Supporting Information

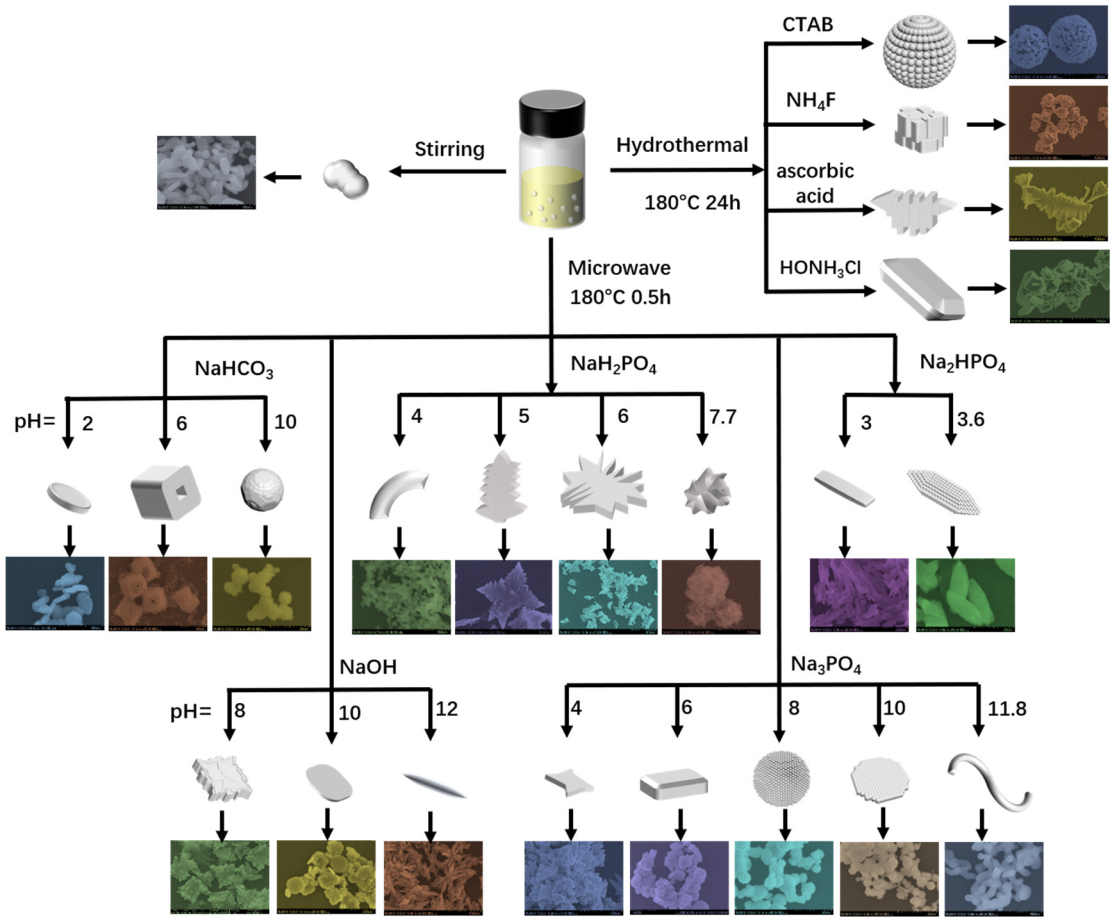

Figure S1. The synthesis produces of morphology-dependent $BiVO_4$ by stirring, hydrothermal and micro wave methods.

The $BiVO_4$ powders were synthesis by stirring, hydrothermal and micro wave methods, respectively. As a control sample, the nanoparticle $BiVO_4$ was prepared by stirring 30 min with the mixture of $Bi(NO_3)_3$ and NH_4VO_4. Beside, the hydrothermal approach also used as a reference experimental method. The hexadecyl trimethyl ammonium bromide (CTAB, Sigma-Aldrich, ≥99%), NH_4F (Sigma-Aldrich, ≥99.99%), L-ascorbic acid (TCI, >99.0%) and $HONH_3Cl$ (Skychy Group, AR) were used as surfactant

