

Supporting Information

Crystal structures and photocatalytic properties of two novel iodoplumbate hybrids templated by multivalent organic cation

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Table S1 Selected Bond Lengths (Å) and Bond Angles (°) for 1-2

Compound 1					
Pb(1)-I(3)	3.1963(14)	Pb(1)-I(3)#1	3.1963(14)	Pb(1)-I(2)#1	3.2010(14)
Pb(1)-I(2)	3.2010(14)	Pb(1)-I(1)#1	3.2342(13)	Pb(1)-I(1)	3.2342(13)
Pb(2)-I(5)	3.0671(13)	Pb(2)-I(4)	3.1191(13)	Pb(2)-I(6)	3.1523(15)
Pb(2)-I(3)	3.3792(16)	Pb(2)-I(1)#1	3.4282(15)	I(1)-Pb(2)#1	3.4282(15)
I(3)-Pb(1)-I(3)#1	180.00(1)	I(3)-Pb(1)-I(2)#1	86.09(3)	I(3)#1-Pb(1)-I(2)#1	93.91(3)
I(3)-Pb(1)-I(2)	93.91(3)	I(3)#1-Pb(1)-I(2)	86.09(3)	I(2)#1-Pb(1)-I(2)	180.00
I(3)-Pb(1)-I(1)#1	86.99(2)	I(3)#1-Pb(1)-I(1)#1	93.01(2)	I(2)#1-Pb(1)-I(1)#1	84.45(3)
I(2)-Pb(1)-I(1)#1	95.55(3)	I(3)-Pb(1)-I(1)	93.01(2)	I(3)#1-Pb(1)-I(1)	86.99(2)
I(2)#1-Pb(1)-I(1)	95.55(3)	I(2)-Pb(1)-I(1)	84.45(3)	I(1)#1-Pb(1)-I(1)	180.00
I(5)-Pb(2)-I(4)	101.19(4)	I(5)-Pb(2)-I(6)	89.29(3)	I(4)-Pb(2)-I(6)	90.53(3)
I(5)-Pb(2)-I(3)	97.57(3)	I(4)-Pb(2)-I(3)	86.28(3)	I(6)-Pb(2)-I(3)	172.87(2)
I(5)-Pb(2)-I(1)#1	164.80(3)	I(4)-Pb(2)-I(1)#1	93.85(3)	I(6)-Pb(2)-I(1)#1	92.77(3)
I(3)-Pb(2)-I(1)#1	81.11(2)	Pb(1)-I(1)-Pb(2)#1	79.93(2)	Pb(1)-I(3)-Pb(2)	81.21(2)
Compound 2					
Pb1-I1	3.3353(14)	Pb1-I2	2.9534(16)	Pb1-I3	3.1628(16)
Pb1-I4	3.1940(16)	Pb1-I5 ¹	3.3229(14)	Pb2-I1 ²	3.2712(15)
Pb2-I3	3.1645(16)	Pb2-I4	3.2195(15)	Pb2-I5	3.2528(15)
Pb2-I6	3.3190(14)	Pb2-I8 ²	3.0994(15)	Pb3-I6	3.1840(15)
Pb3-I7	3.0139(17)	Pb3-I8	3.2119(16)	Pb3-I9	2.9937(17)
I1-Pb2 ¹	3.2713(15)	I5-Pb1 ²	3.3229(14)	I8-Pb2 ¹	3.0995(15)
I2-Pb1-I1	98.75(5)	I2-Pb1-I3	89.71(5)	I2-Pb1-I4	94.72(5)
I2-Pb1-I5 ¹	101.02(5)	I3-Pb1-I1	96.01(4)	I3-Pb1-I4	90.46(4)
I3-Pb1-I5 ¹	169.27(4)	I4-Pb1-I1	165.07(4)	I4-Pb1-I5 ¹	88.83(4)
I5 ¹ -Pb1-I1	82.30(3)	I1 ² -Pb2-I6	100.14(4)	I3-Pb2-I1 ²	91.31(4)
I3-Pb2-I4	89.96(4)	I3-Pb2-I5	175.01(4)	I3-Pb2-I6	83.23(4)
I4-Pb2-I1 ²	176.37(4)	I4-Pb2-I5	94.20(4)	I4-Pb2-I6	83.39(4)
I5-Pb2-I1 ²	84.38(4)	I5-Pb2-I6	99.97(4)	I8 ² -Pb2-I1 ²	86.66(4)
I8 ² -Pb2-I3	89.02(4)	I8 ² -Pb2-I4	89.96(4)	I8 ² -Pb2-I5	88.22(4)
I8 ² -Pb2-I6	169.77(4)	I6-Pb3-I8	165.37(4)	I7-Pb3-I6	95.61(5)
I7-Pb3-I8	94.79(5)	I9-Pb3-I6	94.28(5)	I9-Pb3-I7	96.21(5)
I9-Pb3-I8	94.78(5)	Pb2 ¹ -I1-Pb1	90.24(3)	Pb1-I3-Pb2	79.71(4)
Pb1-I4-Pb2	78.43(3)	Pb2-I5-Pb1 ²	90.78(3)	Pb3-I6-Pb2	152.89(5)
Pb2 ¹ -I8-Pb3	85.68(4)				

