catalysts

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Supplementary Information for Article

Photocatalytic removal of harmful algae in natural waters by Ag/AgCl@ZIF-8 coating under sunlight

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Supplementary caption

1. Chemicals and reagents

Figure. S1. Dip-coating preparation process.

Figure. S2. (a) Photographs of lakes and (b) sampling points for actual water sampling.

Figure. S3. Species composition of phytoplankton in natural landscape lake.

Figure. S4. XRD patterns of Ag/AgCl@ZIF-8 powder and coating.

Figure. S5. Diversity index of algae during photocatalytic algal removal process: (a) Shannon-Werner index, (b) richness index and (c) uniformity index.

Figure. S6. Reusability of Ag/AgCl@ZIF-8 coating for photodegradation of chlorophyll *a*

Table S1 Basic water quality index

Table S2 Comparison with other photocatalyst reported in the literature

Chemicals and reagents: Zinc nitrate ($Zn(NO_3)_2 \cdot 6H_2O$), absolute ethanol (C_2H_5OH), absolute methanol(C_2H_5OH), silver nitrate ($AgNO_3$), sodium chloride (NaCl), isopropanol (C_3H_8O) and sodium oxalate ($Na_2C_2O_4$) were purchased from Sino pharm Chemical Reagent Co., Ltd. 2-methylimidazole, sodium dodecyl benzene sulfonate (SDS) and 1,4-benzoquinone ($C_6H_4O_2$) were purchased from Aladdin Reagent Co., Ltd. All reagents were of analytical grade purity and used without further purification.

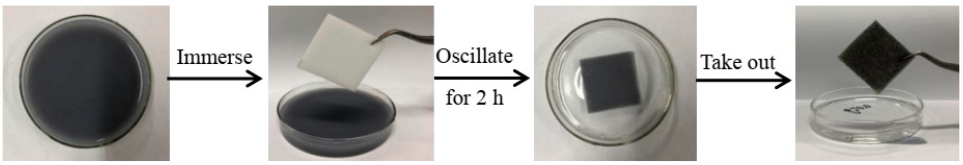


Figure. S1. Dip-coating preparation process.

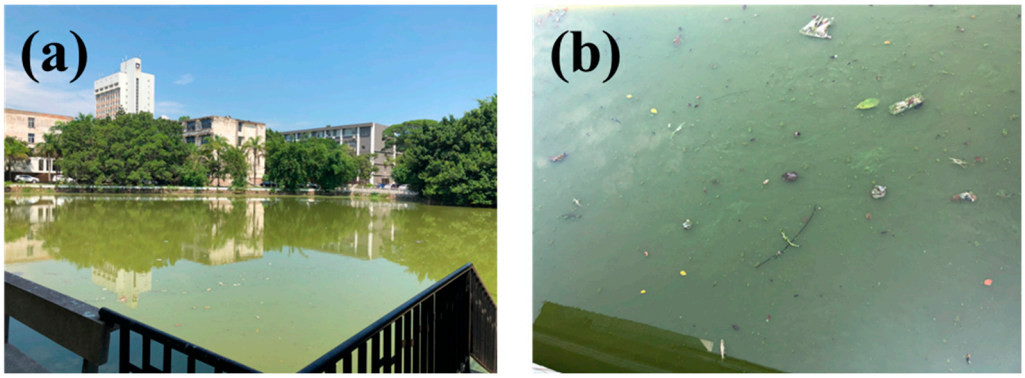


Figure S2. (a) Photographs of lakes and (b) sampling points for actual water sampling.

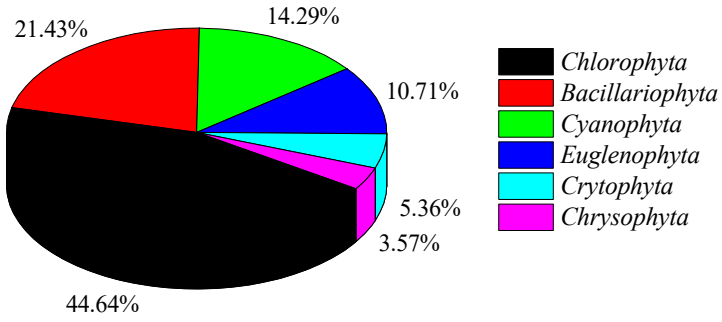


Figure. S3. Species composition of phytoplankton in natural landscape lake.