to obtain the different morphology of $BiVO_4$ (sphere, cube, irregular and cuboid shapes). As a short time and efficient preparation method, the microwave approach can shorten the preparation time effectively, from 24 hours to 30 minutes. The morphology of $BiVO_4$ can be controlled with different additives, including NaH_2PO_4, Na_2HPO_4, Na_3PO_4, Na_2CO_3 and NaOH. The pH values of solution from 2 to 10 were further adjustd by adding HCl or NaOH. Due to the difference in ionization and hydrolysis of phosphate, carbonate and alkaline, the morphology of bismuth vanadate could form many different shapes, including nanosheet, tetrahedron, cuboid, sphere and irregular shapes.

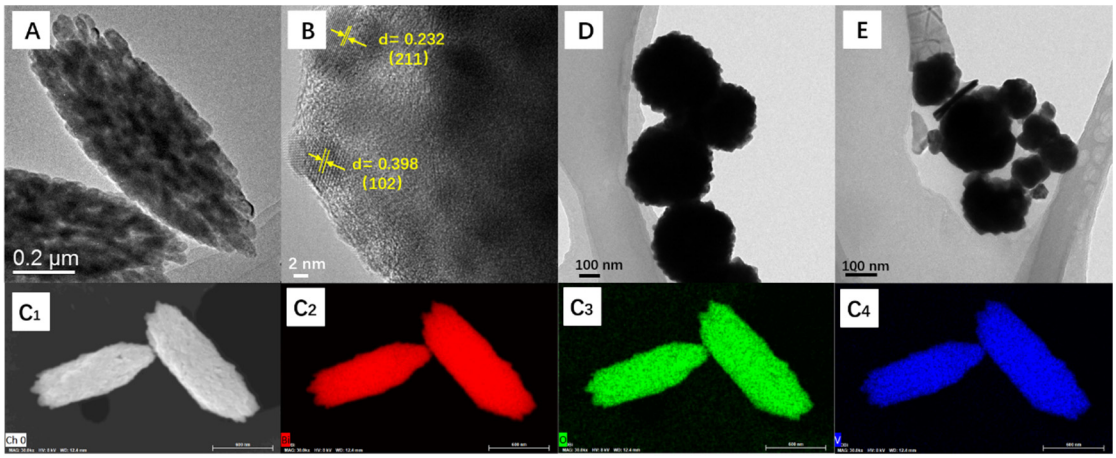

Figure S2. (A) TEM, (B) HRTEM and EDS mapping images of fusiform $BiVO_4$. TEM images of (D) flowered and (E) particle $BiVO_4$.

