

Supplementary Information

Synthesis of semi-conductor-like MOF with black phosphorous as a composite for visible light-driven photocatalyst

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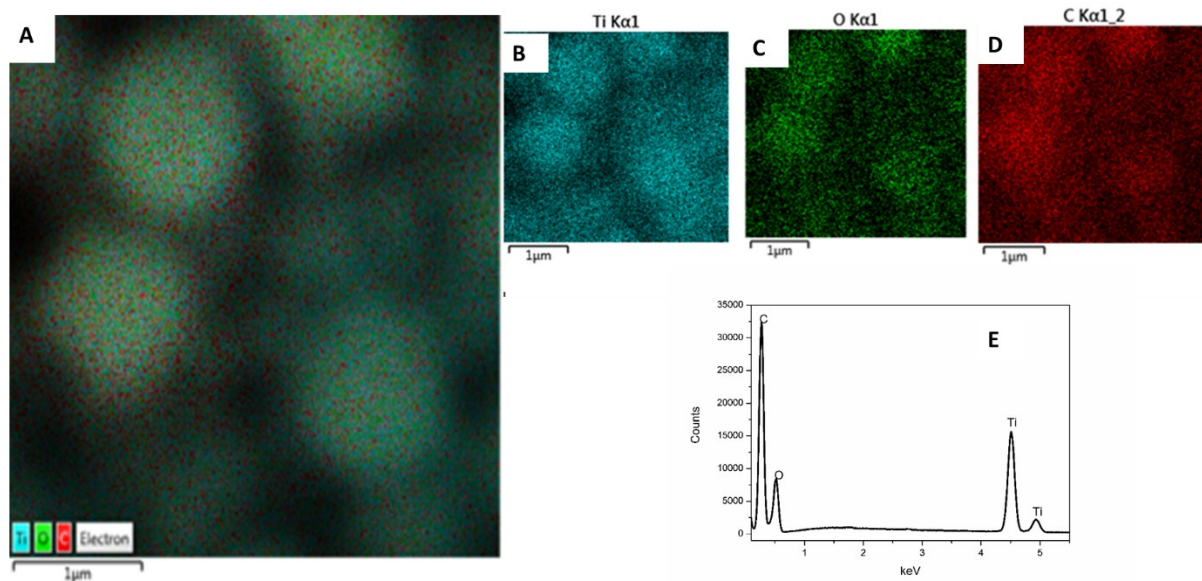


Figure S1 SEM mapping image of MIL-125(Ti) with respective inserts of (B) Titanium, (C) Oxygen and (D) Carbon. (E) EDS of the mapped image.

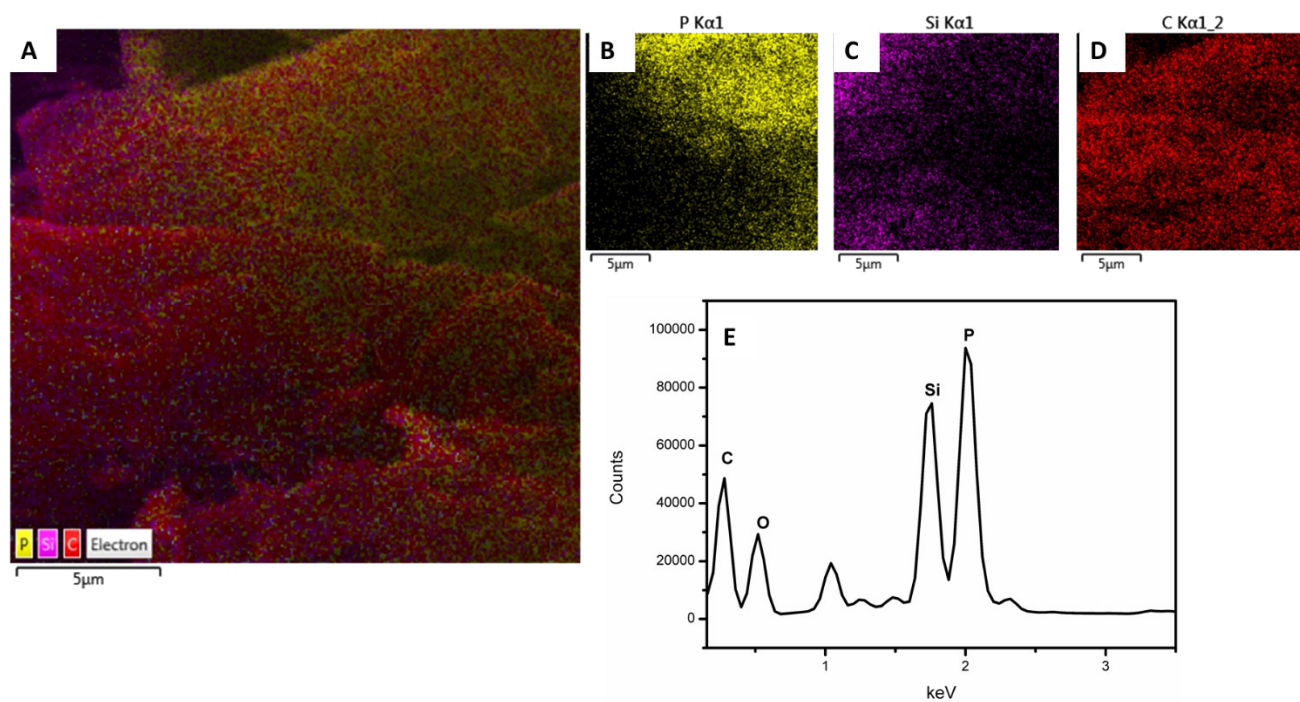


Figure S2 (A) SEM image of FLBP with respective inserts of (B) Phosphorus (C) Silicon and (D) Carbon. (E) EDS of mapped image

