Supplementary Information

Harnessing synergistic effects in porous carbon/Co–ZnO heterojunction for enhanced visible-light photocatalytic removal of bisphenol A

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Tables

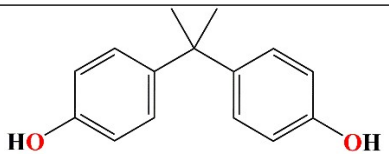
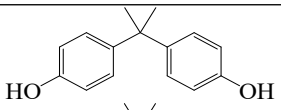
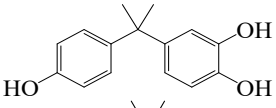
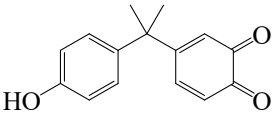
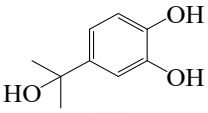
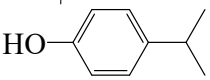
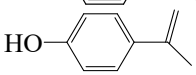
Chemical structure	
Chemical formula	$C_{15}H_{16}O_2$
Molecular weight (g/mol)	228.29 g/mol
Solubility in water (mg/L @ 25 °C)	300
Density at 25 °C	1.195
pK_a (@25°C)	9.6
λ_{max} (nm)	276

Table S1. Physicochemical properties of BPA.

Table S2. Method of determination of water quality parameters.

Parameters	Method of determination
pH	pH meter (EZ-9908)
TDS	TDS meter (EZ-9908)
EC	Conductivity meter (EZ-9908)
TH	EDTA - Titrimetry
BOD	Benchtop meter (HI5421)
Sulfate	Test kit (HI38001A-0)
Phosphate	Multiparameter Photometer (HI83300)
Calcium	EDTA – Titrimetry
Magnesium	EDTA – Titrimetry
Chloride	$AgNO_3$ – Titrimetry
Alkalinity	HCl – Titrimetry

Table S3. Possible intermediate products of BPA degradation determined by LC-MS.

Product	m/z	Chemical structure
BPA	228	
P1	244	
P2	242	
P3	168	
P4	136	
P5	134	
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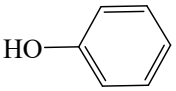
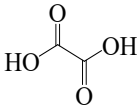
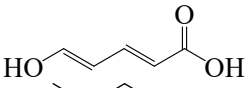
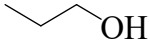
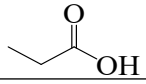
P7	94	
P8	91	
P9	113	
P10	61	
P11	107	

Figures

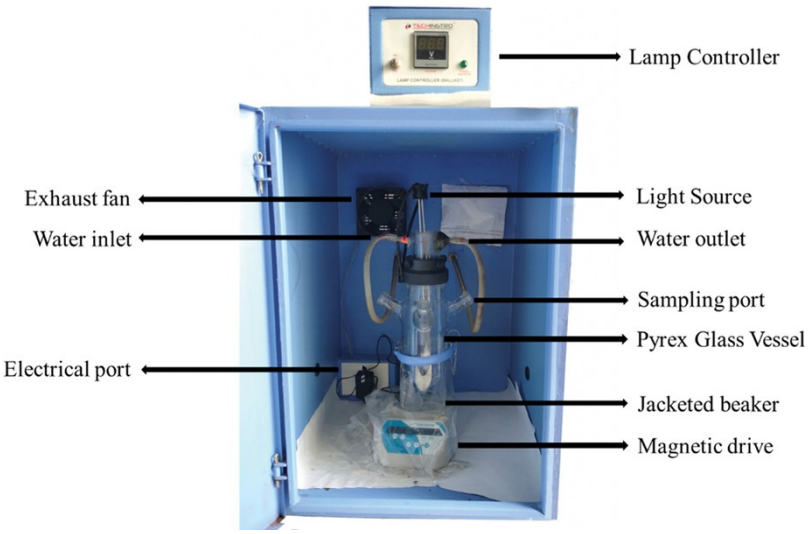


Fig. S1. Schematic representation of experimental setup for UV light photocatalytic reactor.

