Electronic Supplementary Material (ESI) for New Journal of Chemistry.


# The formation and effect of O-vacancies in doped $TiO_2$

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## Supplementary Information

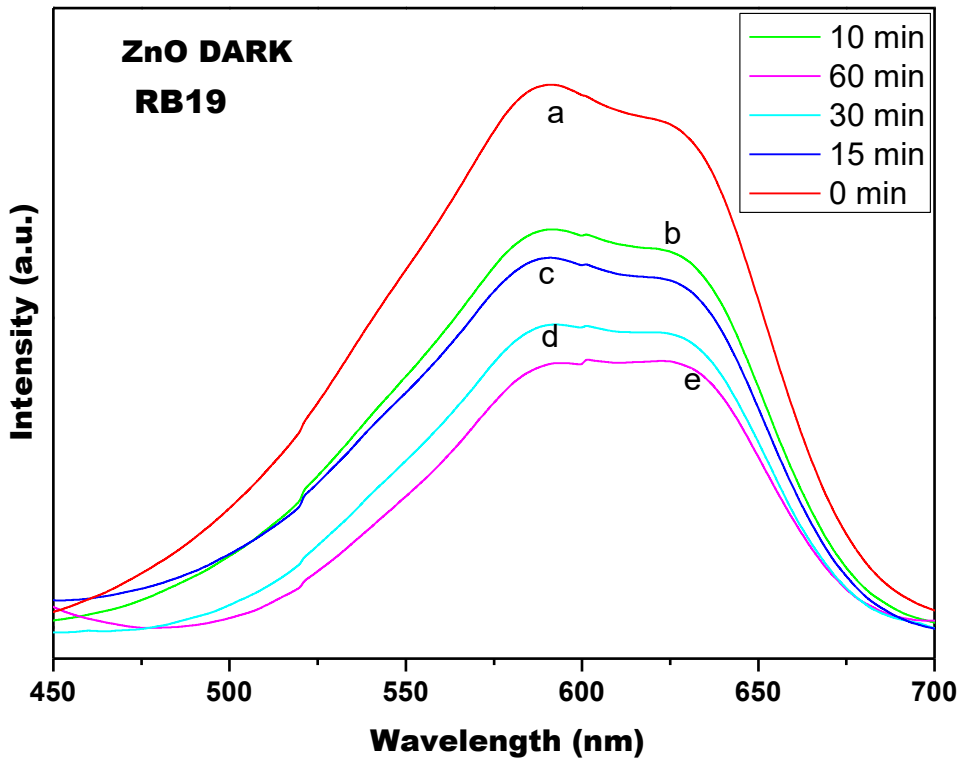


Fig. S.1:- Adsorption profile of RB-19 on nano- ZnO where the adsorption is carried out for a) 0 min, b) 10 min; c) 15 min; d) 30 min; e) 60 min.

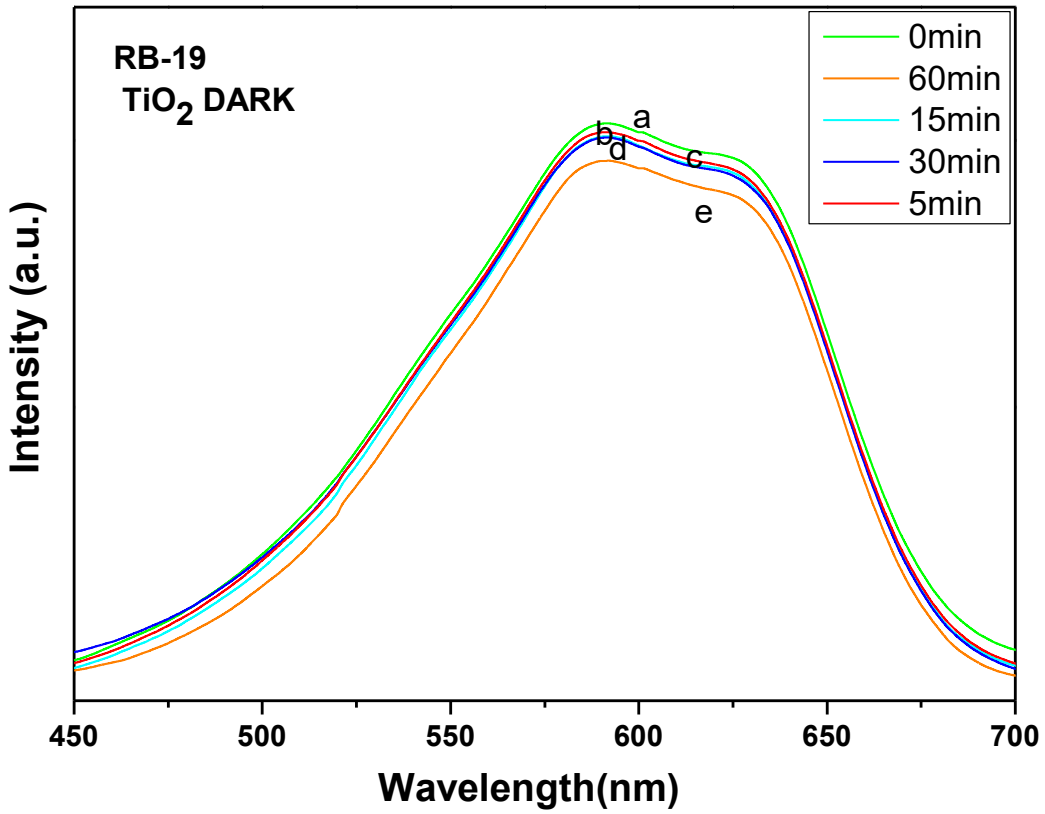


Fig. S.2:- Adsorption profile of RB-19 on nano- $TiO_2$ where the adsorption is carried out for a) 0 min, b) 10 min; c) 15 min; d) 30 min; e) 60 min.

| Sample | Crystallite Size (nm) [a] | Surface Area ($m^2/g$) [b] | a=b (Å) | c(Å) | Vol ($Å^3$) | Composition from ICP-MS |
|---|---|---|---|---|---|---|
| $TiO_2$ | 20 | 54.49 | 3.785 | 9.513 | 136.28 | - |
| Zn-1 | 20 | 46.74 | 3.785 | 9.458 | 135.51 | Ti=34.52, Zn=0.91 |
| Zn-2 | 15 | 59.85 | 3.785 | 9.417 | 134.90 | Ti=35.12, Zn=1.62 |
| Zn-5 | 12 | 70.1 | 3.785 | 9.429 | 135.01 | Ti=34.29, Zn=3.62 |
| Zn-10 | 12 | 68.6 | 3.785 | 9.403 | 134.71 | Ti=32.92, Zn=6.83 |

Table-S.I -1 : The table shows the crystallite size and the surface area of the different Zn-doped $TiO_2$ and nano $TiO_2$ particles. It shows the lattice cell parameters of a, b, c and the total volume of the Anatase lattice with different doping of Zn. The lattice parameters and the cell volume are calculated by the POWDEREX software

a: Crystallite size obtained from Scherer Equation from the XRD data (Fig. S.1) using the $\theta$ = 25.4°;

b: Pore volume obtained from the BJH distribution plot of the desorption branch at *p/p0* ~ 0.995