AgBr Quantum Dots Decorated Mesoporous Bi_2WO_6 Architectures with Enhanced Photocatalytic Activities for Methylene Blue

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Supplementary Information

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Table S1 A summary of literatures using photocatalyst for degradation of Methylene blue.

Catalyst	Light source	Degradation efficiency	Ref.
ZnO-reduced graphene oxide(RGO)-carbon nanotube(CNT) composite	high pressure Hg lamp(500 W)	degradation efficiency of 96% under UV light irradiation for 260 min	[1]
Ag/BiOI	UV lamp(352nm)	degradation rate 96% for 8 hours	[2]
h-MoO_3	visible light (350 W)	degradation rate 100% for 120 min degradation rate of ~ 75% for 180 min	[3]
nitrogen-doped TiO_2 and nitrogen-doped reduced graphene oxide composite(N-TiO_2 /N-RGO)	xenon lamp(500 W), with the light below 400 nm being removed by a filter.	degradation rate of 80% for 160 min	[4]
AgBr/$BiPO_4$	UV mercury lamps (250W)	degradation rate of 96.5.1% under UV light irradiation for 120 min	[5]
$NaIn_{0.9}Fe_{0.1}O_2$	300 W Xe arc lamp	degradation rate of 80% for 90 min	[6]
S-doped TiO_2	xenon lamps (>420 nm)	maximum degradation efficiency of 88.6% under irradiation for 8 hours	[7]
TiO_2-Coated Cenospheres	solar light irradiation	degradation rate of 90% for 60 min	[8]
Starlike $BiVO_4$	500-W Xe lamp with a 420-nm cutoff filter	degradation rate of 90% for 25 min	[9]
Nitrogen-Doped TiO_2	Visible light	degradation rate of 93.1% under Visible light irradiation for 20 hours	[10]

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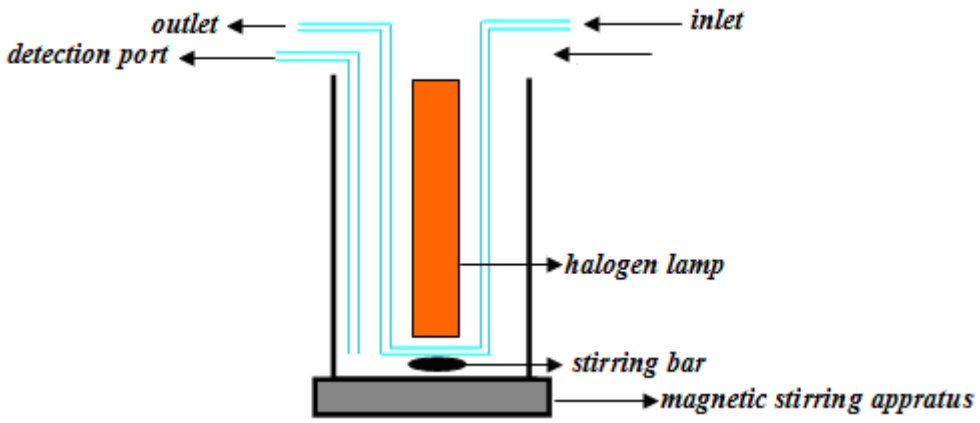

Fig. S1 Schematic diagram of the photoreactor.

