



Supplement of

Photocatalytic degradation of dyes in water by analytical reagent grades ZnO, TiO₂ and SnO₂: a comparative study

Dnyaneshwar R. Shinde et al.

Correspondence to: Popat S. Tambade (pstam3@rediffmail.com)

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Support file

Table-S1: Characteristic of Degussa P25 (TiO₂) photocatalyst (As per manufacturers information)

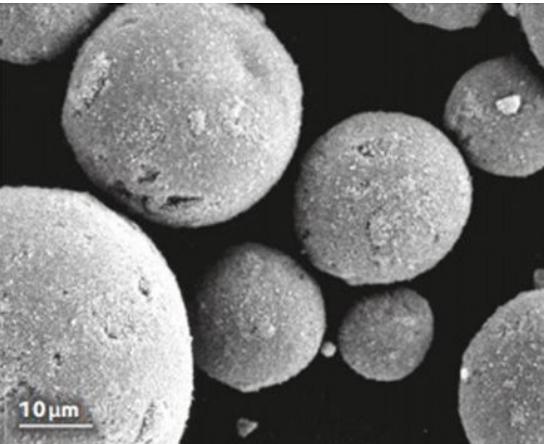
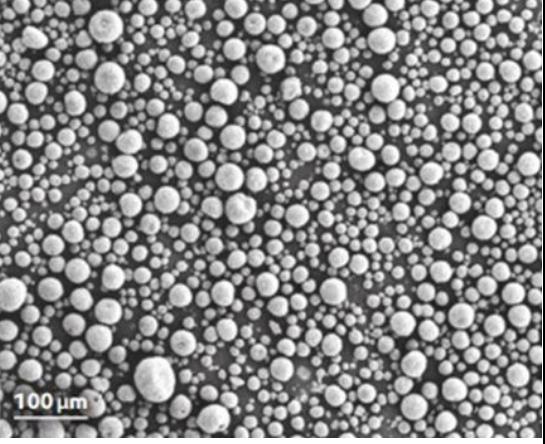
Material	Degussa TiO ₂ p25 Nanoparticles
SEM of Degussa P-25 photocatalyst	
	
APS	25nm
Rutile	20 %
Anatase	80 %
Moisture	<1.5 Wt%
Loss of weight in drying	< 2.0 %
Loss of weight in burning	< 1.0 %
Assay	99.9%
Al	< 17ppm
Mg	< 65ppm
Si	<120ppm
Fe	9.75
Ca	<75ppm
S	< 130ppm
Nb	< 80 ppm

Table-S2: Structural information of dyes

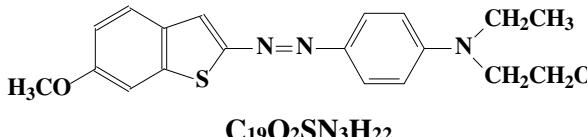
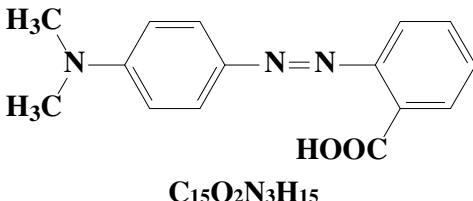
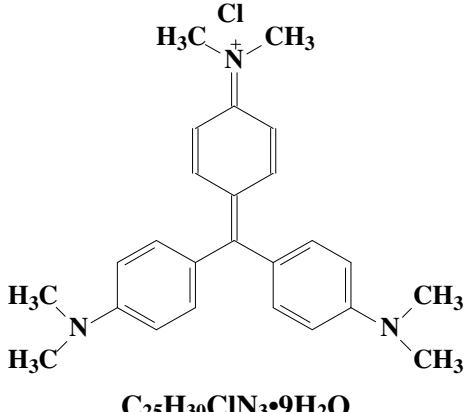
Sr. No.	Name of the Dye	Structure and mol. formula	λ_{max} at specific pH of dye soln.	Mol. Wt.
1	Basic Blue - 41 (BB)	 $\text{C}_{19}\text{O}_2\text{SN}_3\text{H}_{22}$	605.2 nm pH=7	482.7 g
2	Methyl Red (MR)	 $\text{C}_{15}\text{O}_2\text{N}_3\text{H}_{15}$	517.6 nm pH = 4	269.31 g
3	Crystal Violet (CV)	 $\text{C}_{25}\text{H}_{30}\text{ClN}_3 \cdot 9\text{H}_2\text{O}$	592.4 nm pH=7	570.12 g

