Supplementary materials for the article **"Paving the way for a sustainable and efficient SiO₂/TiO₂ photocatalytic composite"** by Mattia Pierpaoli, Xu Zheng, Vladimir Bondarenko, Gabriele Fava, Maria Letizia Ruello
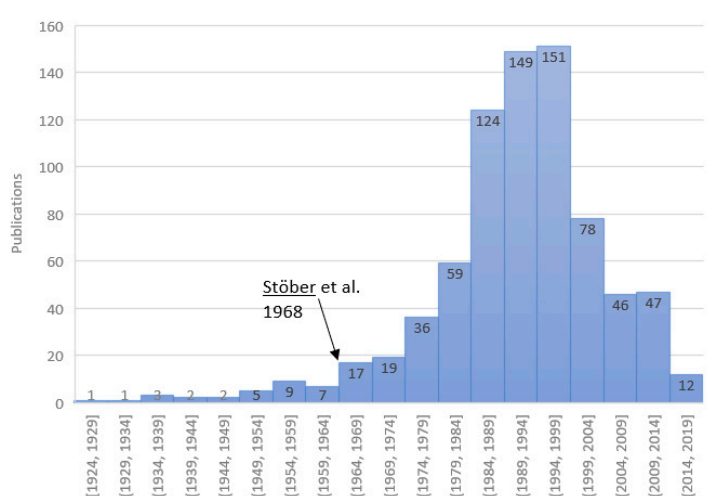

Fig S1. Time distribution of 768 selected publications about silica/titania composites.

All data were obtained from the Web of Science Core Collection (WoSCC) by Thomson Reuters prior to 1 June 2019. In this study, the keywords used for the data retrieval strategy were as follows: TI=((silica OR SiO2) AND (TiO2 OR titania)). English-only document types were selected from the following indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, and ESCI. The final dataset contained 5084 bibliographic records. A further selection were made by using Citespace, in which 768 publications were selected using the following criteria: 10% of the most cited publication, in each year slice were subjected to a pruning of the merged network, by using the pathfinder algorithm.
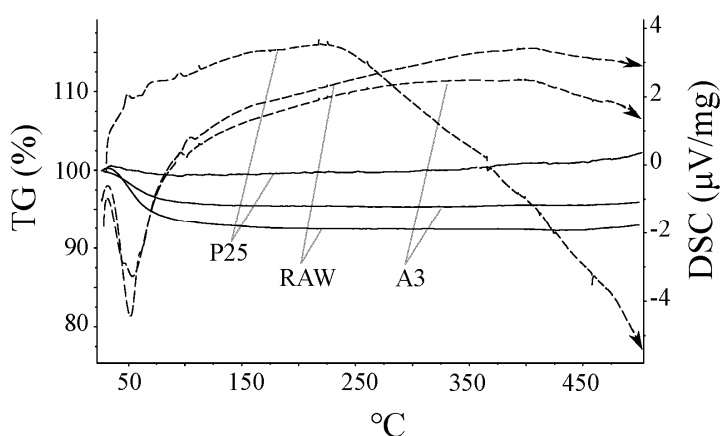

Fig S2. TGA analysis of the samples

The TGA (solid lines) reveals that the weight losses (-7.51%, -0.77%, -4.42%) occurs in the temperature range from 30 °C to 191 °C, 30°C to 95°C and 30°C to 127°C respectively for the RAW, T, A3 samples. The total weight losses are due to the elimination of a small amount of the physically adsorbed water [25]. The DSC thermogram (dotted lines) shows a small endothermic peak at 52.5°C and 54.0°C respectively for the RAW and A3 samples, which is resulted from desorption of physically adsorbed water, while no peak was observed for the P25 sample.
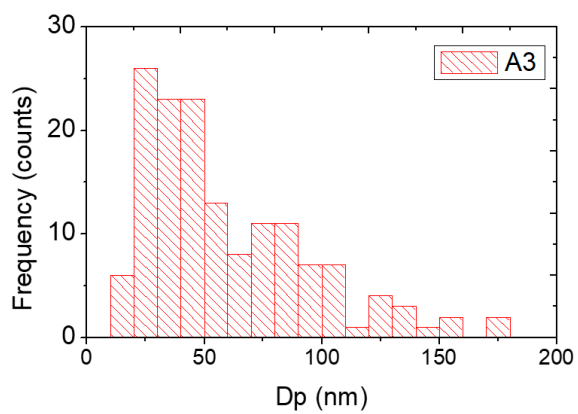
Fig S3. *The primary particle size distributions measured from SEM images for the sample A3*

Sample	TiO$_2$/SiO$_2$	composite mass	MEK initial concentration	removal rate under UV conditions	removal rate under dark conditions	Net removal rate	α	NOx initial concentration	NO removal	NOx removal
	%	g	mg/l	mg/min	mg/min	mg/min	-	ppb	% (surface normalized)	% (surface normalized)
RAW	0	0.15	4	0.22	0.29	-0.11	0.86	458	1.9	0.6
A3	3	0.15	4	1.11	0.9	0.35	0.72	456	15.3	7.1
A7	7	0.15	4	0.43	0.26	0.28	0.88	443	12.3	4.9
A12	12	0.15	4	0.23	0.23	0	0.78	433	9.8	2.9
W3	3	0.15	4	0.87	0.59	0.48	0.72	455	1.9	0.6
W7	7	0.15	4	0.46	0.35	0.19	0.72	403	6.8	1.7
W12	12	0.15	4	0.31	0.28	0.05	0.82	438	14.9	5.1

Table S4: Photocatalytic properties of the samples