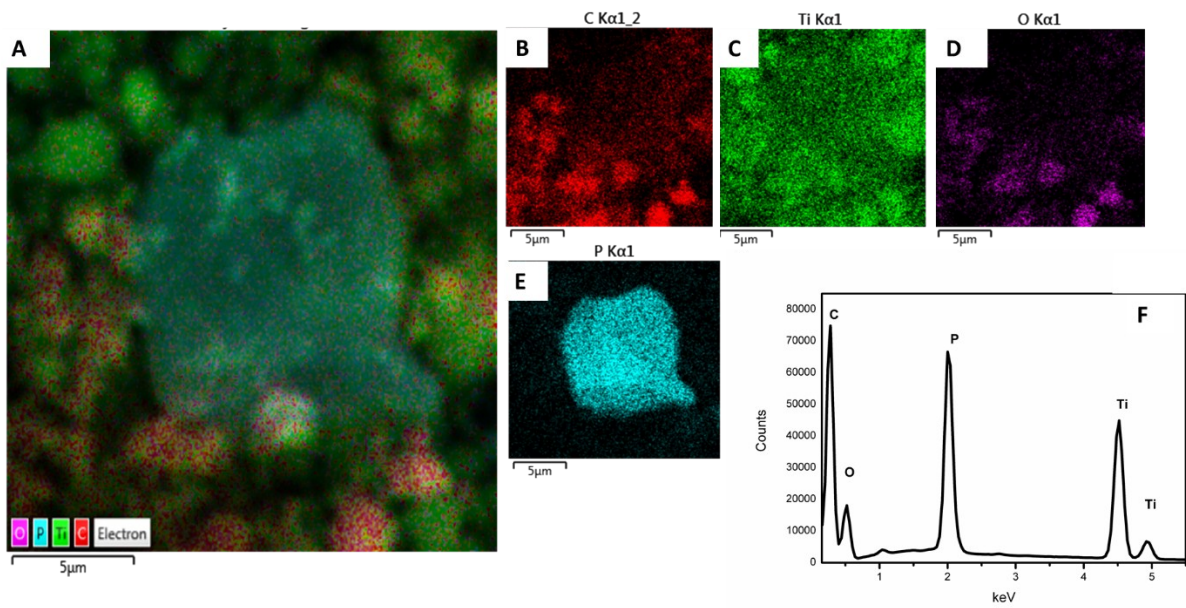


Figure S3 (A) SEM mapping images of 12%BpMIL with respective inserts of (B) Carbon (C) Titanium (D) Oxygen and (E) Phosphorus. (F) EDS of mapped image

