

Supplementary Material

Reusable Fe₂O₃/TiO₂/PVC Photocatalysts for the Removal of Methylene Blue in the Presence of Simulated Solar Radiation

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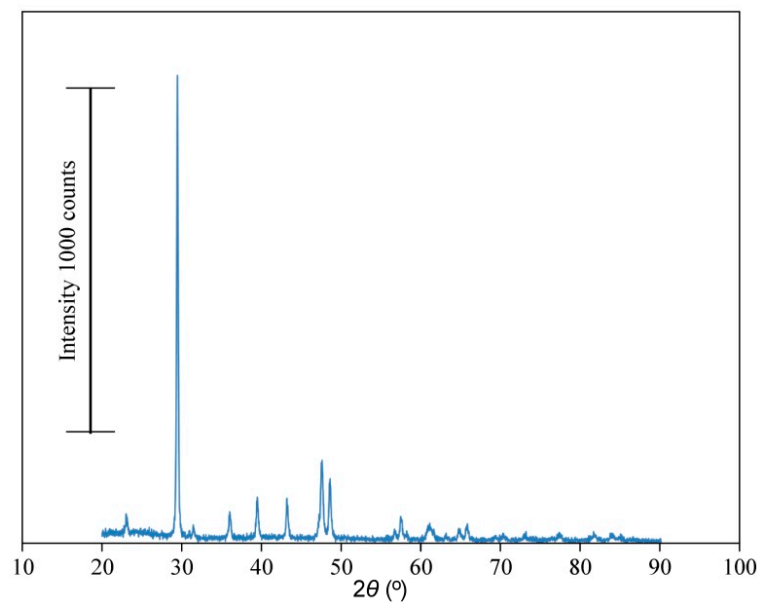


Figure S1. XRD pattern of PVC samples.

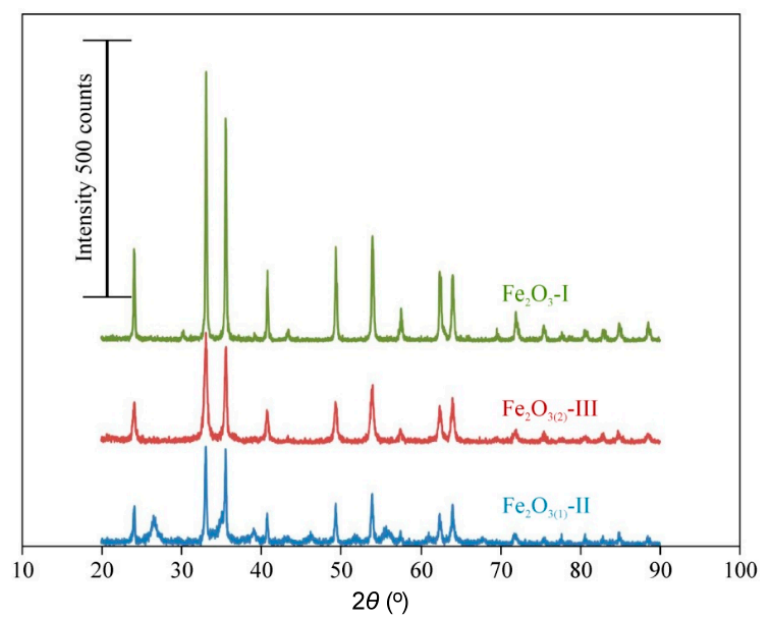


Figure S2. XRD pattern of Fe_2O_3 .