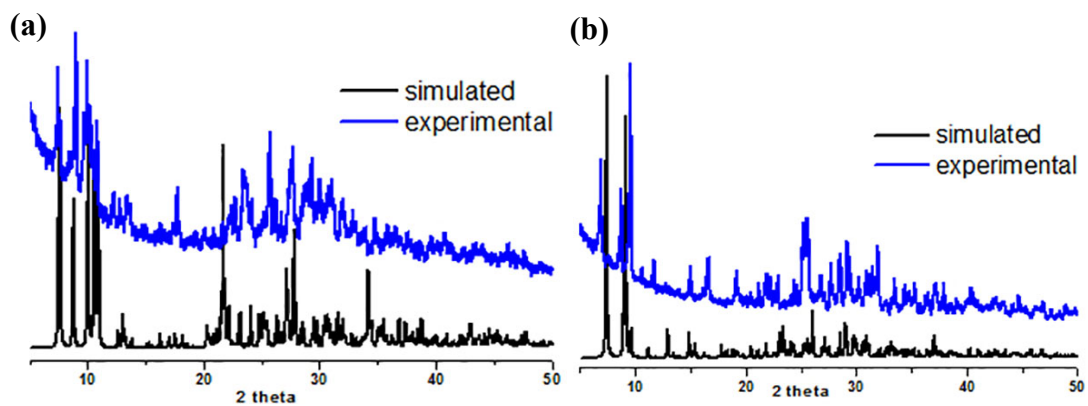


Fig.S1 X-ray powder diffraction pattern of complex 1-2, 1(a), 2(b)