Table-S3: COD of the dyes at the time of decolourization on ZnO photocatalyst and at 4 hr. of irradiation time

Dye	Initial COD (ppm)	% removal COD		
		at the time decolourization	4 h irradiation time	5 h irradiation time
Crystal Violet	76.8 ± 3.2	46.3 ± 4.8	91.6 ± 2.1	92.2 ± 2.9
Basic Blue	63.85 ± 4.7	52.9 ± 5.6	94.9 ± 1.9	95.6 ± 2.6
Methyl orange	81.98 ± 5.2	38.1 ± 3.8	87.2 ± 3.5	89.3 ± 3.7

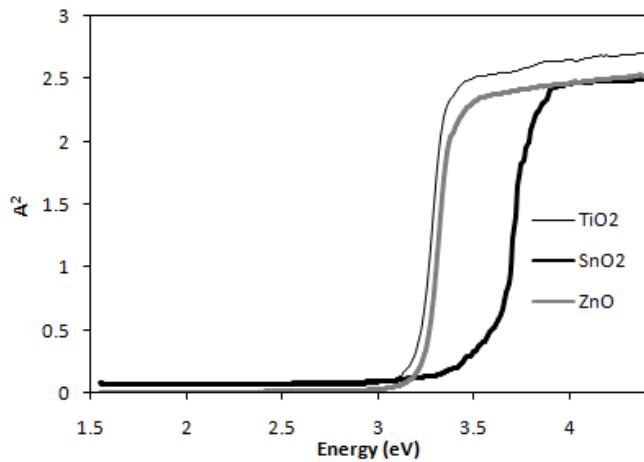
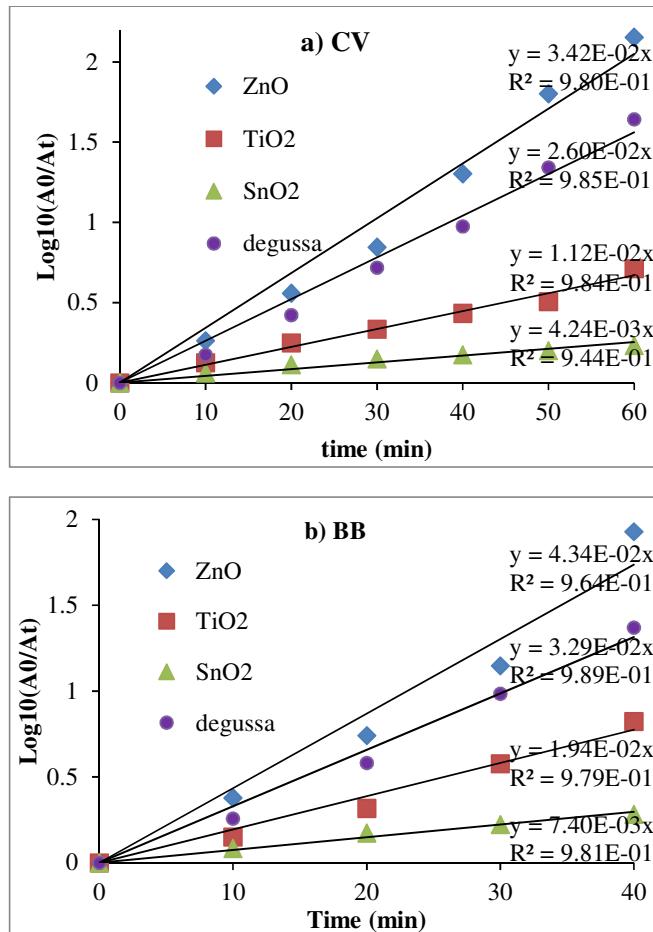


Figure S1: Graph A^2 against energy constructed from UV-DRS in absorbance mode to evaluate band gap