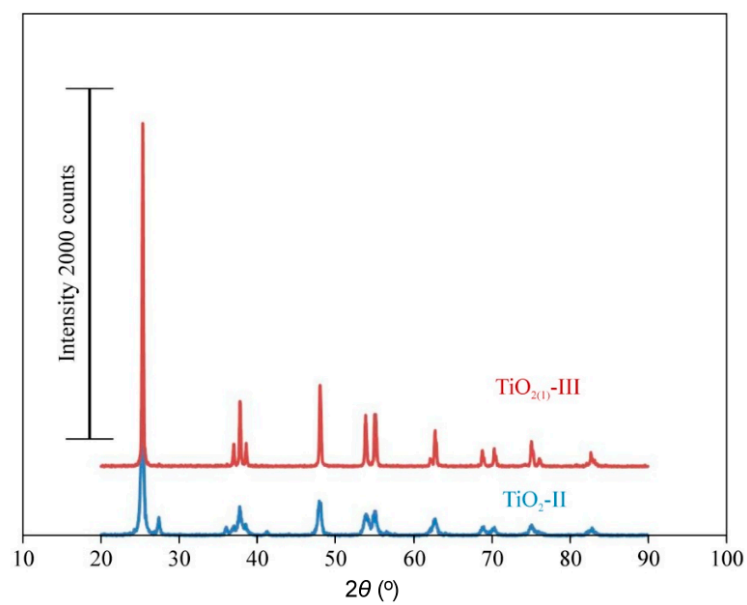


Figure S3. XRD pattern of TiO₂.

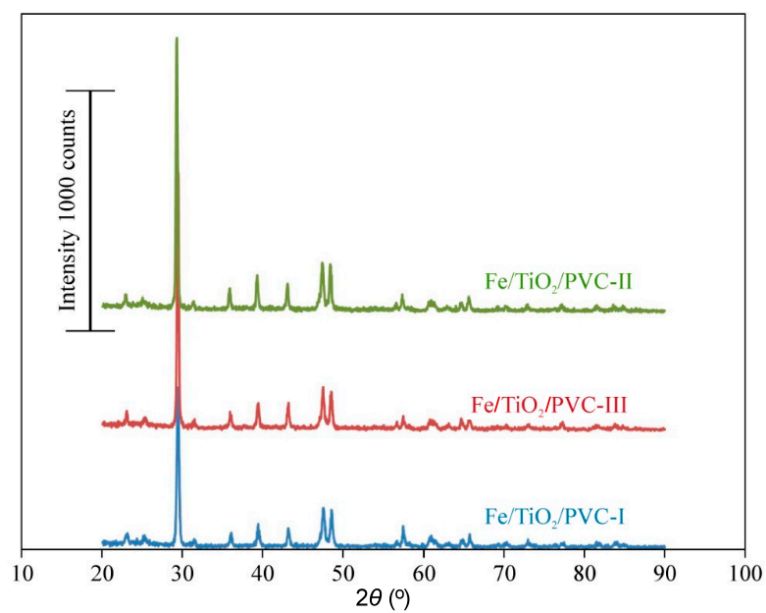


Figure S4. XRD pattern of Fe₂O₃/TiO₂/PVC.

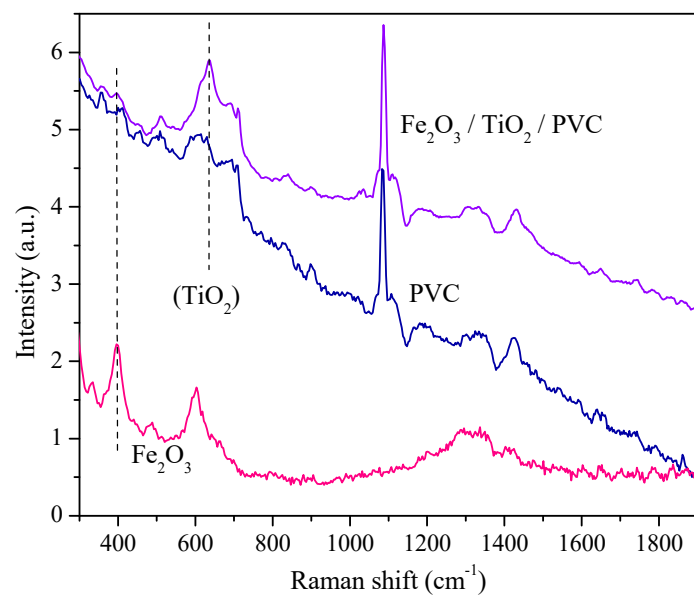


Figure S5. Raman spectra of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ at room temperature.

