

**Mineralization of malachite green dye over visible light responsive bismuth doped TiO₂-
ZrO₂ ferromagnetic nanocomposites**

Archana Charanpahari¹, Sachin G. Ghugal¹, Suresh S. Umare^{1*}, Rajamma Sasikala^{2}**

Electronic Supplementary Information (ESI)

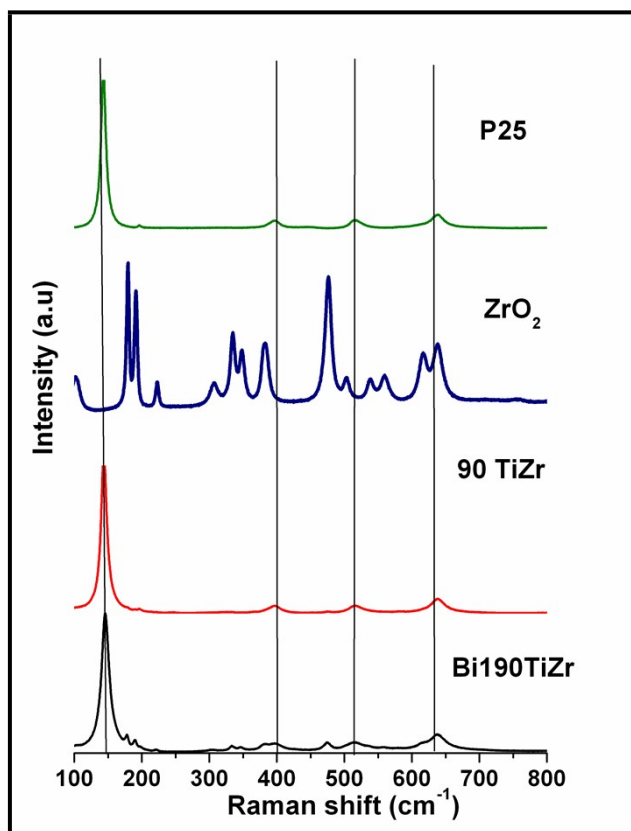


Fig S1. Full Raman spectrum of 1Bi90TiZr, 90TiZr, ZrO₂, P25

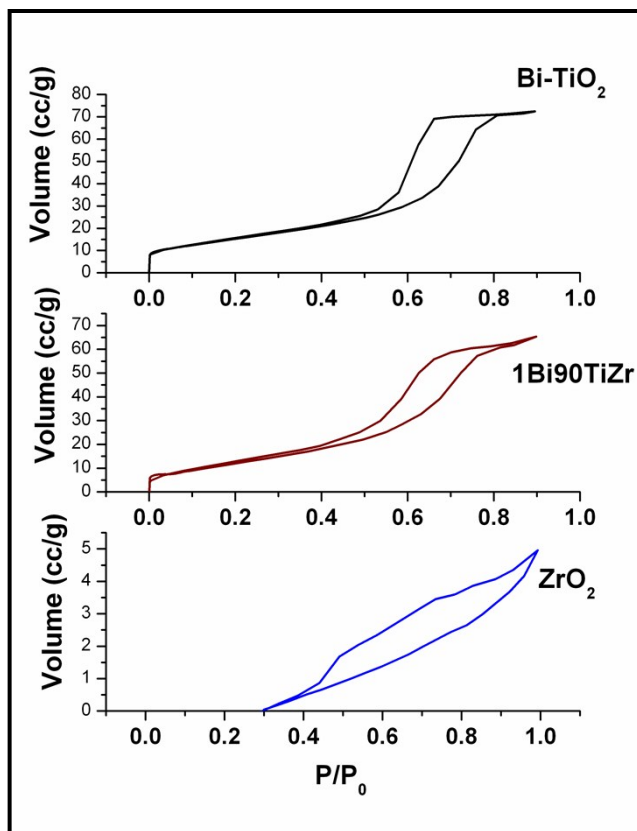
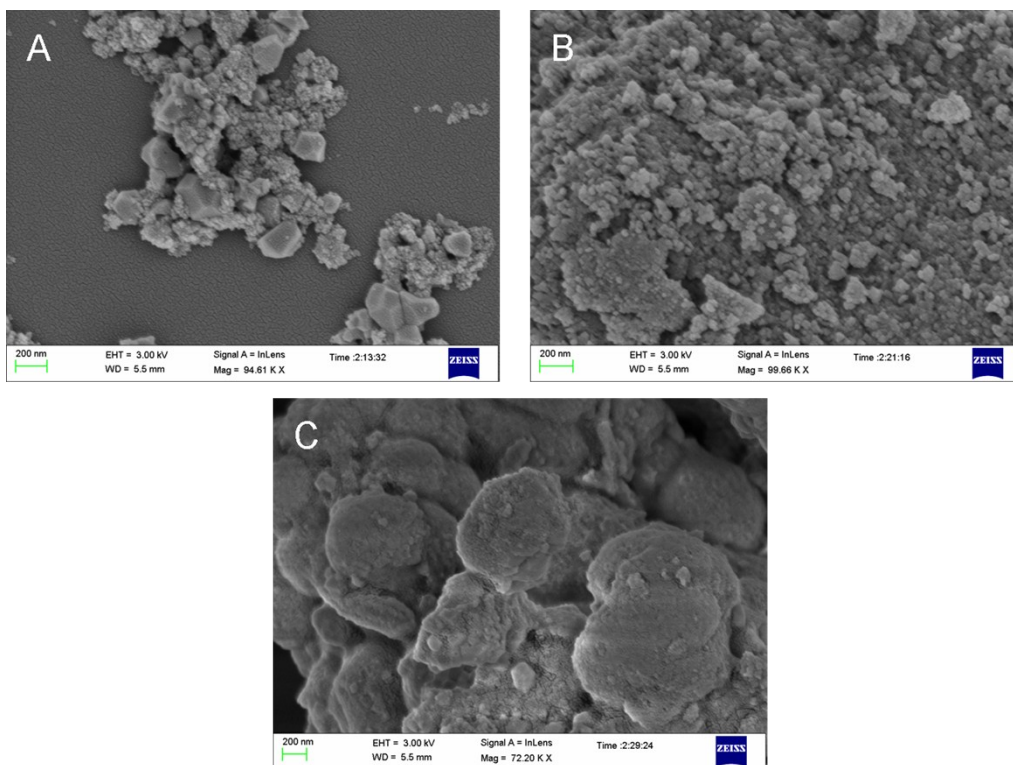
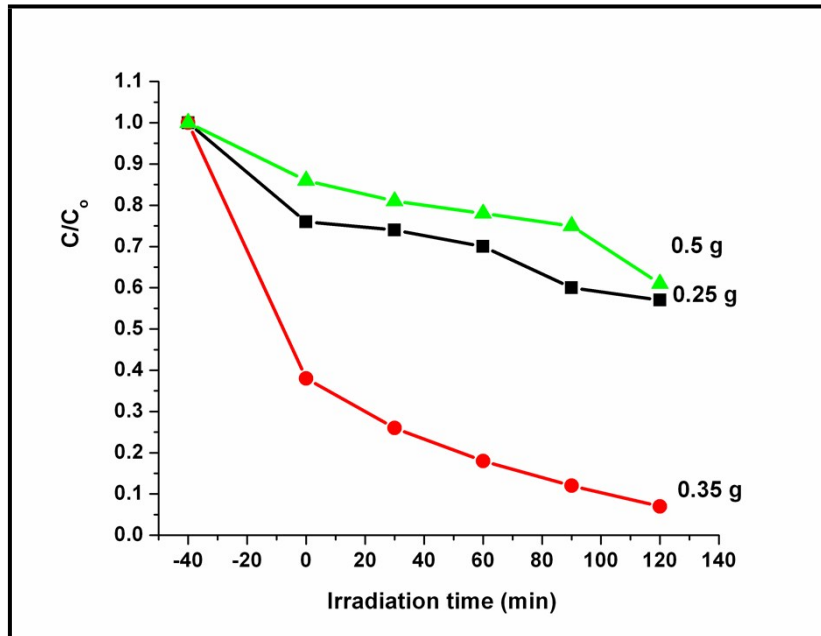