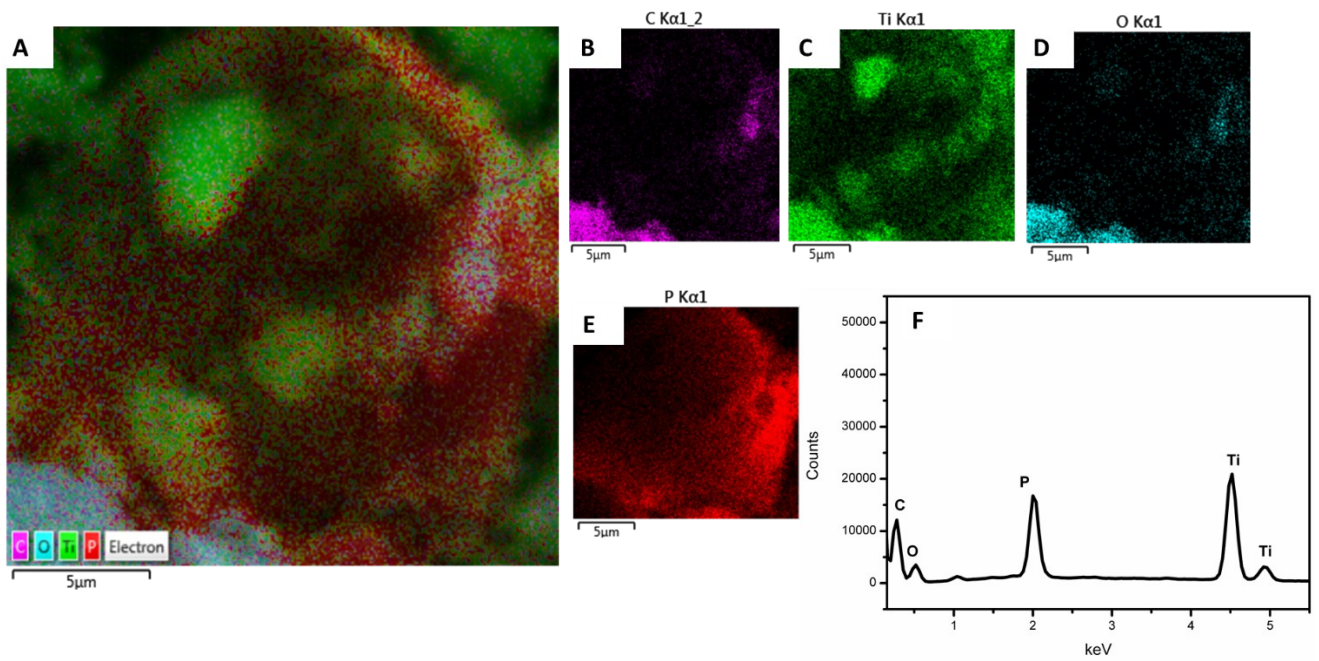


Figure S4 (A) SEM mapping images of 6%BpMIL with respective inserts of (B) Carbon (C) Titanium (D) Oxygen and (E) Phosphorus. (F) EDS of mapped image

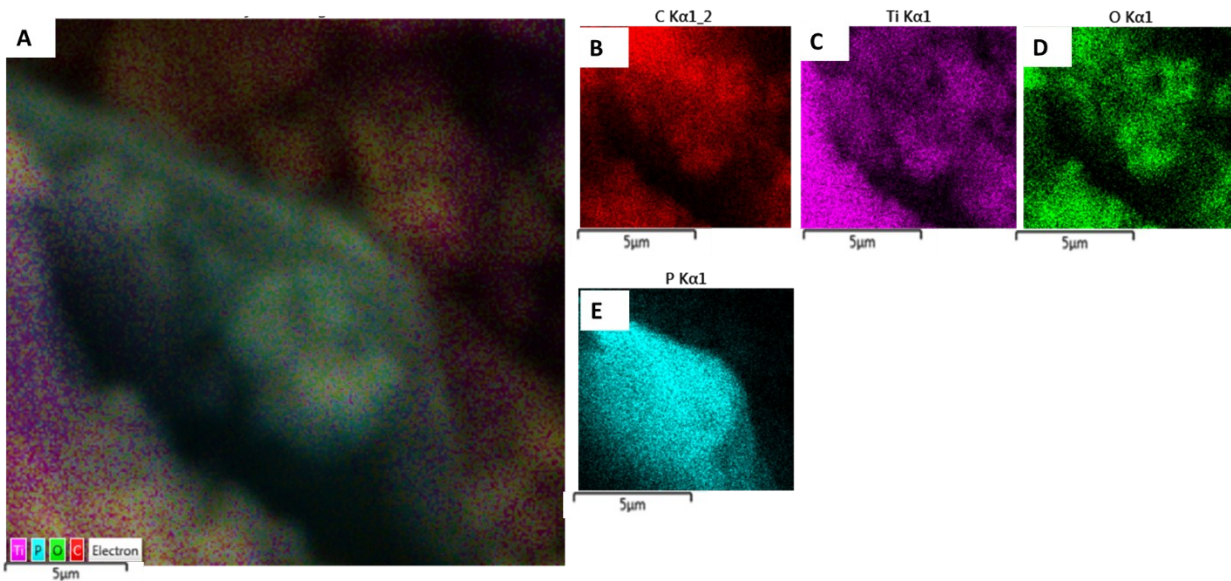


Figure S5 (A) SEM mapping images of 4%BpMIL with respective inserts of (B) Carbon (C) Titanium (D) Oxygen and (E) Phosphorus. (F) EDS of mapped image