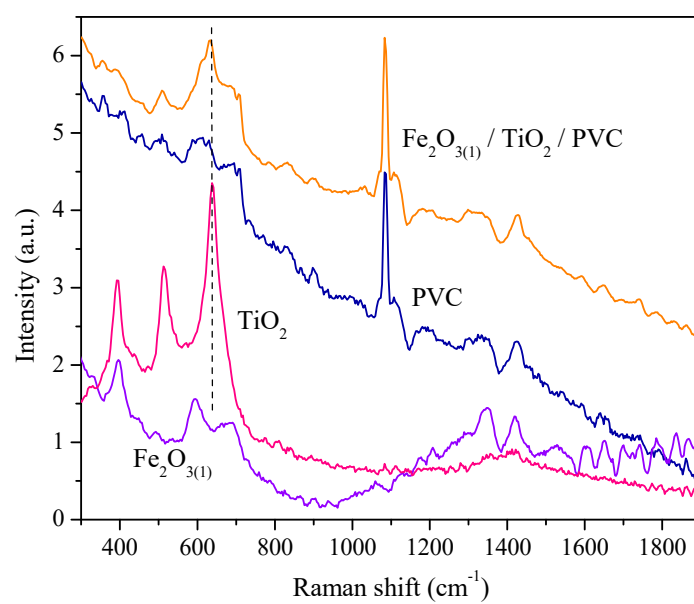


Figure S6. Raman spectra of $\text{Fe}_2\text{O}_{3(1)}/\text{TiO}_2/\text{PVC}$ at room temperature.

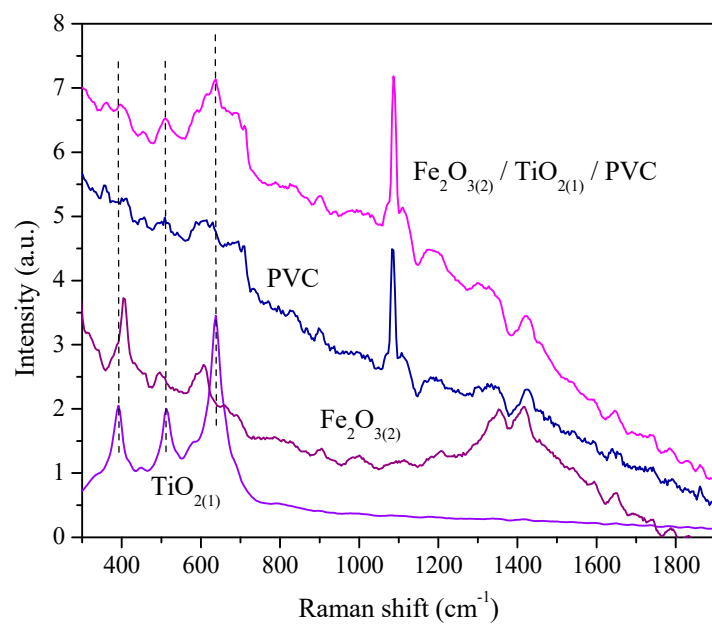


Figure S7. Raman spectra of Fe₂O₃₍₂₎/TiO₂₍₁₎/PVC at room temperature.

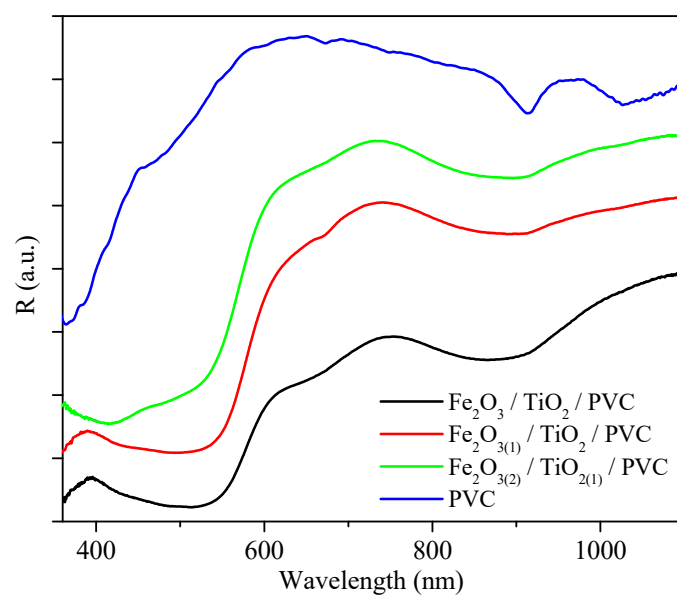


Figure S8. Reflection spectra of Fe₂O₃/TiO₂/PVC.