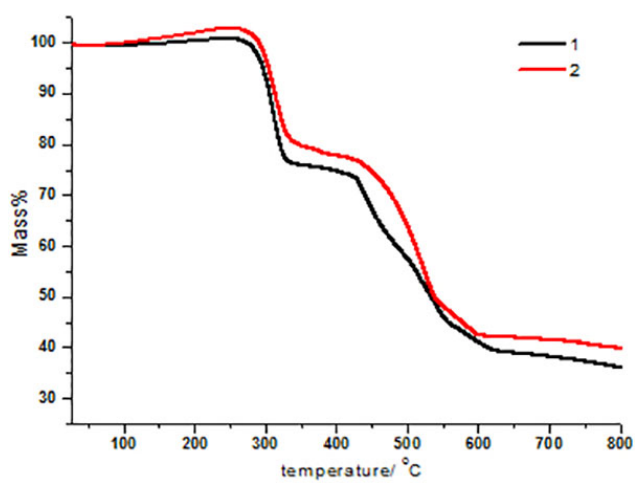


Fig.S2 TG plot of compounds 1 to 2

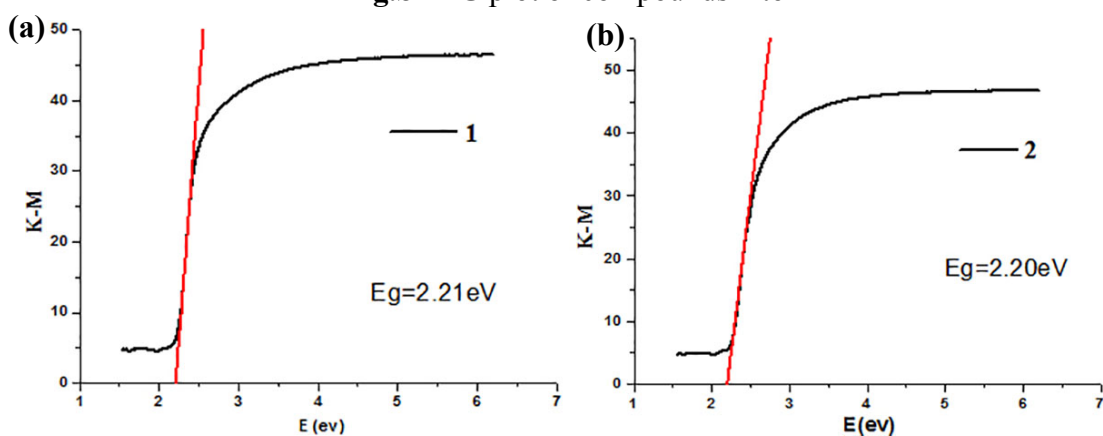


Fig.S3 K-M function versus energy (eV) curve of compounds 1-2

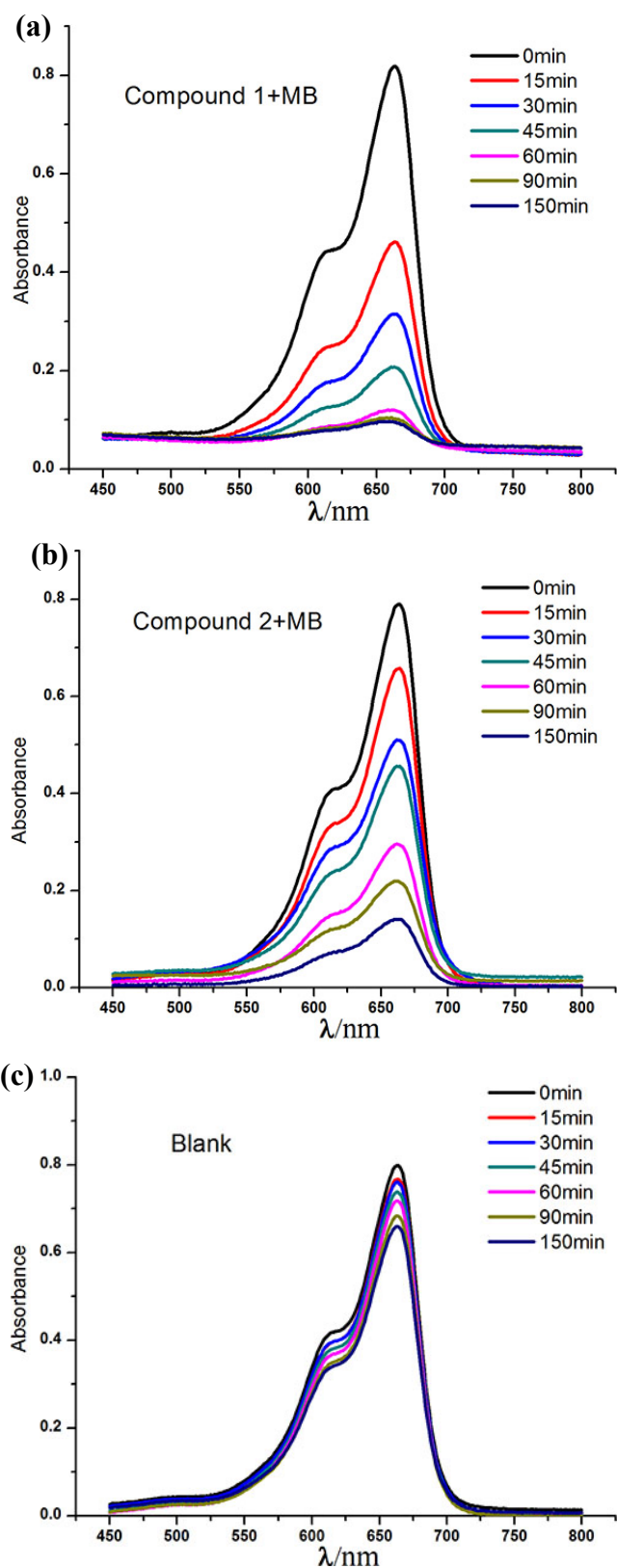


Fig.S4 Absorption spectra of the MB solution during the decomposition reaction under UV light irradiation