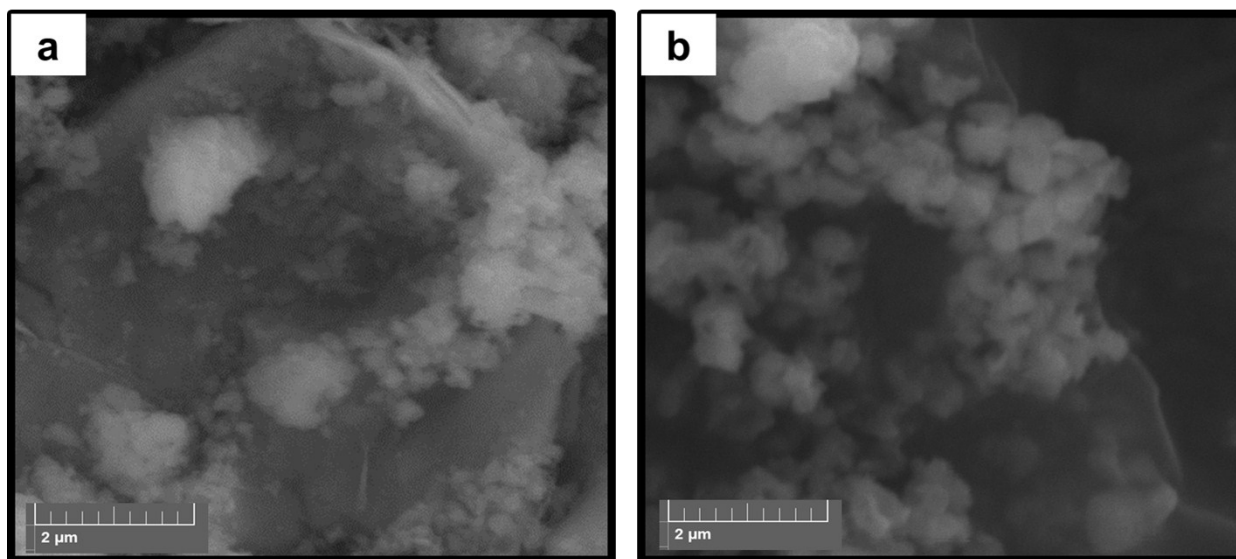


Figure S6 SEM images of (a) 12%BpMIL and (b) 6% BpMIL

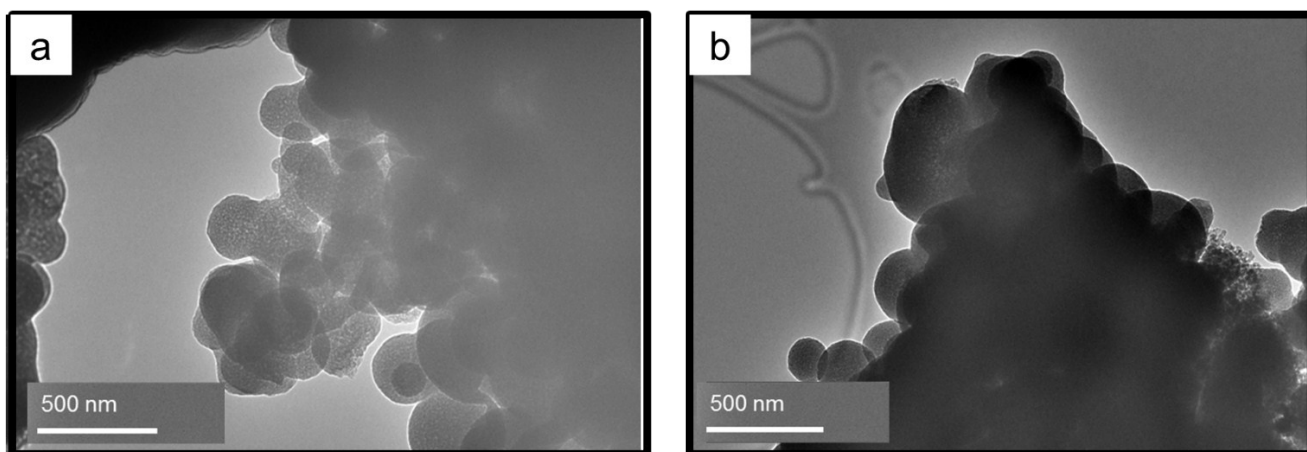