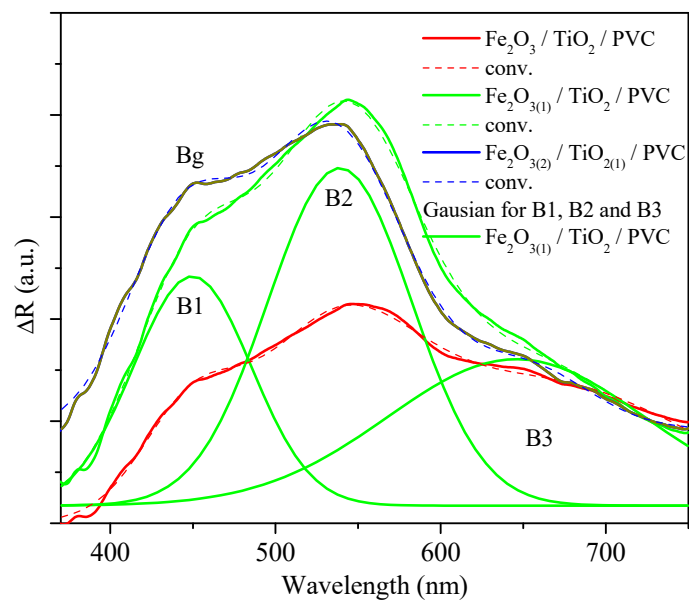


Figure S9. Absorption of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ (solid lines-measured values, dashed lines-calculated convolutions, B1-B3 deconvoluted bands for $\text{Fe}_2\text{O}_{3(1)}/\text{TiO}_2/\text{PVC}$ sample).

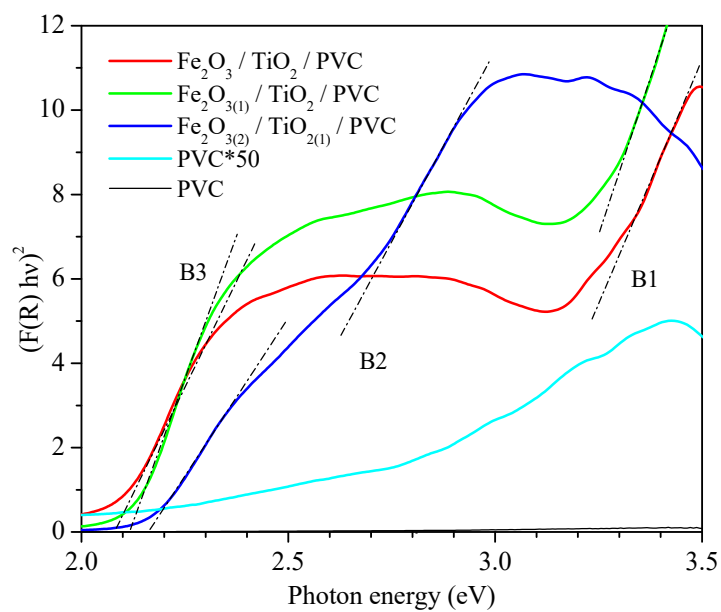


Figure S10. Energy plot of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ samples.

