

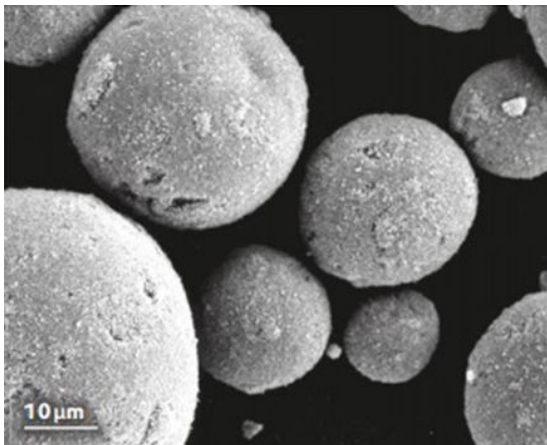
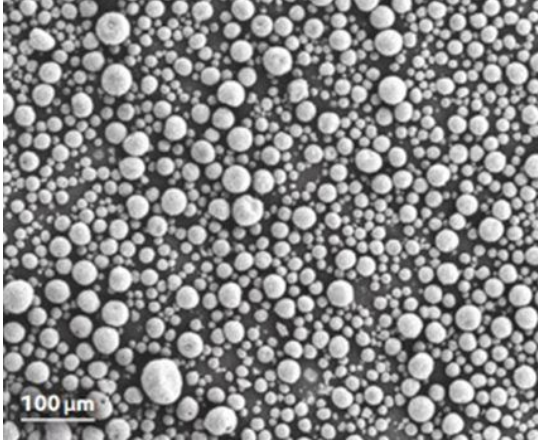
# Photocatalytic degradation of Dyes in Water by Analytical Reagent Grade Photocatalysts – A comparative study

Dnyaneshwar R. Shinde, Popat S. Tambade\*, Manohar G. Chaskar, Kisan M. Gadave

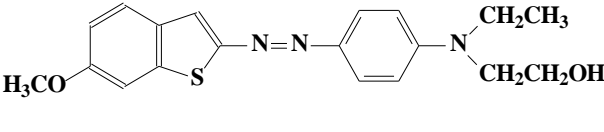
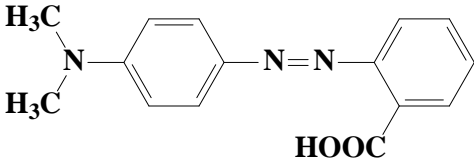
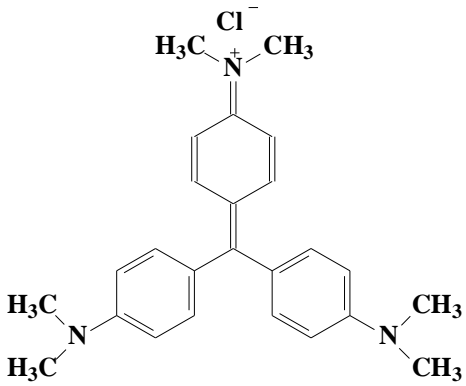
Prof. Ramkrishna More Arts, Commerce and Science College, Akurdi, Pune-44, Affiliated Savitribai Phule Pune University (India)

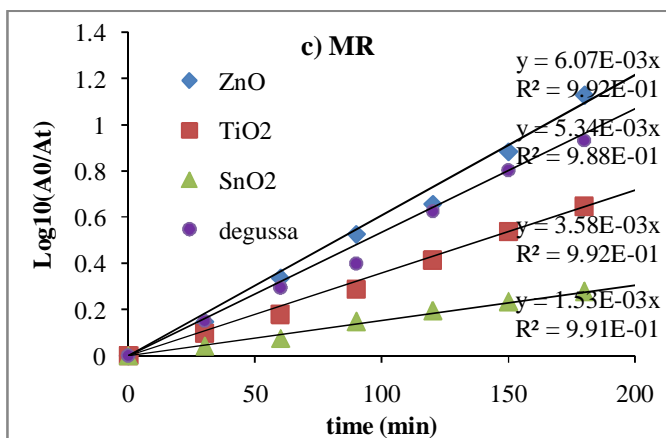
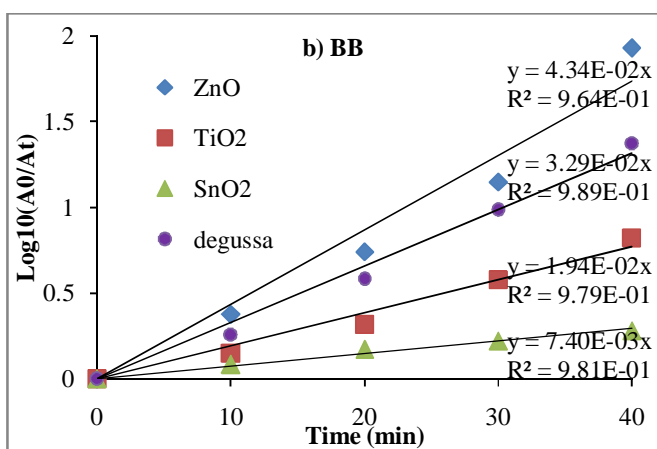
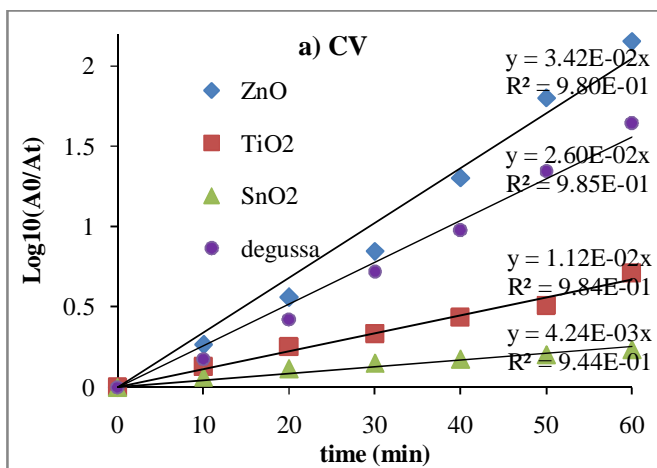
## Support File