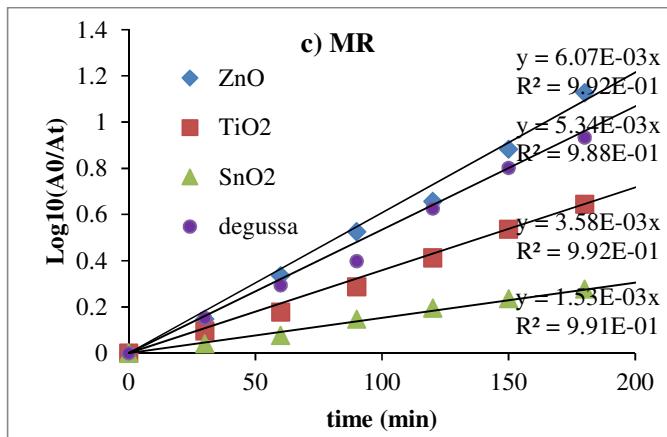


Figure S2: Graph of $\log_{10}(A_0/A_t)$ against time for the evaluation of rate constants of decolourization of dyes on photocatalysts

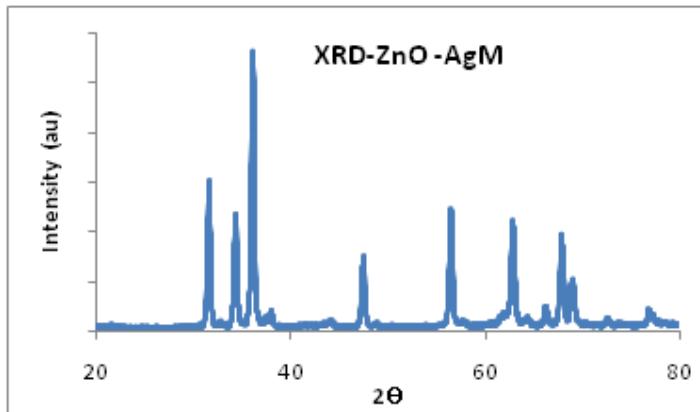


Figure S3: XRD of Silver metal sensitized ZnO

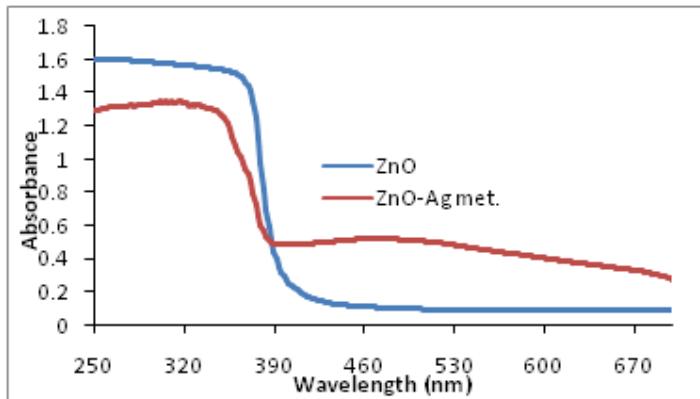


Figure S4: UV-DRS in absorbance mode of ZnO and Silver metal sensitized ZnO

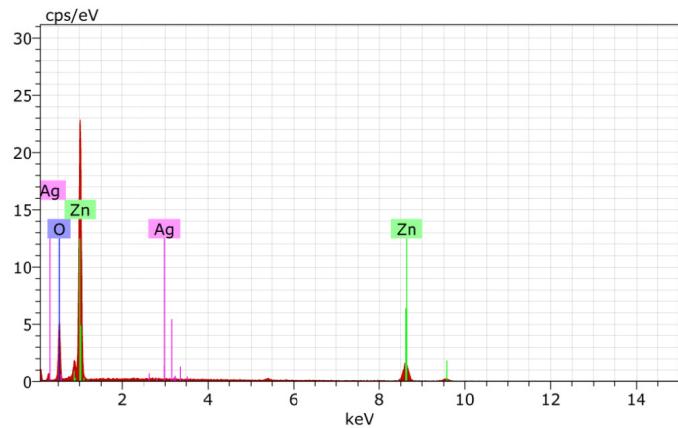


Figure S5: EDS Silver metal sensitized ZnO