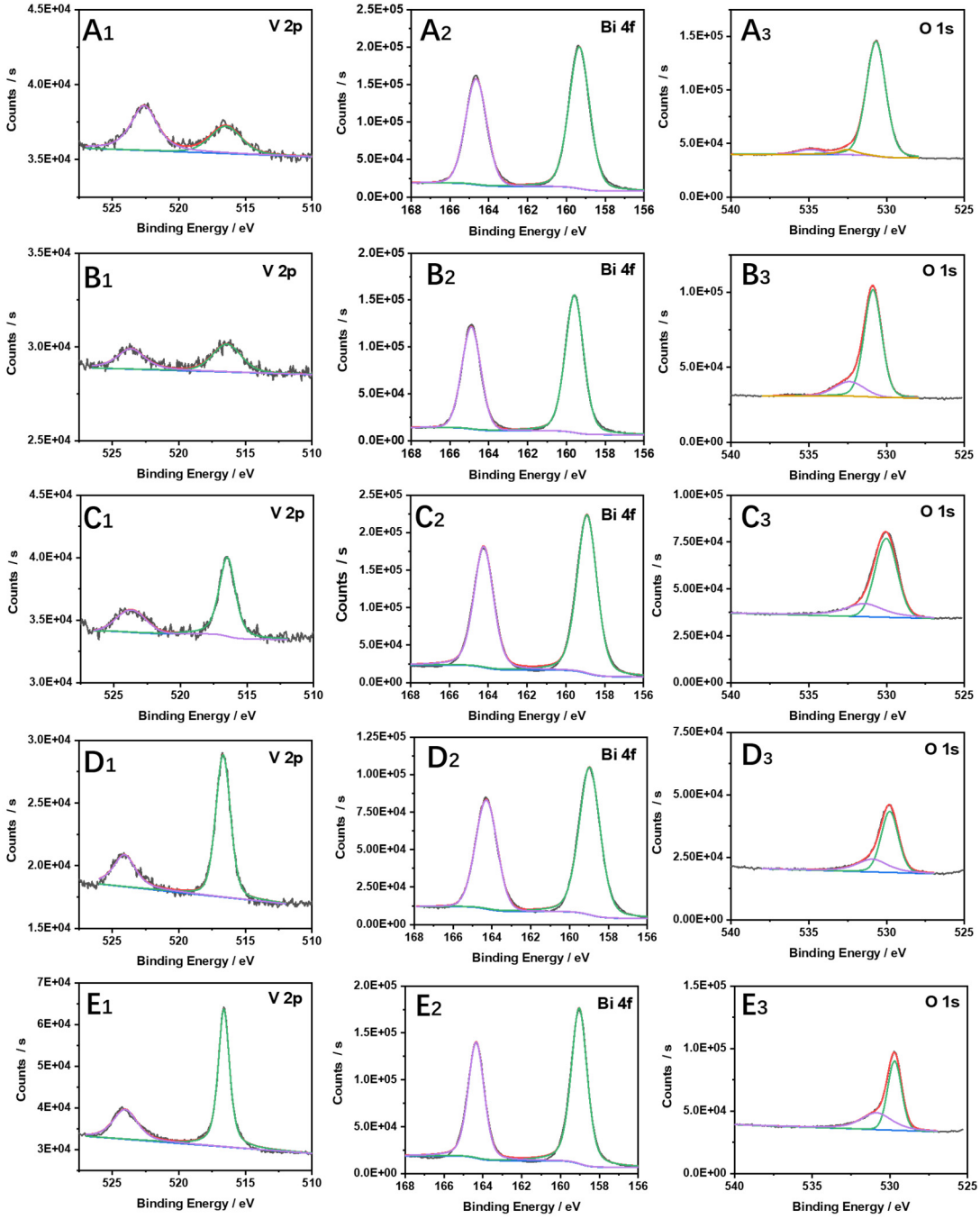

Figure S3. High-resolution XPS spectra of V 2p, Bi 4f and O 1s. (A) clavate (B) fusiform (C) flowered, (D) bulky and (E) particle $BiVO_4$.

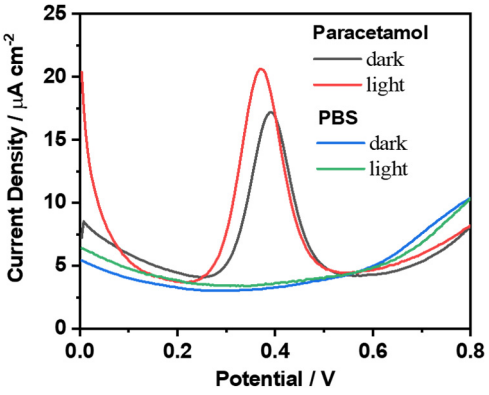

Figure S4. DPV curves of clavate $BiVO_4$ in 0.01 M PBS with and without 100 μM paracetamol. The DPV test was performance under dark condition (labeled as dark) and in illumination condition (labeled as light).