Figure S7 TEM images of (a) 12%BpMIL and 6%BpMIL

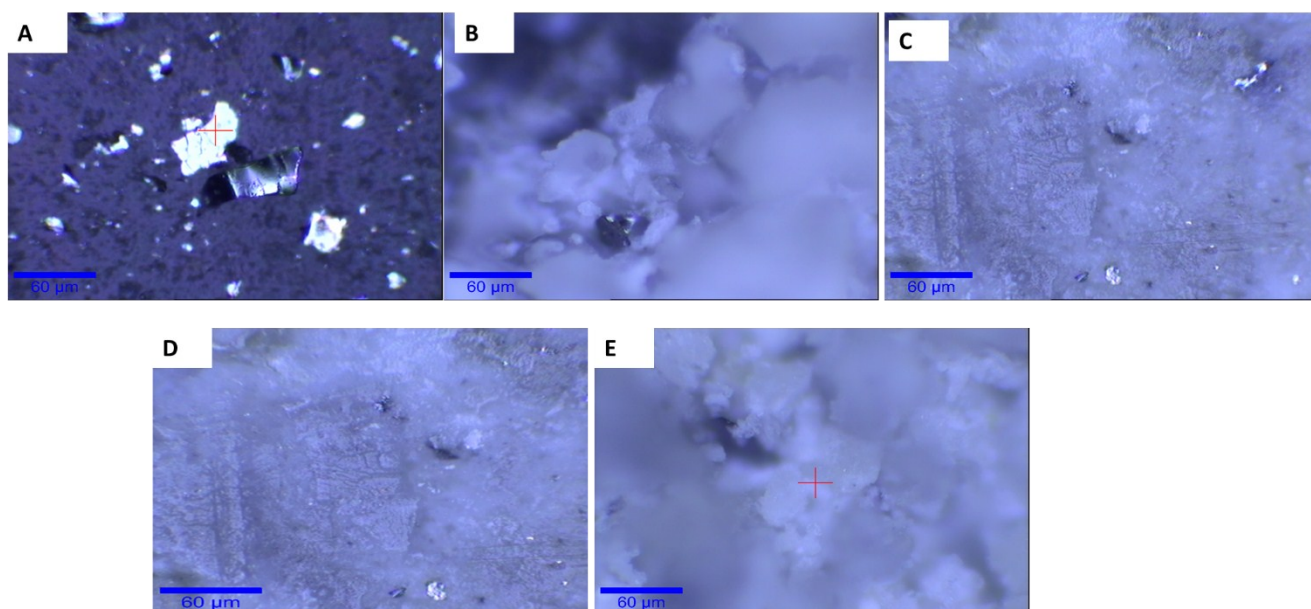


Figure S8 Raman images of (A) FLBP (B) MIL-125(Ti) (C) 12%BpMIL (D) 6%BpMIL (E) 4%BpMIL