dealt with compounds **1** (a), **2** (b) and the control experiment without any catalyst (c)

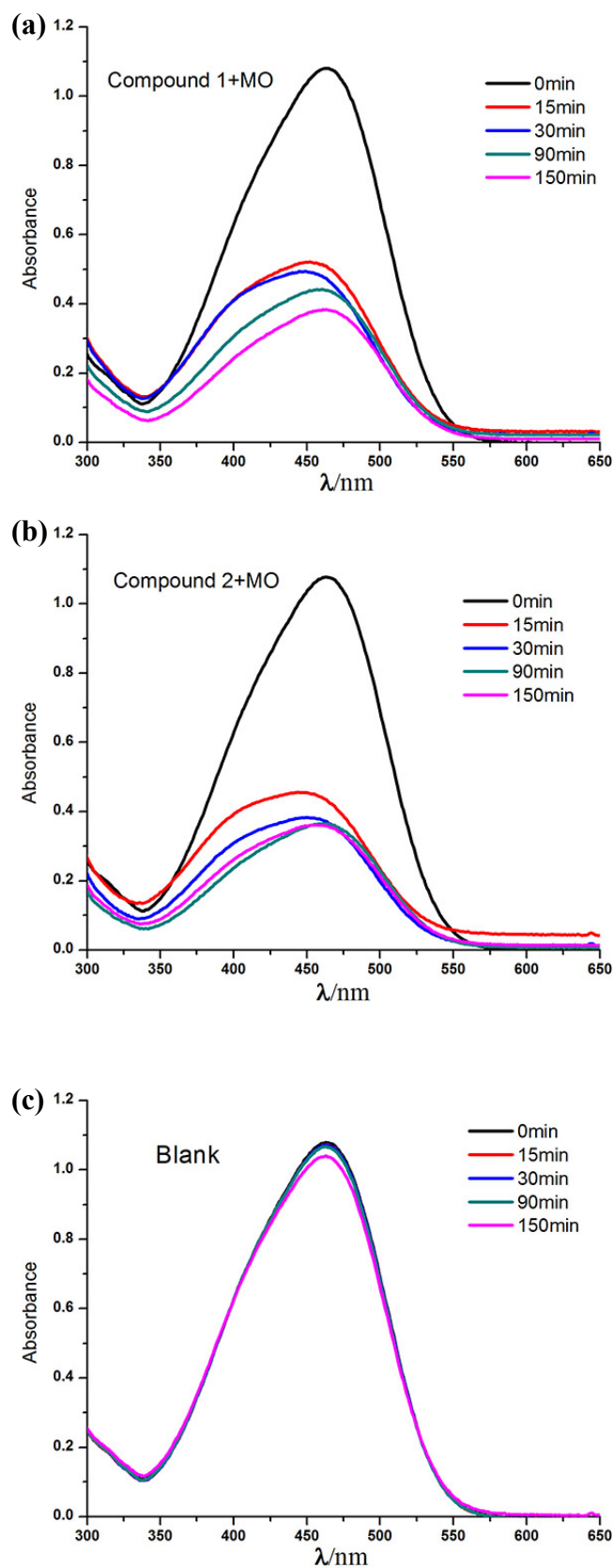


Fig.S5 Absorption spectra of the MO solution during the decomposition reaction under UV light irradiation dealt with compounds **1** (a), **2** (b) and the control experiment without any catalyst (c)