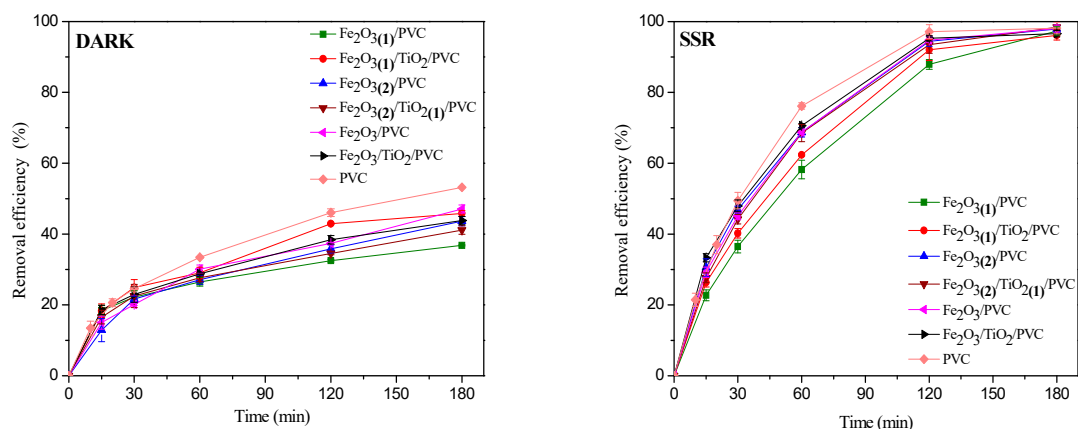


Figure S11. Adsorption and photodegradation kinetic curves for MB removal efficiency ($c_0 = 2.45 \cdot 10^{-2}$ mM) in the presence of 29 tablets of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ nanocomposites at a stirring rate of 490 rpm.

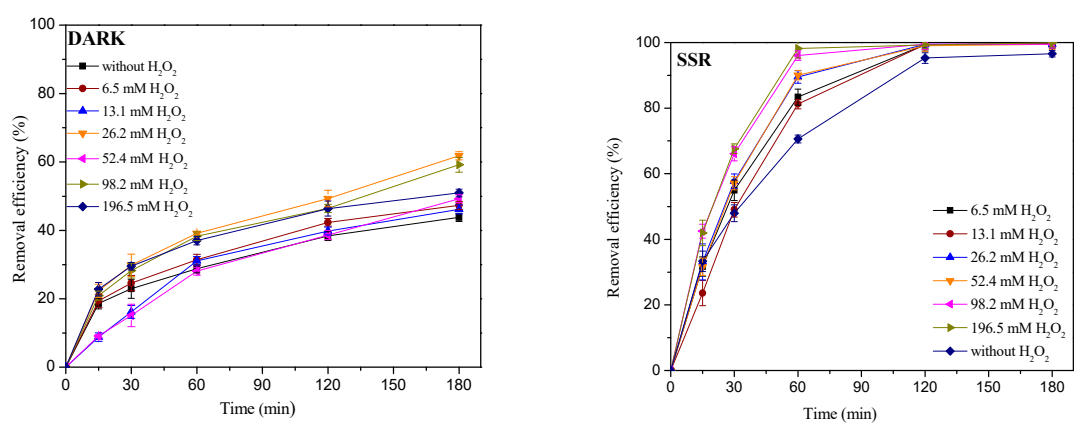


Figure S12. Adsorption and photodegradation kinetic curves for MB removal efficiency ($c_0 = 2.45 \cdot 10^{-2}$ mM) in the presence of 29 tablets of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ composites and different H_2O_2 concentrations at a stirring rate of 490 rpm.

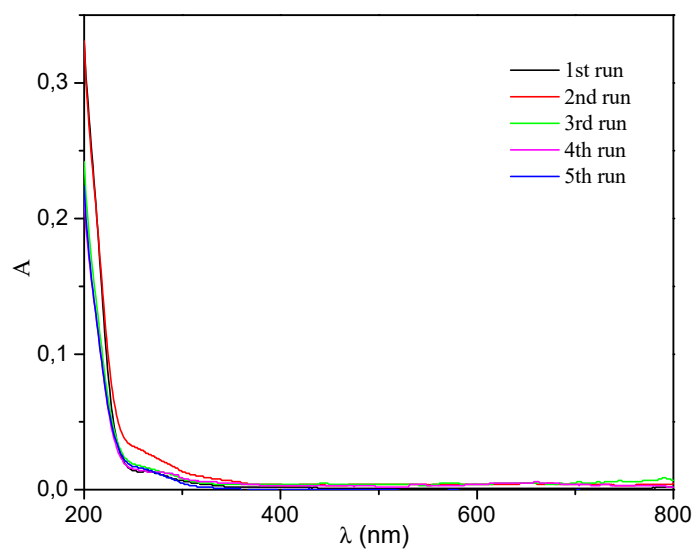


Figure S13. Absorption spectra of ultrapure water left after each photo-cleaning of 29 tablets of $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$ composites used in the MB ($c_0 = 2.45 \cdot 10^{-2}$ mM) removal under the influence of UVC irradiation for 60 min.