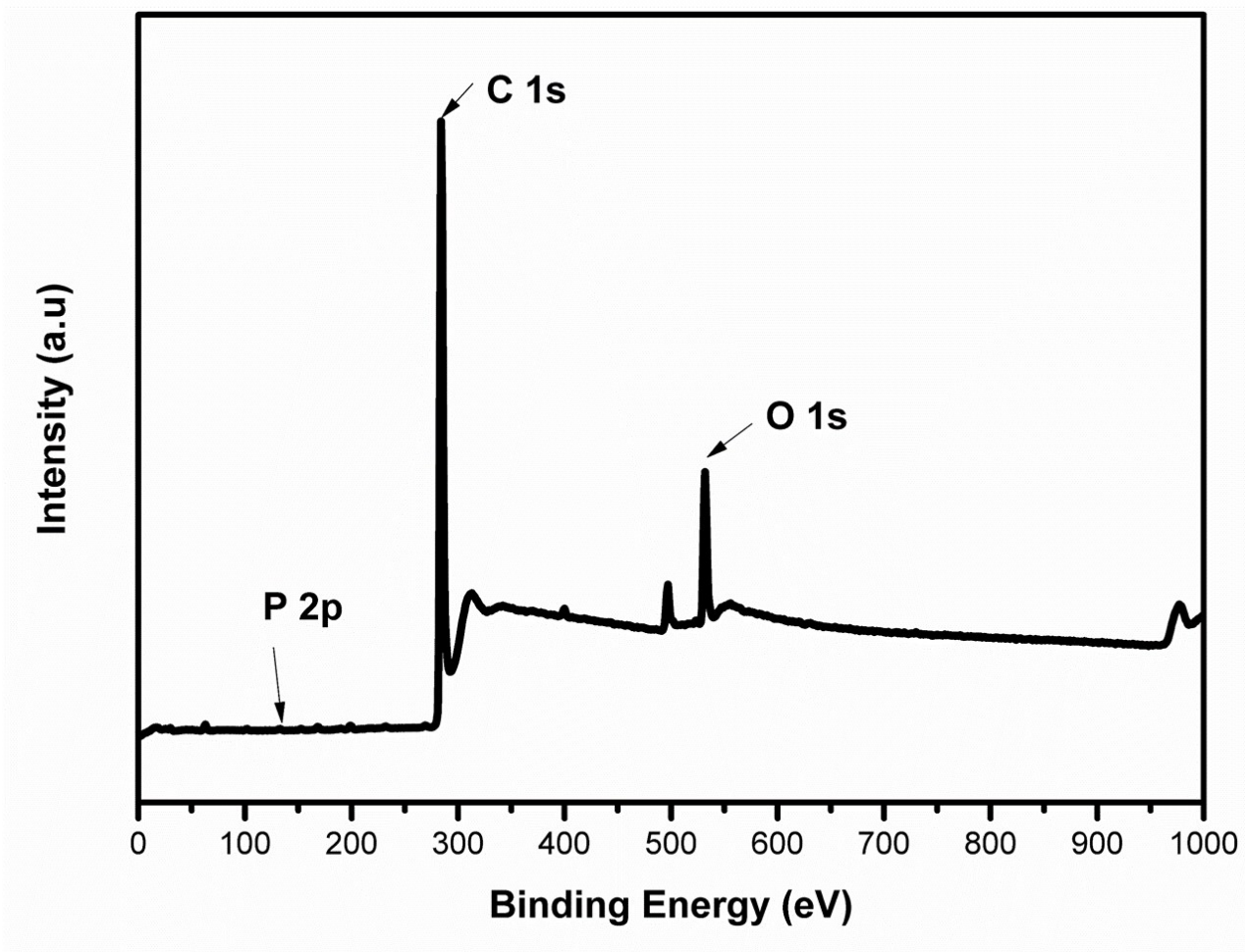


Figure S9 XPS survey spectrum of FLBP

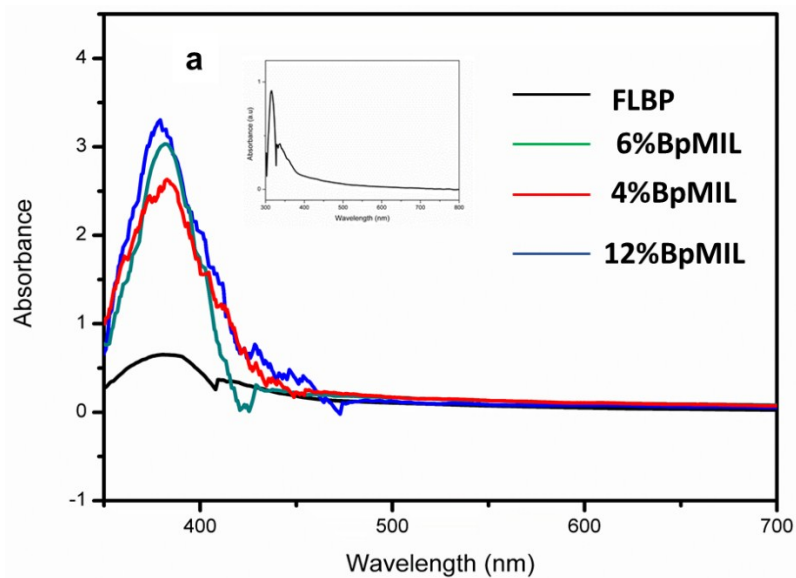


Figure S10 UV DRS of nanocomposites

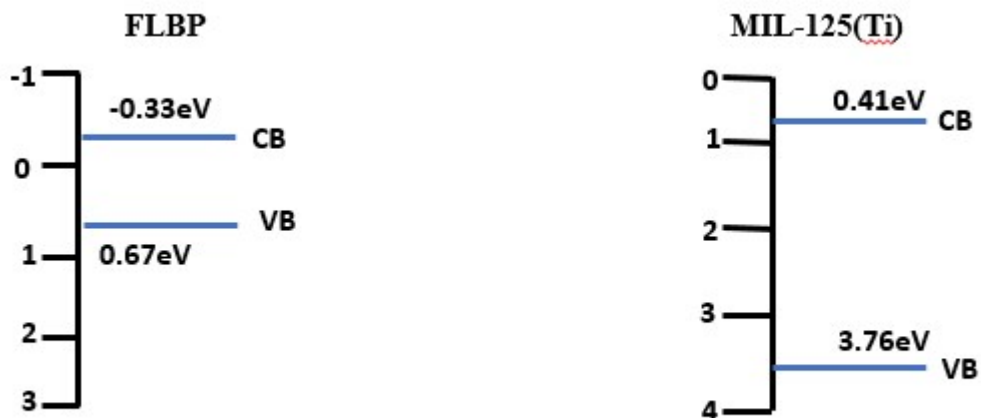


Figure S11 Band positions of FLBP and MIL-125(Ti)

