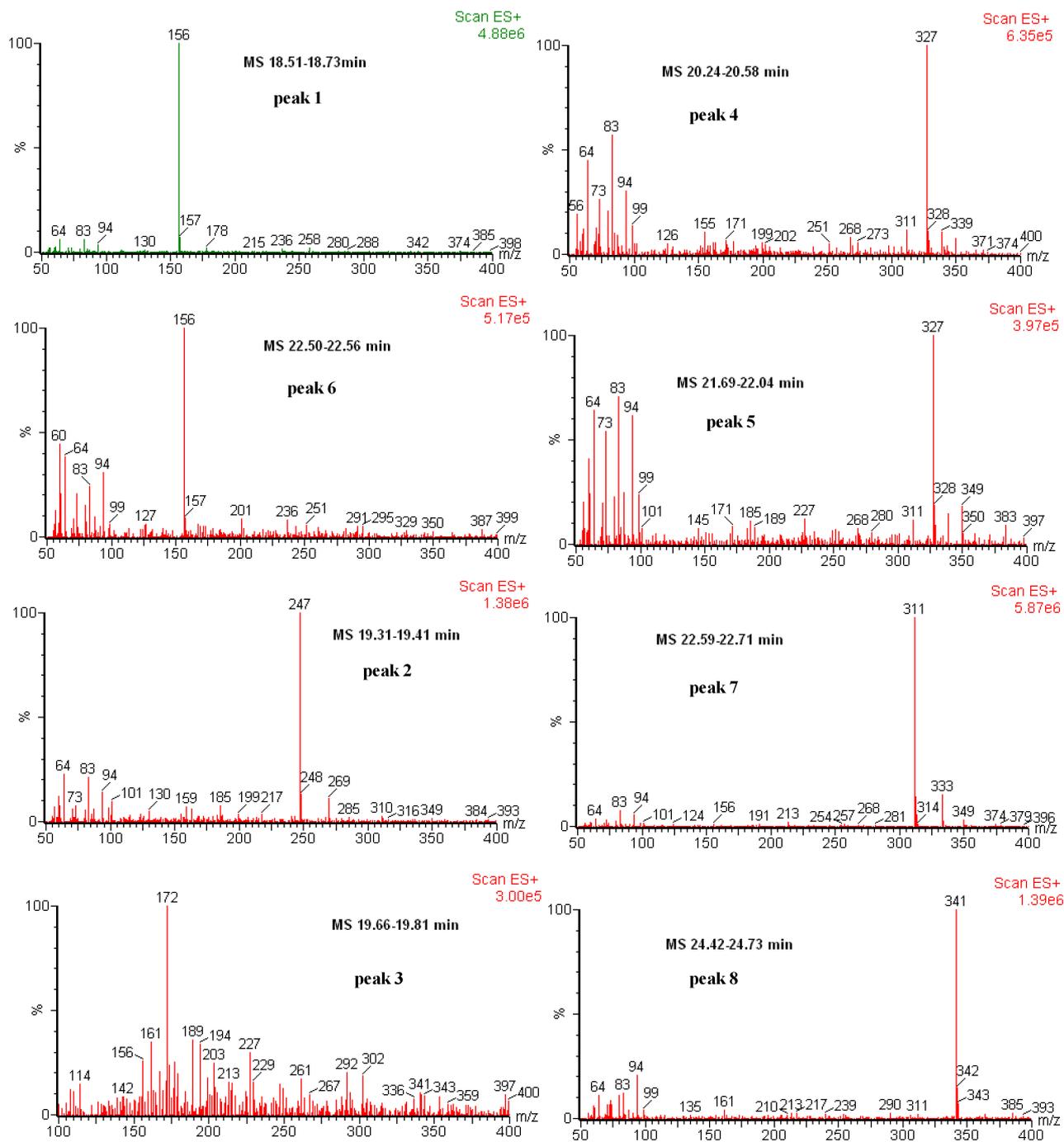


Figure S8. Mass spectra corresponding proposed structures of six main peaks and SDM in TIC.

Table S1. Analyte acronyms, molecular weights, ions monitored for LC–MS/MS, and conditions of cone voltages and collision energies.

Analyte	Molecular weight	Precursor ion (m/z)	Product ion (m/z)	Cone voltage (v)	Collision energy (v)
SAAM	214.2	215	156	20	10
SPD	249.3	250	156	30	20
SMZ	278.3	279	156	28	20
SIA	367.3	368	186	20	12
SDM	310.3	311	156	30	22