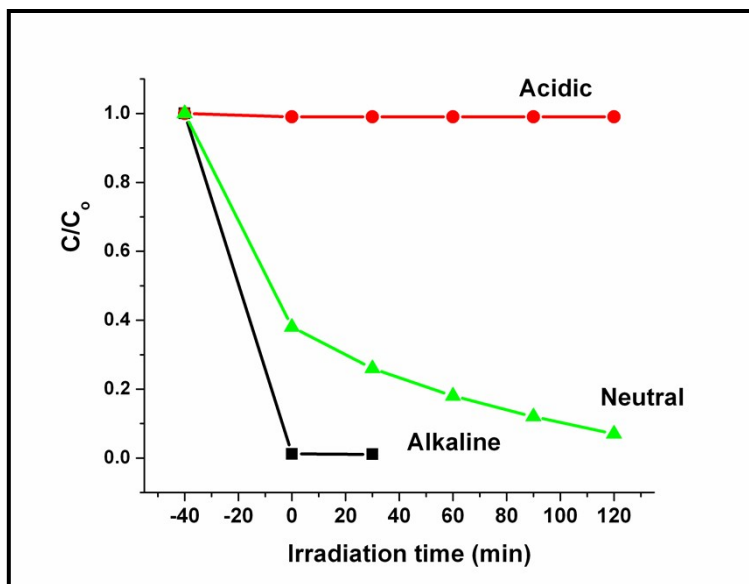
Fig S2. Adsorption isotherms for ZrO₂, 1Bi90TiZr, Bi-TiO₂



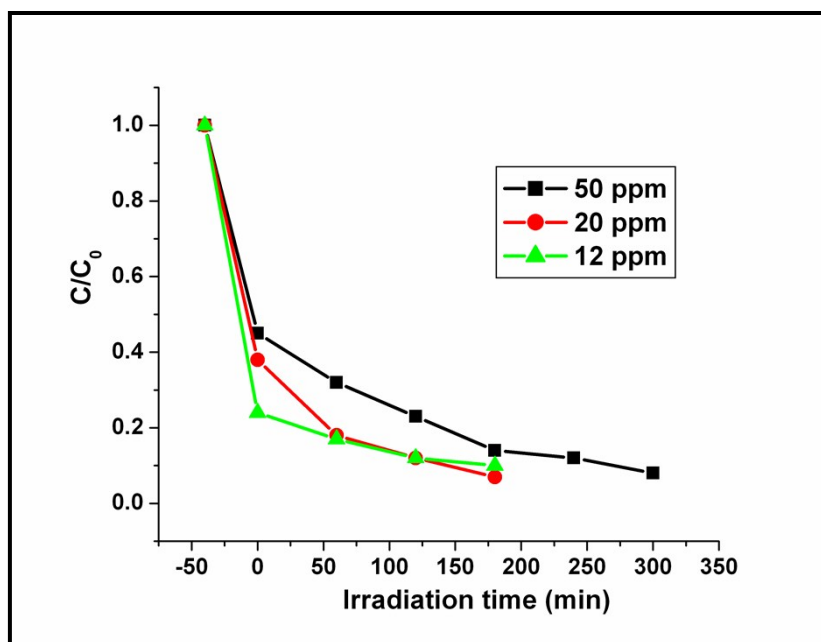
S3. SEM of A. 1Bi90TiZr B. Bi-TiO₂, C. ZrO₂



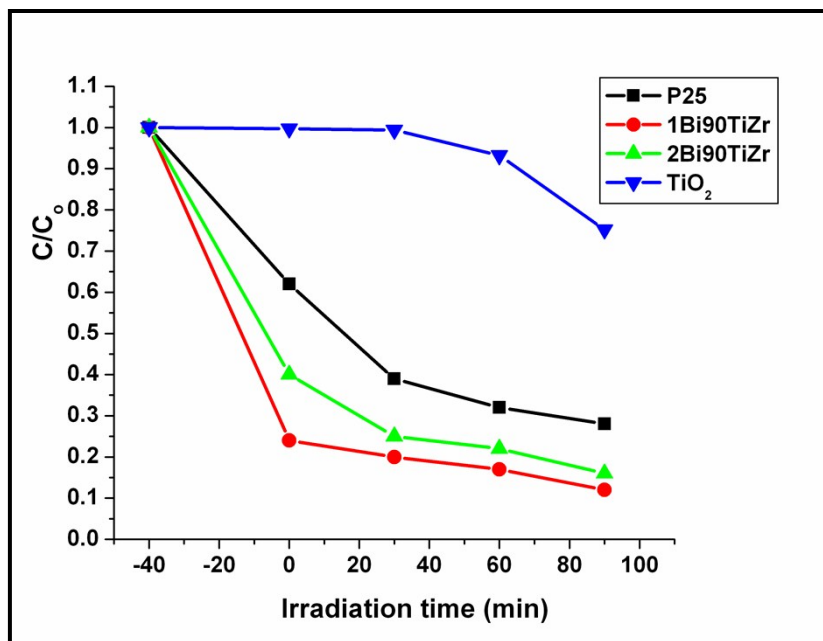
S4 . Photodegradation of 20 ppm malachite green with various 1Bi90TiZr catalyst loading.