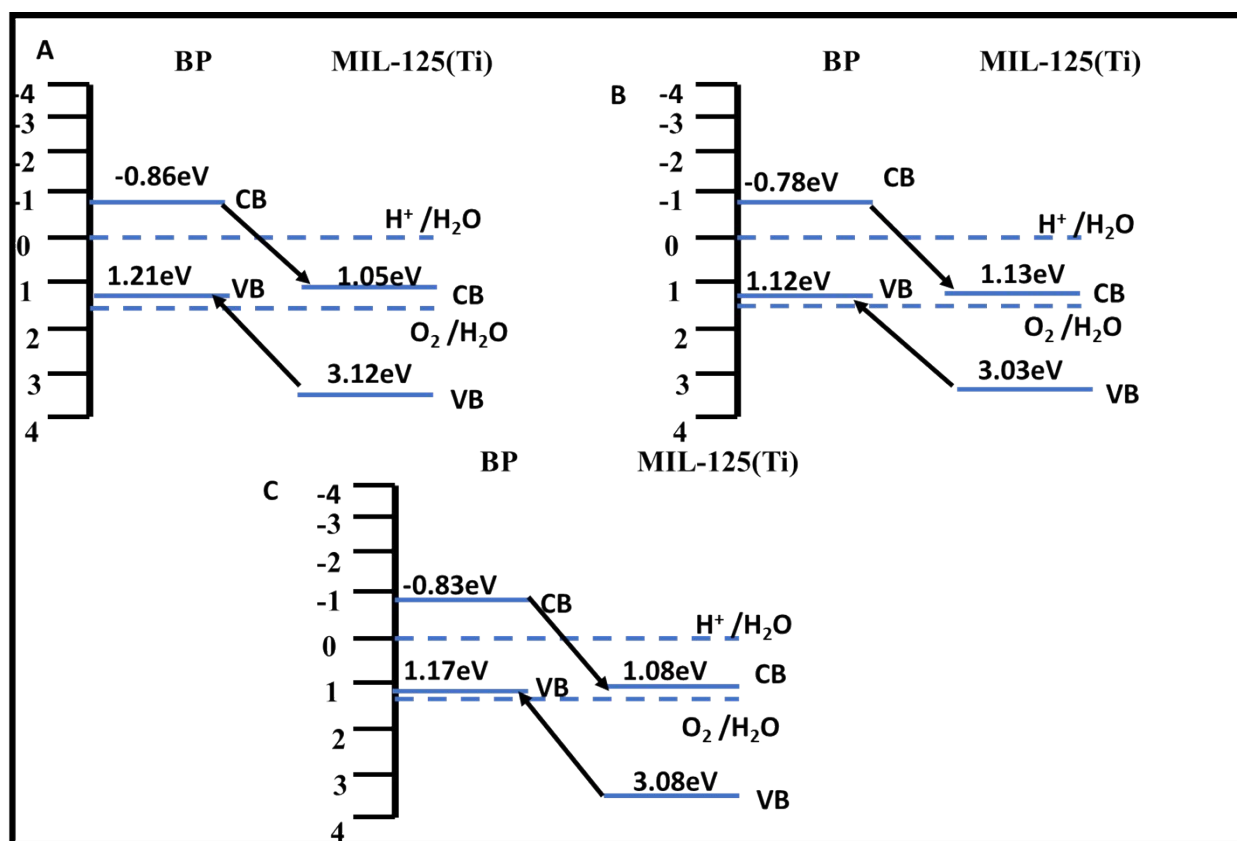


Figure S12 Band positions of (A) 12%BpMIL, (B) 6%BpMIL and (C) 4% BpMIL

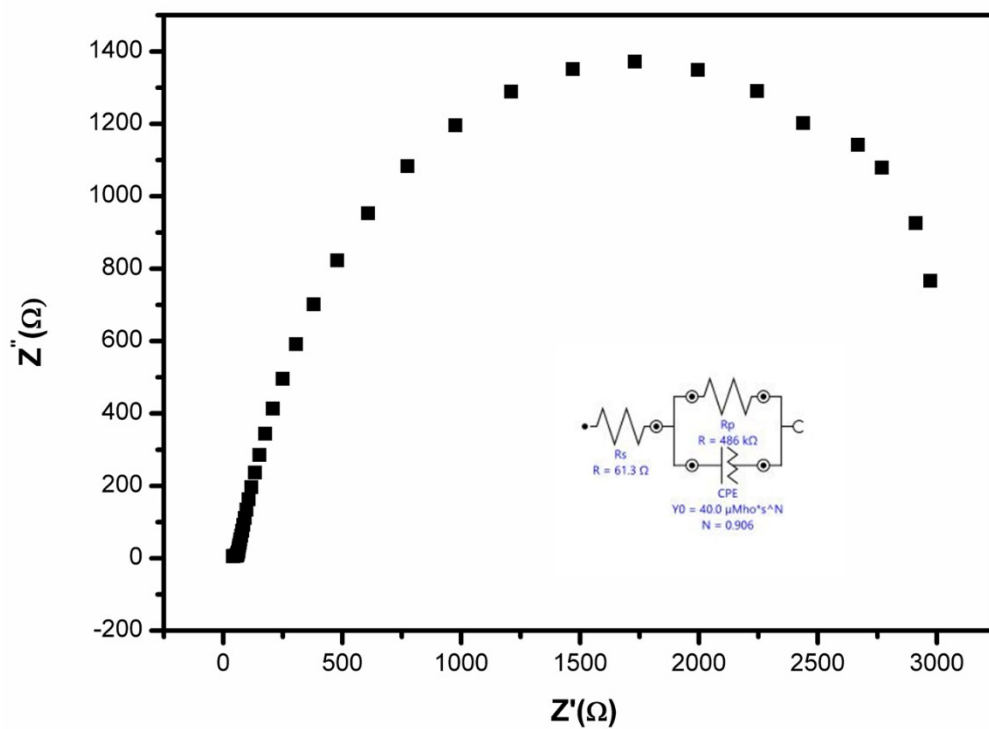


Figure S13 Equivalent circuit and fitted Nyquist plots of MIL-125(Ti)