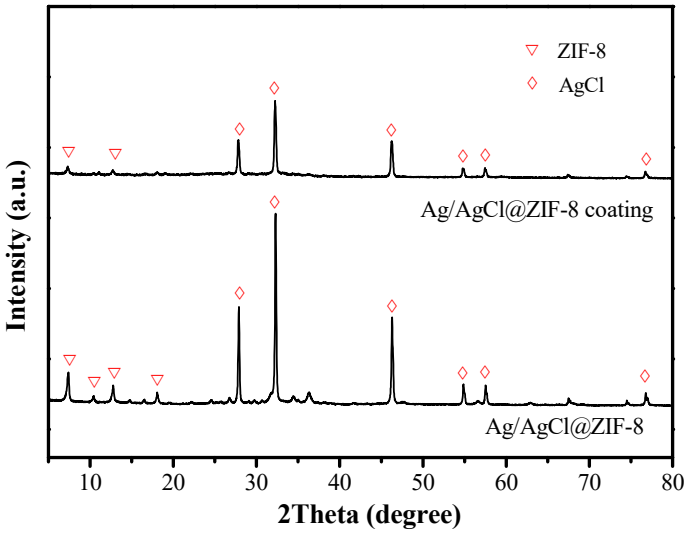
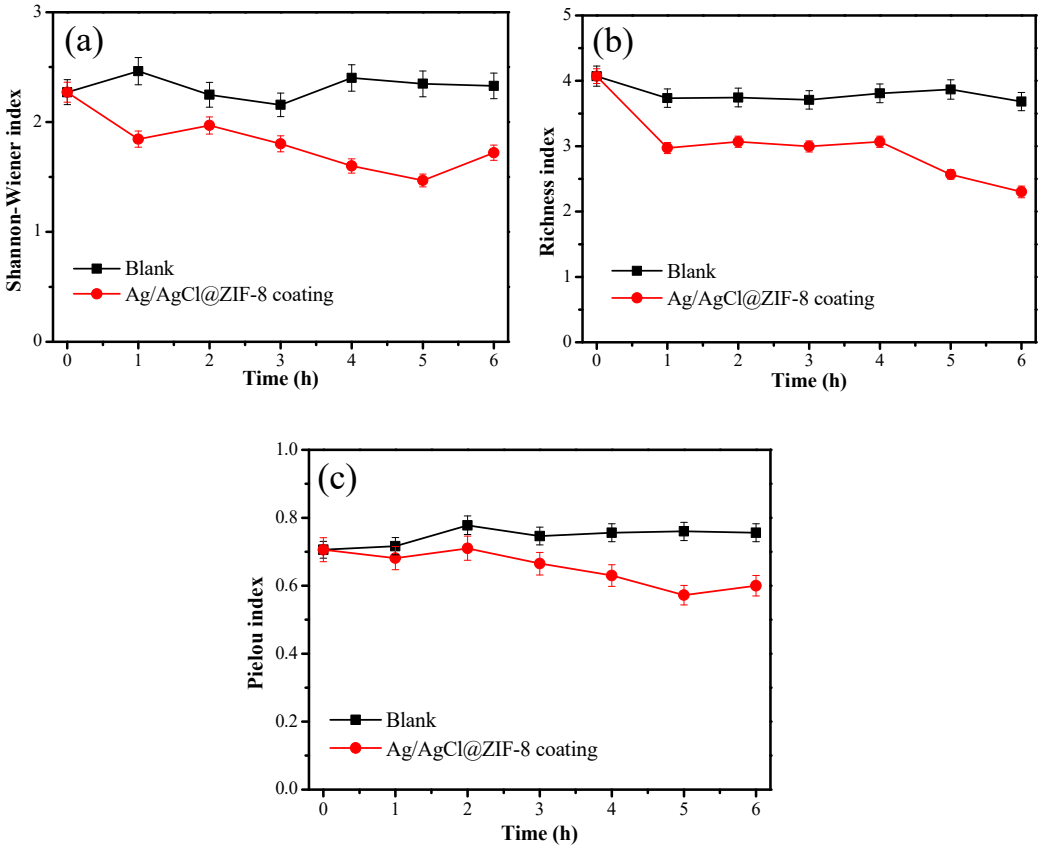


Figure. S4. XRD patterns of Ag/AgCl@ZIF-8 powder and coating.



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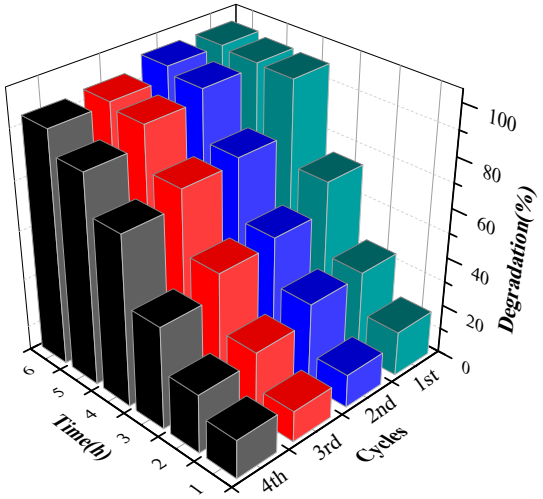

Figure. S6. Reusability of Ag/AgCl@ZIF-8 coating for photodegradation of chlorophyll *a*.

Table S1 Basic water quality index

Basic water quality index	NH_4^+-N (mg/L)	UV_{254}	pH	Temperature (K)	TOC (mg/L)	Turbidity (NTU)	TP (mg/L)	TN (mg/L)
Campus landscape water	0.0074	0.2418	6.8	305.15	16.6	213	0.09	1.639

Table S2 Comparison with other photocatalyst reported in the literature

Catalyst	Catalyst Dose (g/L)	Microbial level (cell/mL)	Light source	Reaction time (h)	Final inactivation rate	Ref
g-C_3N_4/Al_2O_3/EP	2	2.7×10^6	500 W Xenon lamp with a UV filter	6	74.40%	[1]
g-C_3N_4/TiO_2/Al_2O_3/EP	2	2.7×10^6		6	88.10%	[2]
TiOX-550 (X=N and P)	4	2.7×10^6		6	81.5%	[3]
CeO_x/$TiO_{2-y}F_y$	4	2.7×10^6		4	100%	[4]
NPTiO_2	4	2.7×10^6		6	92.60%	[5]
$Bi_2Mo_3O_{12}$	1	/		4	84% (Chl a)	[6]
NTiO_2	2	5×10^6	LED lamp	14	100%	[7]
Ag/AgCl@ZIF-8 coating	0.625	3.6×10^6	sunlight	6	92.60% 99.9% (Chl a)	

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