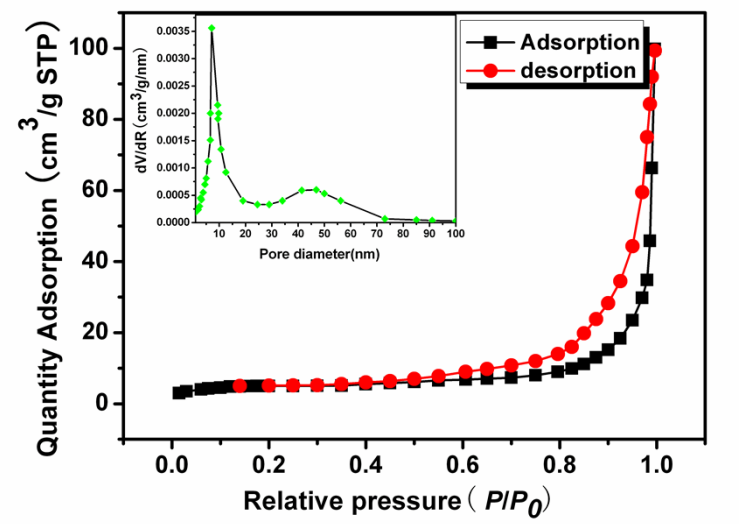

Fig. S2 Nitrogen adsorption/adsorption isotherms and Barrett-Joyner-Halenda (BJH) pore size distribution plot (inset picture) of as-prepared nest-like 3D Bi_2WO_6 architecture.

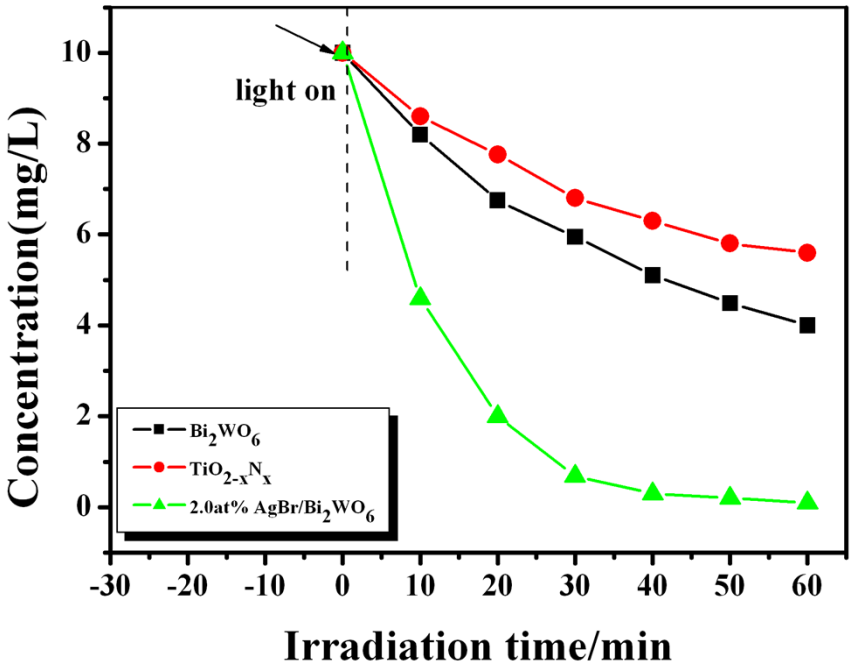

Fig.S3 Comparison of the photocatalytic activity of 2.0at% $AgBr/Bi_2WO_6$ heterojunction, pure-Bi_2WO_6 and $TiO_{2-x}N_x$.