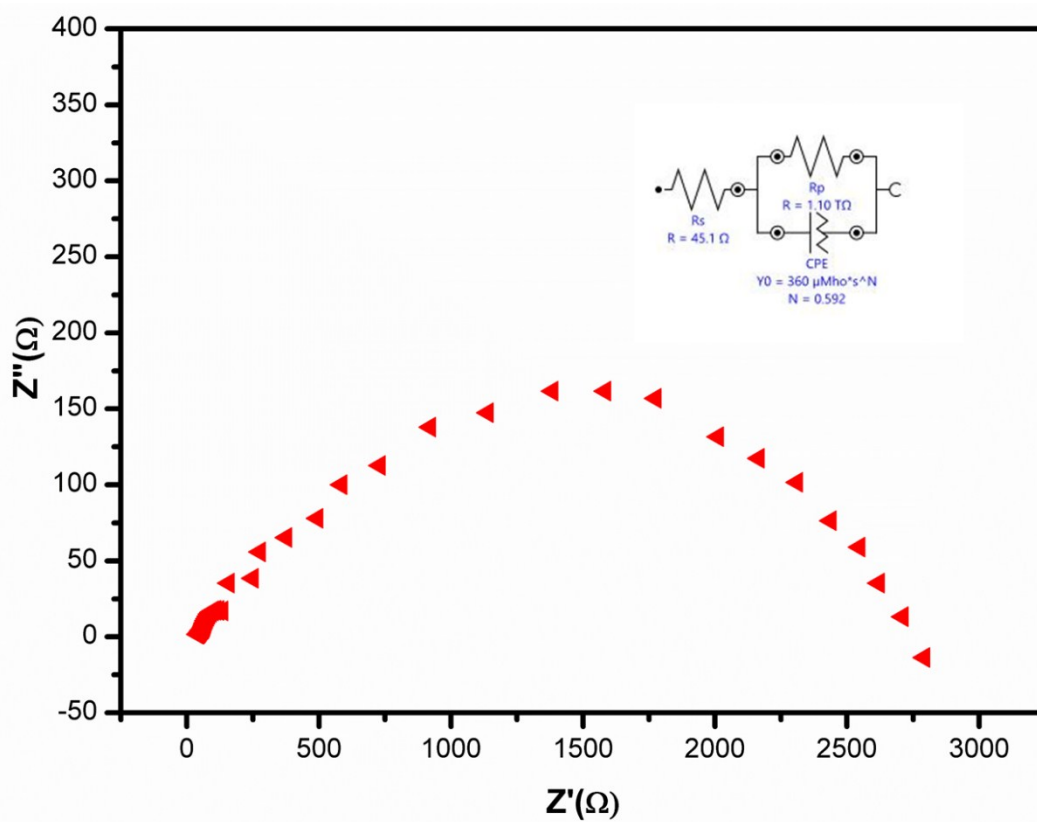


Figure S14 Equivalent circuit and fitted Nyquist plots of FLBP

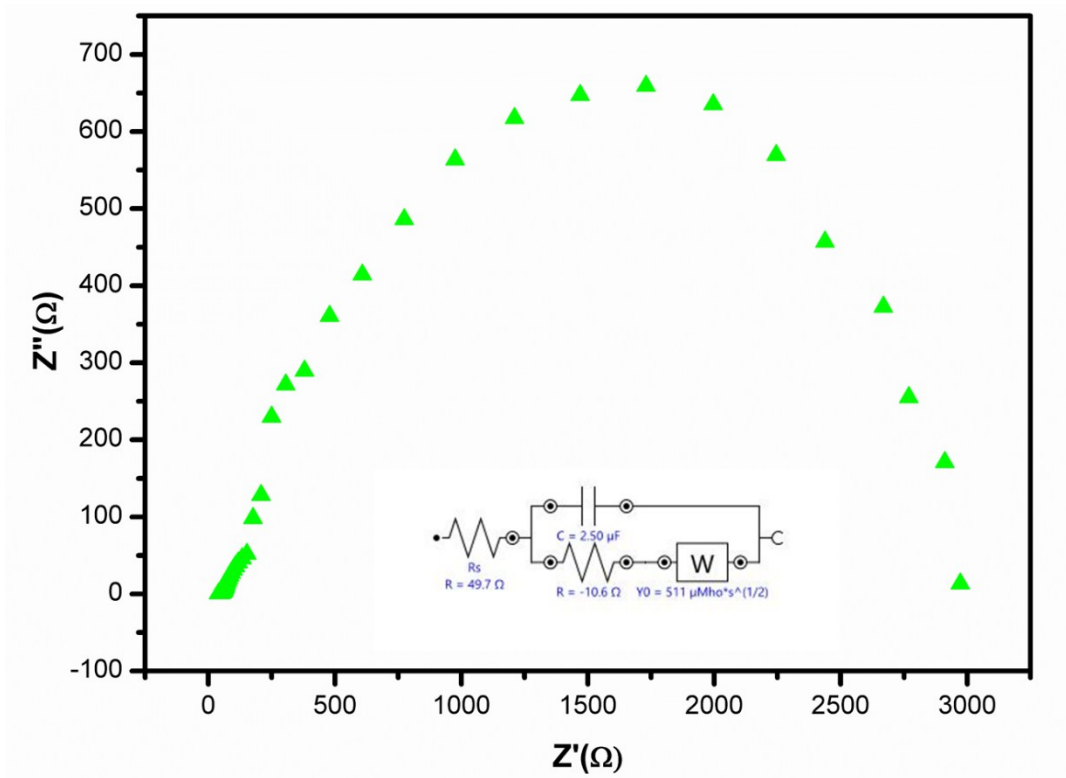


Figure S15 Equivalent circuit and fitted Nyquist plots of 4%BpMIL

Table S1: Measurements of surface area, pore volume and pore size

Photocatalyst name	S_{BET} (m^2g^{-1})	Pore Volume (cm^3g^{-1})	Pore size (nm)
MIL-125(Ti)	285	0.168	6.38
4%BpMIL	105	0.198	3.12
6%BpMIL	229	0.234	3.28
12%BpMIL	254	0.309	5.40