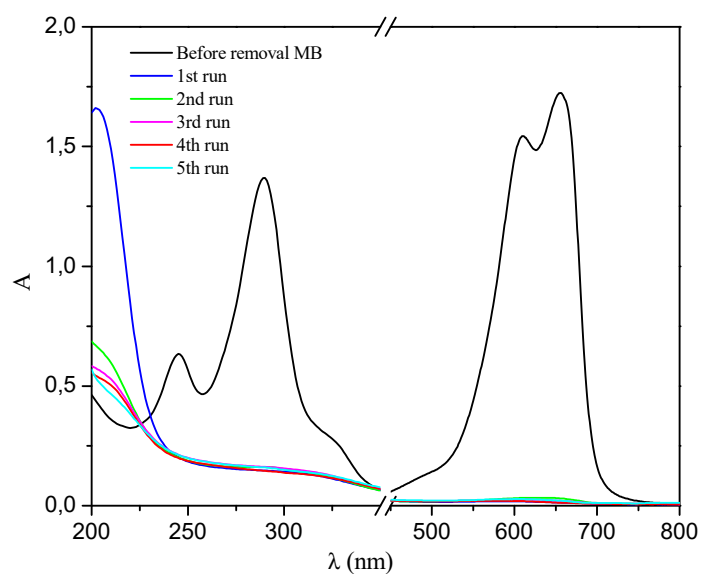


Figure S14. The looks of the absorption spectra of MB ($c_0 = 2.45 \cdot 10^{-2}$ mM) at the beginning and after 180 min of SSR irradiation, at a stirring rate of 490 rpm for five consecutive removals.

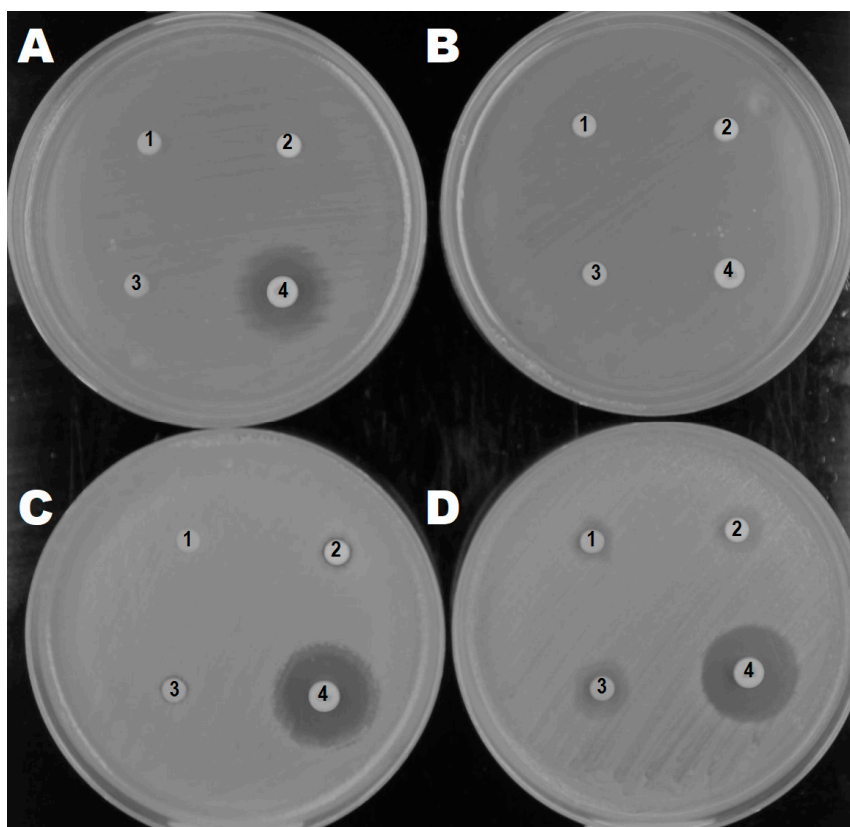


Figure S15. Antibacterial activity of photocatalysts (1 - $\text{Fe}_2\text{O}_3/\text{TiO}_2/\text{PVC}$, 2 - PVC , 3 - $\text{Fe}_2\text{O}_3/\text{PVC}$, 4 - gentamicin (control)) determined by agar diffusion method: A - *Escherichia coli*, B - *Pseudomonas aeruginosa*, C - *Bacillus cereus*, D - *Staphylococcus aureus*.