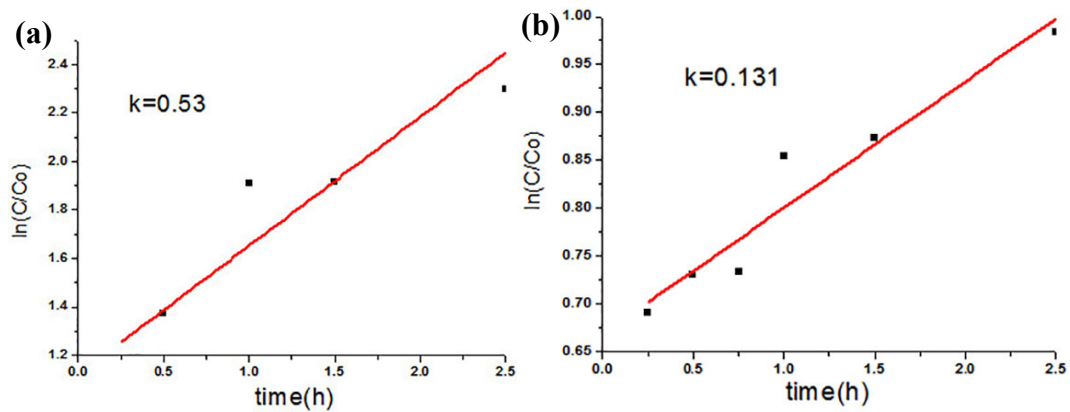


Fig. S6 Kinetic study of 1(a), 2 (b) with MB

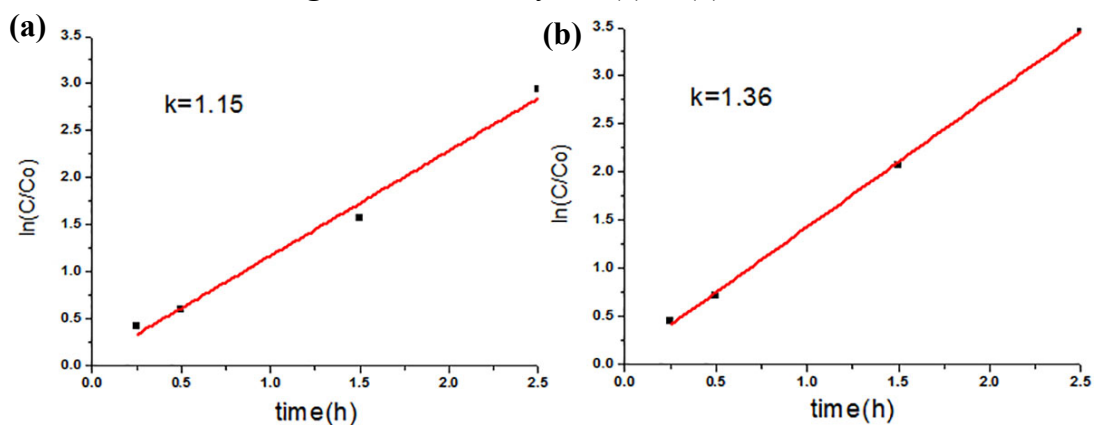


Fig. S7 Kinetic study of 1(a),2 (b) with MO

(a)

(b)

Fig. S8 Photocatalytic decomposition of MB solution (a), MO solution (b) under UV light irradiation with the use of PbI_2 , tbp , $tbpm$, eparately.

(a)

(b)

(c)

Fig.S9 Absorption spectra of the MB solution during the decomposition reaction under UV light irradiation dealt with PbI_2 (a), tbp (b), tbpm (c)

(a)

(b)

(c)

Fig.S10 Absorption spectra of the MO solution during the decomposition reaction under UV light irradiation dealt with PbI_2 (a), tbp (b), tbpm (c)