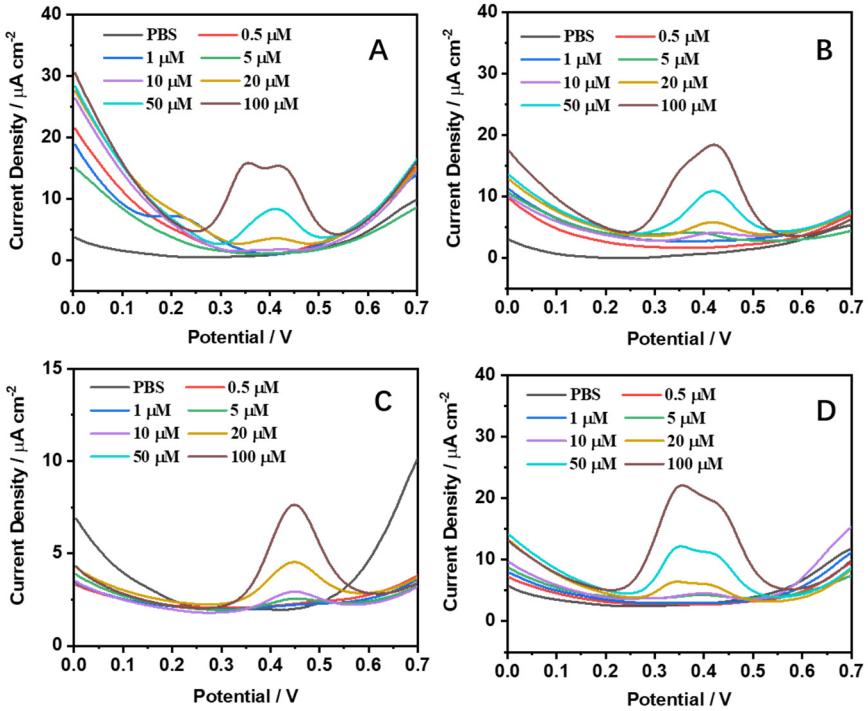

Figure S5. DPV curves at (A) fusiform (B) flowered, (C) bulky and (D) particle $BiVO_4$ in 0.01 M PBS with 0-100 μM paracetamol.

Table S1. Comparison between the present work and some reported sensors for paracetamol determination.

Sensor	Solution	Linear range	**LOD**	**Ref.**
MWCNTs/GO	0.05 M PBS (pH 7.0)	0.5-400 mM	47 nM	[1]
Au NPs	PBS (pH 7.4)	0.05-270 μM	14.6 nM	[2]
Au@graphene/ PEDOT	PBS (pH 7.0)	0.15-5.88 mM	41 nM	[3]
TiO_2-graphene	0.1 M PBS 0.2 (pH 7.0)	1-100 μM	0.21 μM	[4]
Co/MWCNTs	0.1 M PBS	5.2×10^{-3}-0.45 μM	1.0 nM	[5]
Pd/GO	0.1 M PBS (pH 6.8)	0.005-0.5 μM 0.5-80.0 μM	2.2 nM	[6]
PS-PNIPAm-PS/MWCNTs-COOH/N-GQDs	0.1 M PBS 0.2 (pH 7.0)	0.1-7.0 μM 7.0-103.0 μM	66 nM	[7]
Polymeric micelle	PBS solution (pH 7.0)	1×10^{-3} - 4 m M	0.33 uM	[8]
g-C_3N_4/PANI/ CdO	0.1 M PBS (pH 7.4)	0.1-790 mM	26 μM	[9]
Au–Ag	0.2 M PBS solution	0.01-0.1 mM	2.6 μM	[10]
NiAl LED	0.1 M acetate buffer	3-1500 μM	0.8 μM	[11]
$CoFe_2O_4$	0.1 M phosphate	3-200 μM	250 nM	[12]

	buffer (pH 6.0)			
NiO NPs	BR buffer (pH 3.0)	3.0-47.8 μM	0.12 μM	[13]
ZrO_2	PBS (pH 7.4)	10-60 μM	0.68 μM	[14]
Bi_2O_3	0.1 M KH_2PO_4	0.5-1500 μM	0.2 μM	[15]
Fe_2O_3 NPs	0.1 M PBS (pH 7.0)	2-170 μM	1.16 μM	[16]
Clavate-$BiVO_4$	0.01 M PBS (pH 7.4)	0.5-100 μM	0.2 μM	This work

LOD: limit of detection; PBS: phosphate buffer saline; BR buffer: Britton-Robison buffer; MWCNTs: multi-wall carbon nanotubes; GO: graphene oxide; PEDOT: Poly(3,4-ethylenedioxythiophene); PS-PNIPAm-PS: polymer poly(styrene-b-(N-isopropylacrylamide)-b-styrene); MWCNTs-COOH: carboxylated multi-walled carbon nanotubes; N-GQDs: amino-functionalized graphene quantum dots.

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