Supporting information

Plasmon active Ag nanoparticle decorated Sg-C₃N₄/Bi₂O₃ ternary nanohybrid: A promising visible light harnessing photocatalyst effective towards degradation of Rhodamine B and Tetracycline Hydrochloride

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Figure- S1: Antibacterial activity of TCH residue after photodegradation with different times: (a) 0 min, (b) 30 min, and (c) 60 min.
Figure S2. Number of cycles runs for degradation of RhB by Sg-C₃N₄/Bi₂O₃/Ag (15%), (b) XRD spectra of Sg-C₃N₄/Bi₂O₃/Ag (15%) before and after photocatalytic reaction.
Table S1. Values of $K_{app}$ for degradation of RhB and TCH by Sg-C$_3$N$_4$/Bi$_2$O$_3$/Ag(15%) photocatalyst.

| Catalyst | RhB ($K_{app} \times 10^{-5}$) | TCH ($K_{app} \times 10^{-5}$) |
|----------|-------------------------------|-------------------------------|
| Sg-C$_3$N$_4$/Bi$_2$O$_3$ | 62.1 | 903 |
| Sg-C$_3$N$_4$/Bi$_2$O$_3$/Ag (5%) | 284 | 1500 |
| Sg-C$_3$N$_4$/Bi$_2$O$_3$/Ag (10%) | 384 | 1851 |
| Sg-C$_3$N$_4$/Bi$_2$O$_3$/Ag (15%) | 1662 | 3008 |
| Sg-C$_3$N$_4$/Bi$_2$O$_3$/Ag (20%) | 1144 | 2189 |

Table S2. Percentage of degradation of RhB in the presence of different trapping reagents.

| Scavenger | Species involved | Percentage of degradation |
|-----------|------------------|--------------------------|
| p-BQ      | $\cdot O_2^-$     | 36.48                    |
| DMSO      | $e^-$             | 34.37                    |
| TBA       | $\cdot OH$        | 23.18                    |
| EDTA      | $h^+$             | 13.52                    |

Table S3. GC-MS retention times, and possible intermediates with their m/z values obtained from photocatalytic degradation of TCH.

| Retention Time | m/z value (abundance %) | Possible structure |
|----------------|-------------------------|--------------------|
| 25.19          | 73(37), 114(29), 174(100) | ![Possible structure](image1) |
| 26.43          | 73(32), 147(100)          | ![Possible structure](image2) |
| 27.03          | 73(100), 117(35)          | ![Possible structure](image3) |
| 29.56          | 73(68), 75(79), 201(100), 215(25) | ![Possible structure](image4) |
| Mass   | Rt(min) | Retention Indices | 2D Structure |
|--------|---------|-------------------|--------------|
| 31.49  | 71(100), 163(58) | ![Structure 1](image1.jpg) |             |
| 32.33  | 71(100), 263(27), 264(32) | ![Structure 2](image2.jpg) |             |
| 34.52  | 147(70), 163(100), 237(92) | ![Structure 3](image3.jpg) |             |
| 35.32  | 81(91), 207(100), 295(85) | ![Structure 4](image4.jpg) |             |
| 36.57  | 73(52), 167(100), 222(13) | ![Structure 5](image5.jpg) |             |