**Table-1: Characteristic of Degussa P25 (TiO<sub>2</sub>) photocatalyst (As per manufacturers information)**

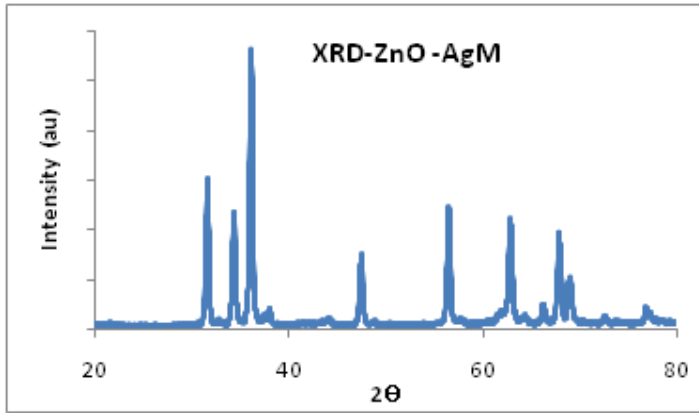
| Material   | Degussa TiO <sub>2</sub> p25 Nanoparticles  |
|--|---|
| SEM of Degussa P-25 photocatalyst  |   |
|  |  |
| APS  | 25nm  |
| Rutile   | 20 %  |
| Anatase  | 80 %  |
| Moisture   | <1.5 Wt%  |
| Loss of weight in drying   | < 2.0 %   |
| Loss of weight in burning  | < 1.0 %   |
| <b>Assay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

**Table-2:** Structural information of dyes

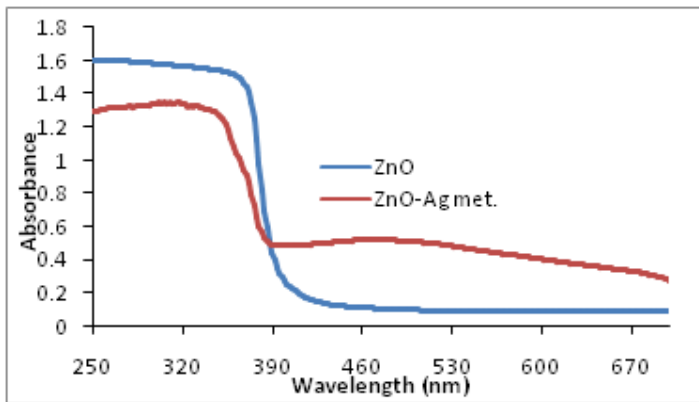
| Sr. No. | Name of the Dye      | Structure and mol. formula   | $\lambda_{\max}$ and pH of dye soln. | Mol. Wt. |
|---------|----------------------|--|--------------------------------------|----------|
| 1       | Basic Blue - 41 (BB) | <br>$C_{19}O_2SN_3H_{22}$            | 605.2 nm pH=7                        | 482.7 g  |
| 2       | Methyl Red (MR)      | <br>$C_{15}O_2N_3H_{15}$             | 517.6 nm<br>pH = 4                   | 269.31 g |
| 3       | Crystal Violet (CV)  | <br>$C_{25}H_{30}ClN_3 \cdot 9H_2O$ | 592.4 nm<br>pH=7                     | 570.12 g |



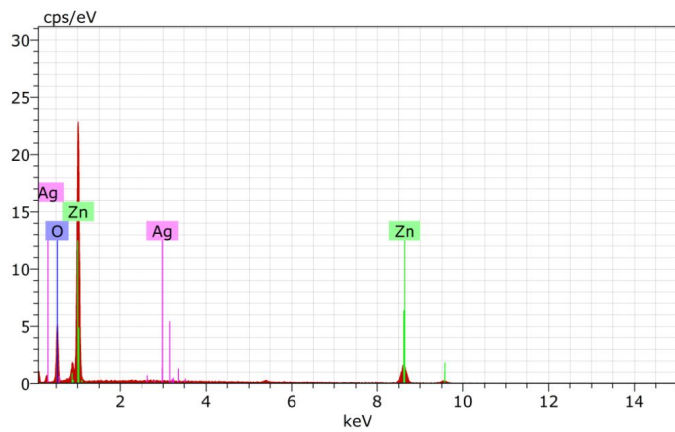
**Figure-1:** Graph of  $\log_{10}(A_0/A_t)$  against time for the evaluation of rate constants of decolourization of dyes on photocatalysts



**Figure-2:** XRD of Silver metal sensitized ZnO



**Figure-3:** UV-DRS in absorbance mode of ZnO and Silver metal sensitized ZnO



**Figure-4:** EDS Silver metal sensitized ZnO