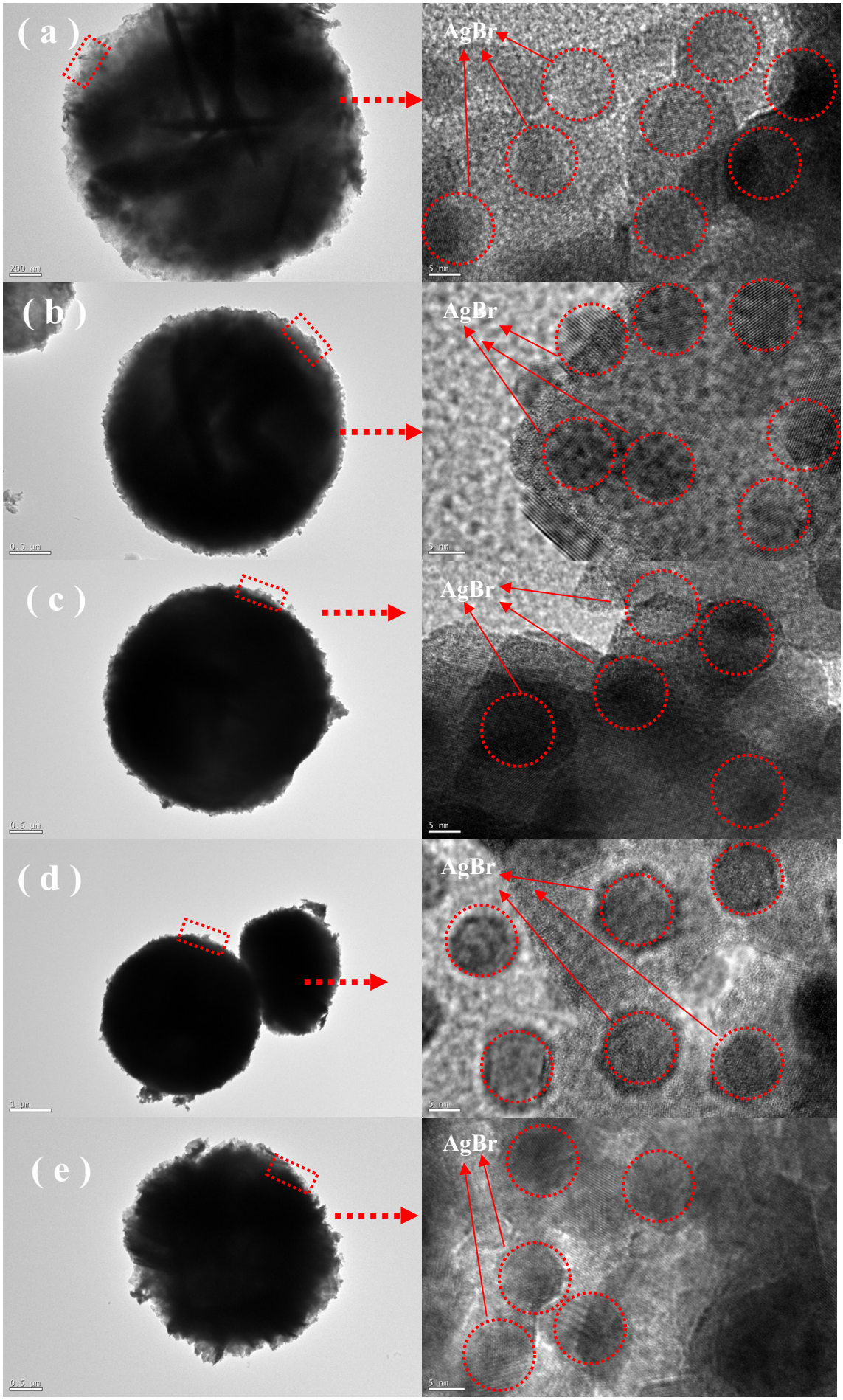
(a)
AgBr
200 nm
5 nm
(b)
AgBr
0.5 um
5 nm
(c)
AgBr
0.5 um
5 nm
(d)
AgBr
1 um
5 nm
(e)
AgBr
0.5 um
5 nm

Fig. 4 Comparison of TEM image of 2.0at%AgBr/Bi_2WO_6 heterojunction with different AgBr content: (a) 0.5at%; (b)1.0at%; (c)2.0at%; (d)5.0%at and (e)10.0at%.

