

Supplementary Materials

A Visible-Light-Active CuS/MoS₂/Bi₂WO₆ Aptamer Sensitively Detects the Non-Steroidal Anti-Inflammatory Drug Diclofenac

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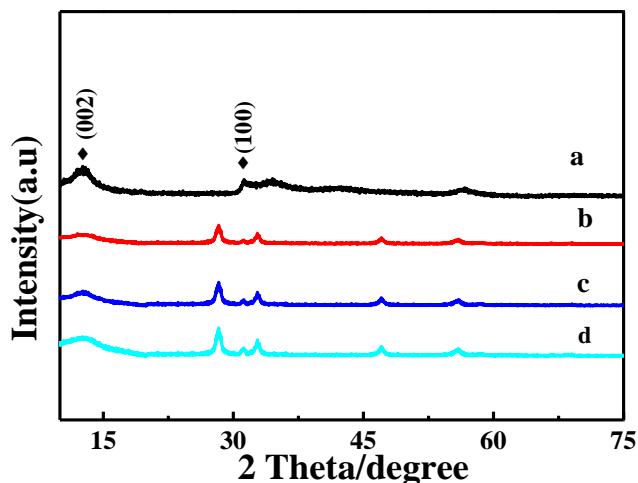


Figure S1. XRD patterns of MoS₂, MoS₂/Bi₂WO₆-2% and MoS₂/Bi₂WO₆-5%, MoS₂/Bi₂WO₆-7% nanocomposites.

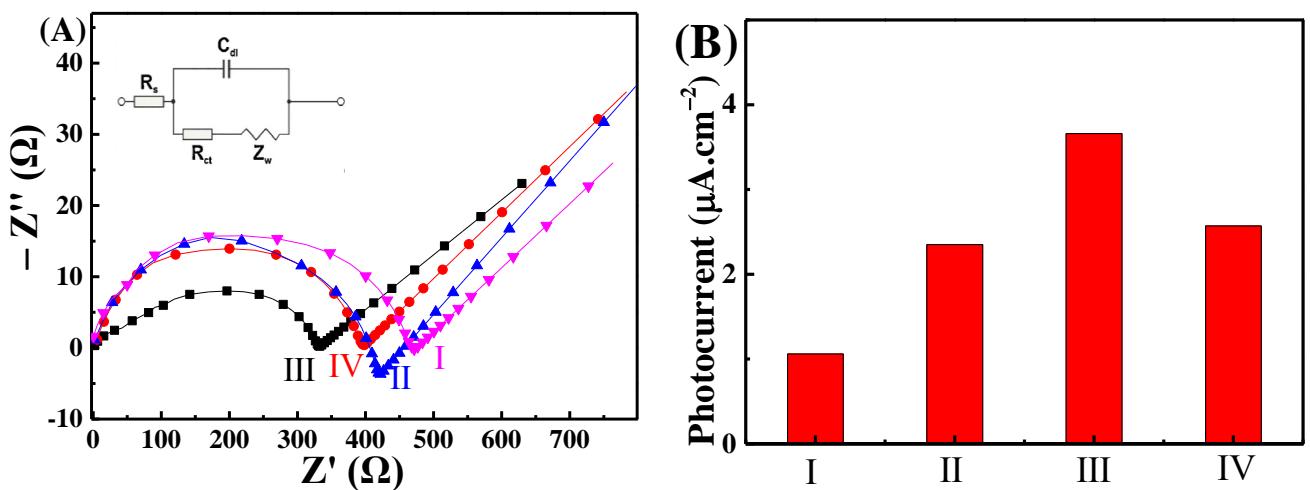
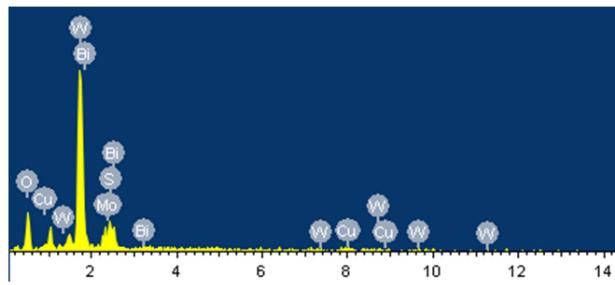


Figure S2. Nyquist plots (A) and PEC responses (B) of different electrodes: (I) Bi₂WO₆, (II) MoS₂/Bi₂WO₆-2%, (III) MoS₂/Bi₂WO₆-5% and (IV) MoS₂/Bi₂WO₆-7%. The EIS spectra were achieved in 0.1 M KCl containing 5 mM Fe (CN)₆^{3-/4-}.



Element	O K	S K	Cu L	Mo L	W M	Bi M	Total
Weight percentage	16.69	7.83	5.21	10.43	33.23	26.61	100.00

Figure S3. EDS spectrum of CuS/MoS₂/Bi₂WO₆-5% microstructures.

