Characterization of semiconductor photocatalysts

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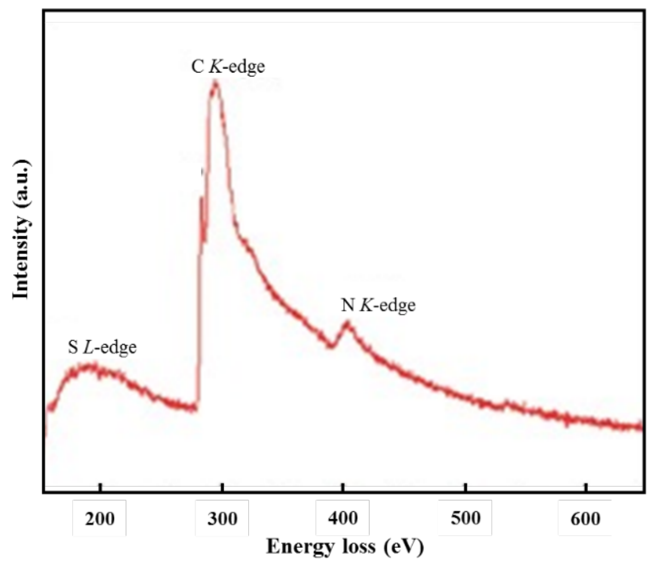

Fig. S1 EELS spectra of sulfur-modified graphitic carbon nitride. Adapted with permission from ref. [1]. Copyright 2017 Wiley-VCH.

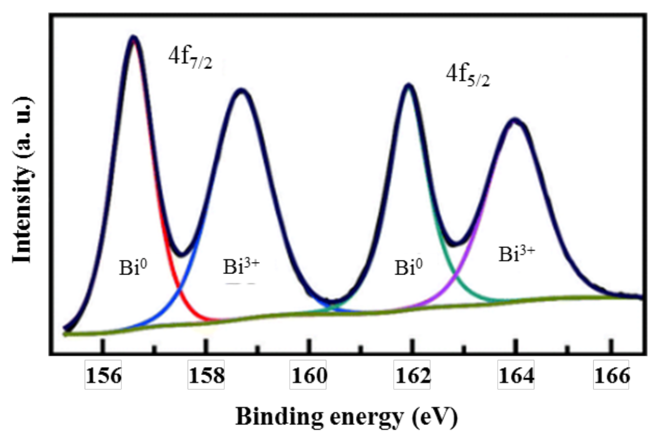

Fig. S2 High-resolution XPS spectra of Bi 4f of Bi^0/Bi_2O_3. Reproduced with permission from ref.[2]. Copyright 2016 the Royal Society of Chemistry.

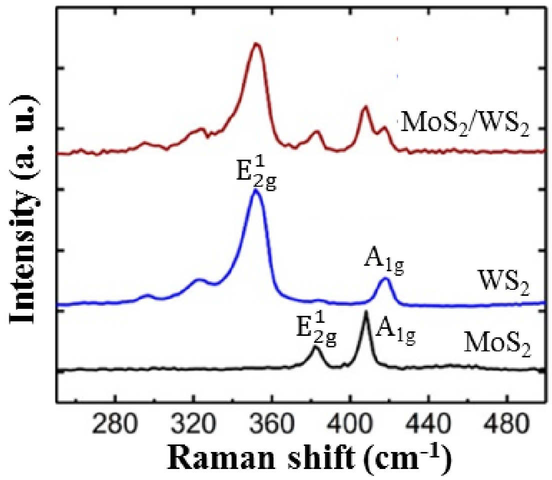

Fig. S3 Raman spectra of MoS_2 and WS_2 nanosheets and MoS_2/WS_2. Reproduced with permission from ref. [3]. Copyright 2017 American Chemical Society.

Table S1. Use of in situ/operando techniques to study photocatalysts

In situ/operando technique	Use	Ref.
ESR	Visualization of charge separation	4
	Study of the photocatalytic degradation of rhodamine B and methylene blue	5
	Identification of the radicals generated under light irradiation	6
FTIR	Study of the reaction between CO_2 and Ga_2O_3 surface	7
	Study of the reaction between water and TiO_2 surface	8
	Study of the photocatalytic degradation of dichlorobenzene over V_2O_5	9
SEM	Observation of the movement of CdS during photocatalytic hydrogen production	10
TEM	Observation of the structural changes during the formation of SnO_{2-x}/In_2O_{3-y} heterojunction	11
XAS	Study of the structural distortions (change in bond length and coordination number) during photocatalytic water splitting	12
	Study of the oxidation of Ce doped in TiO_2 during heating	13
	Study of the electron transfer	14
XPS	Study of the electron trapping in B and Ag codoped TiO_2 under light irradiation	15
	Study of the charge transfer in TiO_2/CdS Z-scheme heterojunction	16

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