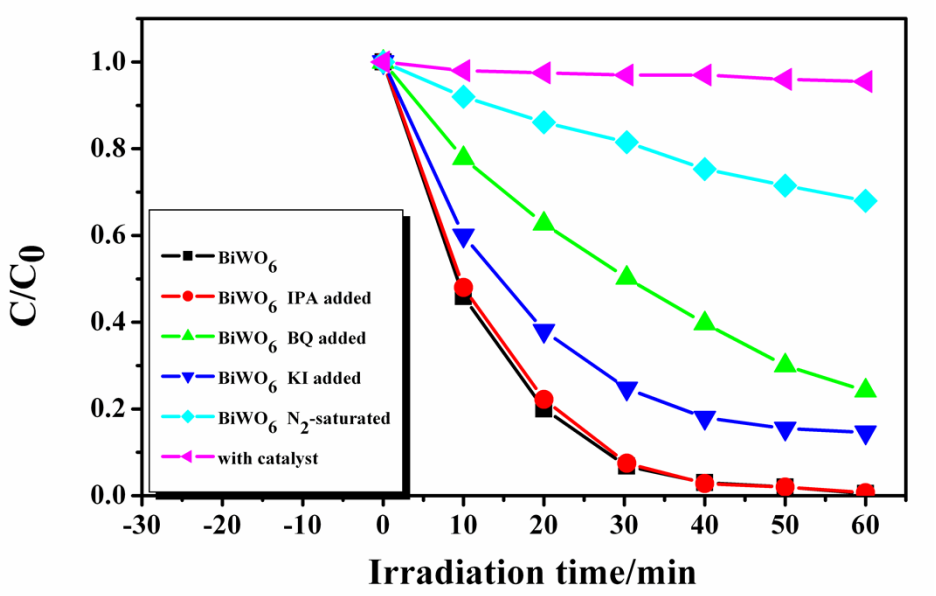

Fig. S5 Controlled experiments under N_2-saturated atmosphere and using different radicals and holes scavengers over AgBr/Bi_2WO_6 sample under visible-light irradiation: isopropyl alcohol(IPA) as scavenger for hydroxyl radicals(·OH); KI (concentration is 1×10^{-4} mol·L^{-1}) as scavenger for holes; benzoquinone(BQ) as scavenger for superoxide radicals($O_2^{\bullet-}$).

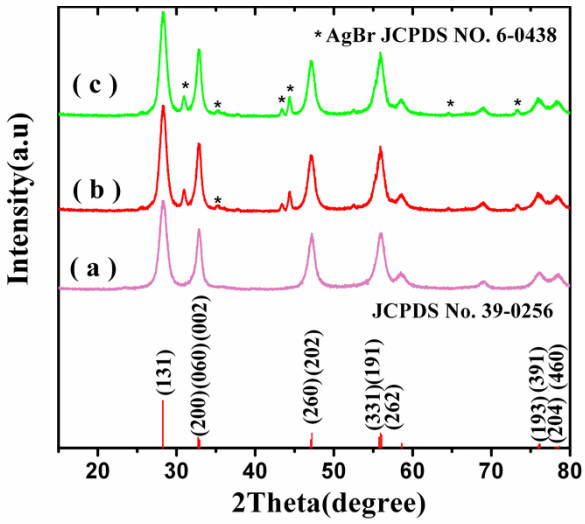

Fig. S6 Comparison of XRD pattern of pure-Bi_2WO_6(a) and 2.0at%AgBr/Bi_2WO_6 heterojunction before (b) and after used (c).

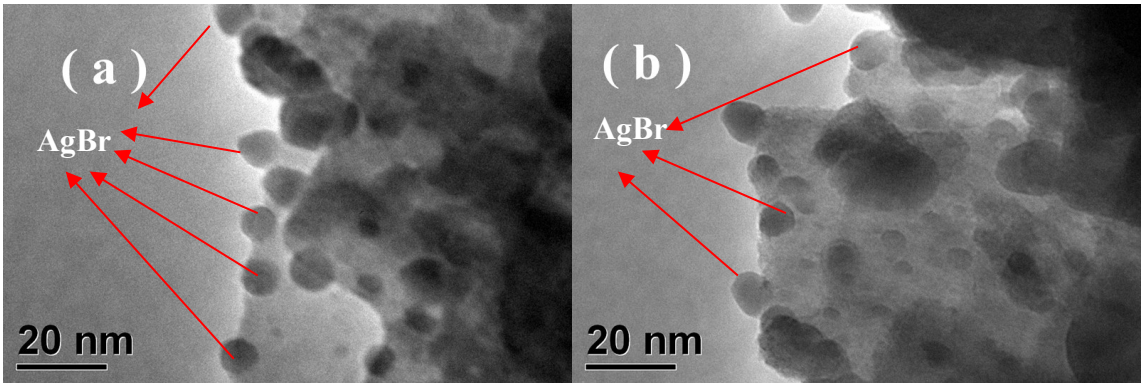

Fig. S7 Comparison of TEM image of 2.0at%AgBr/Bi_2WO_6 heterojunction before (a) and after used (b).