**Supplementary information**

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| Photocatalyst | Synthesis method | Light source | Time (min) | Model pollutant/degradation efficiency | Model micro-organism | Reference |
| ZnWO4-GO | Co-precipitation | Visible light | 60 | Methylene blue (90%) | B. Subtilis and and E. Coli | (Ahmed *et al.* 2022) |
| Ag2WO4-CoWO4 | Sonochemical method | Visible light | 160 | MB (94.4%) | B. subtilis and E. coli. | (Elgorban *et al.* 2021) |
| MnS/Ag2WO4 | co-precipitation | Visible light | 200 | MB (92.3%) | B. subtilis and E. coli. | (Kokilavani *et al.* 2021) |
| CoS/Ag2WO4 | Chemical precipitation | Visible light | 160 | MB (92%) | B. subtilis and E. coli | (Kokilavani *et al.* 2021) |
| La6WO12/Ag2WO4 | Sonochemical method | Visible light | 140 | MB (82.8%) | B. subtilis and E. coli | (Chinnathambi *et al.* 2021) |
| CaWO4/Ag2MoO4 | Sonochemical method | Visible light | 180 | MB (91.4%) | B. subtilis and E. coli | (Syed *et al.* 2021) |
| CoWO4-Ag2MoO4 | chemical co-precipitation | Visible light | 200 | MB (90.5%) | B. subtilis and E. coli | (Balasurya *et al.* 2021) |
| GO- MoS2-ZnO | Hydrothermal | Visible light | 90 | MB (90.%) | S.aureus  E. coli | (Priyadharsan *et al.* 2018) |
| GO-MoS2-C3N4- | Hydrothermal | UV light | 120 | Ampicillin (74.6%) | E. coli | (Yang and Wang 2021) |
| Ag2WO4-MoS2-GO | Hydrothermal | Visible light | 90 | Methyl orange | S.aureus  E. coli | Present work |

### **Table. 3 Comparison of Photocatalytic and anti-microbial activity of various metal tungstates, and graphene oxide based nanocomposites**

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**Fig. S1. Nitrogen adsorption–desorption isotherms (a) AgWG and AgWMG, and the corresponding pore-size distribution curve (b &c )**

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| --- | --- |
| **(a)** | |
| (b) | (c) |
| **(d)** | (e) |

**Fig.S2 Zone of inhibition diagram (a) AgWG (b,c) AgWMG 10mg/ml (d, e) 25mg/ml**