Figure S4 shows the FTIR spectra of the as-prepared samples. Specifically, the adsorption band at 442.3 cm⁻¹ is owing to the bending vibrations of Bi–O bond. A vibration peak at 596.5 cm⁻¹ signifies the presence of Cu–S bond. The strong peaks at 778.1 cm⁻¹ and 823.8 cm⁻¹ are attributed to the W–O and W–O–W bond of Bi₂WO₆, respectively. The bands at 1380 and 3430 cm⁻¹ are induced by the bending and stretching vibrations of the water molecules adsorbed on the sample surface. The results show that there is no residue of other organic matter

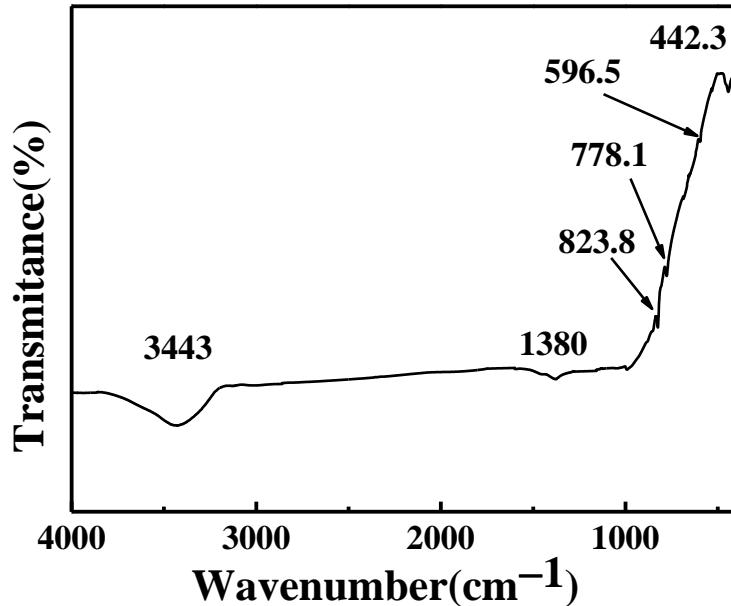


Figure S4. FT-IR spectra of the CuS/MoS₂/Bi₂WO₆-5% composites.

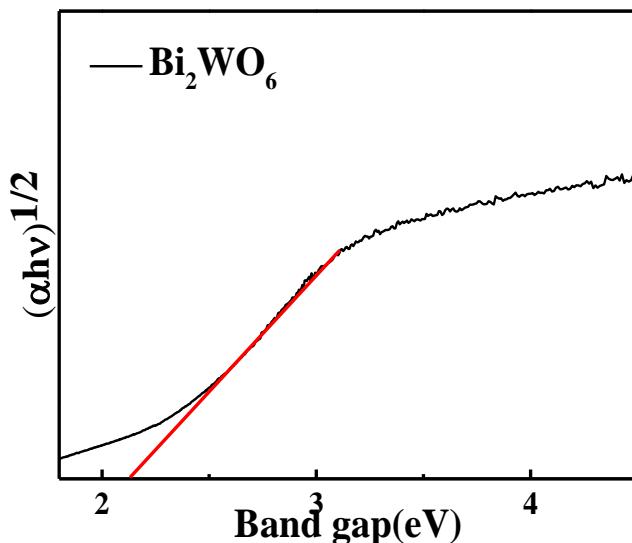


Figure S5. Plots of $(\alpha h\nu)^{1/2}$ vs. photon energy ($h\nu$) for Bi_2WO_6 .

Table S1. Comparison of analytical performances of the $\text{CuS}/\text{MoS}_2/\text{Bi}_2\text{WO}_6$ electrodes with the typical reported methods.

Typical methods for DCF detection	Linear Range	LOD	Ref.
Photoelectrochemical aptasensor	$1.0 \times 10^{-10} - 5.0 \times 10^{-7}$	6.9×10^{-11}	[1]
Photoelectrochemical aptasensor	$1.0 \times 10^{-9} - 1.5 \times 10^{-7}$	7.8×10^{-10}	[2]
Impedimetric aptasensor	$1.0 \times 10^{-8} - 2.0 \times 10^{-7}$	2.7×10^{-9}	[3]
Electrochemical aptasensor	$0 - 5.0 \times 10^{-6}$	2.7×10^{-7}	[4]
HF-LPME/HPLC-DAD	$5.9 \times 10^{-10} - 3.4 \times 10^{-8}$	1.8×10^{-10}	[5]
Photoelectrochemical aptasensor	$1.0 \times 10^{-10} - 5.0 \times 10^{-7}$	3.3×10^{-11}	[6]
$\text{CuS}/\text{MoS}_2/\text{Bi}_2\text{WO}_6$	$1.0 \times 10^{-10} - 5.0 \times 10^{-7}$	3.0×10^{-11}	This Work

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