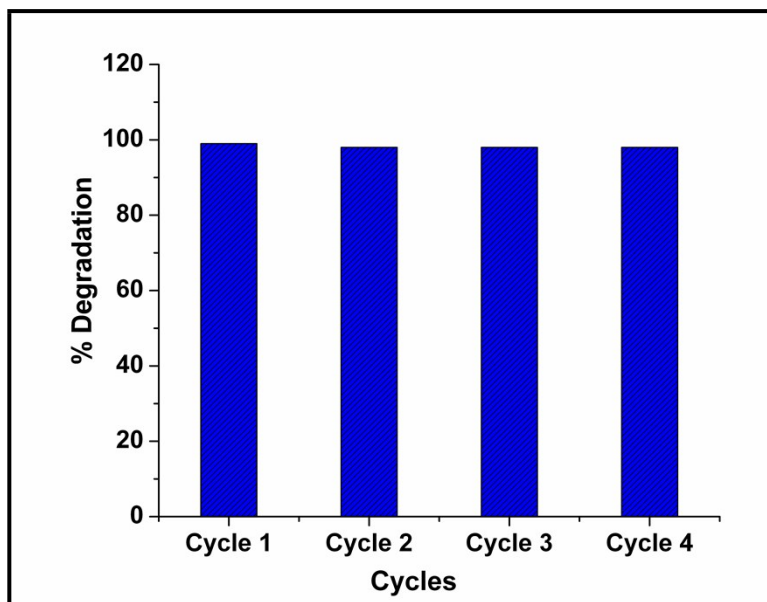
S5. Effect of pH on photodegradation of 20 ppm malachite green for $1\text{Bi}90\text{TiZr}$ catalyst



S6. Photodegradation of 20 ppm malachite green with various initial dye concentration for $1\text{Bi}90\text{TiZr}$ catalyst.

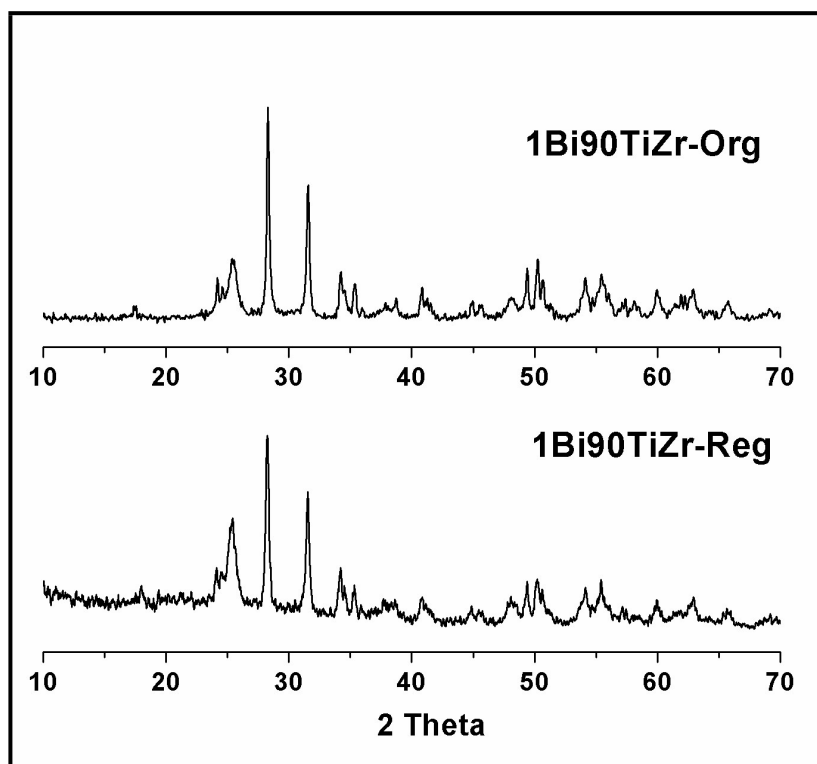


S7. Photodegradation of 20 ppm malachite green with two different Bi dopant contents



S8. Recyclability of 1Bi90TiZr for degradation of 20 ppm Malachite green

(Cycle 1: Fresh photocatalyst).



S9. XRD of original and regenerated 1Bi90TiZr.