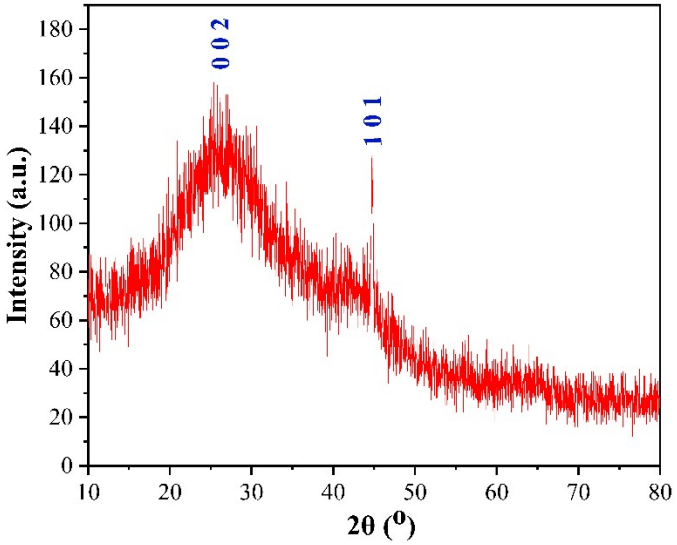


Fig. S2. XRD diffraction pattern of CCAC.

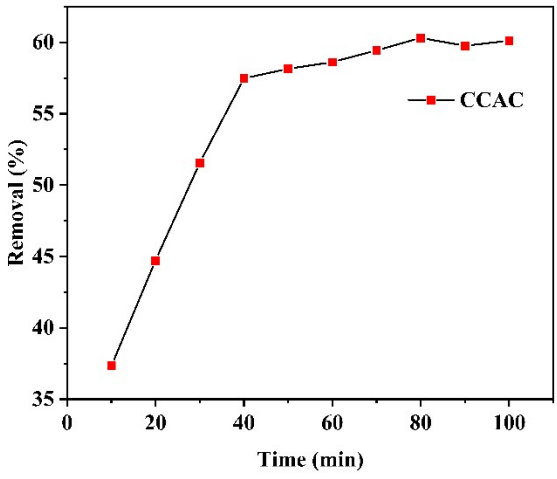
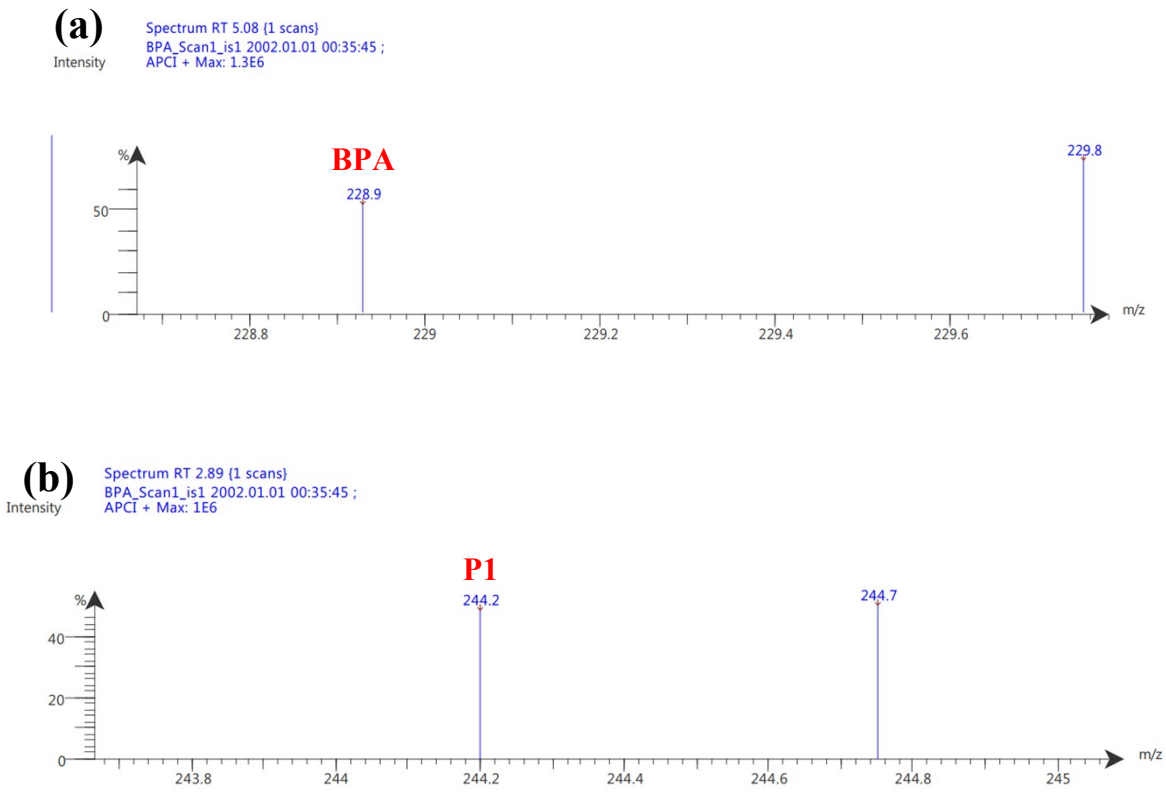
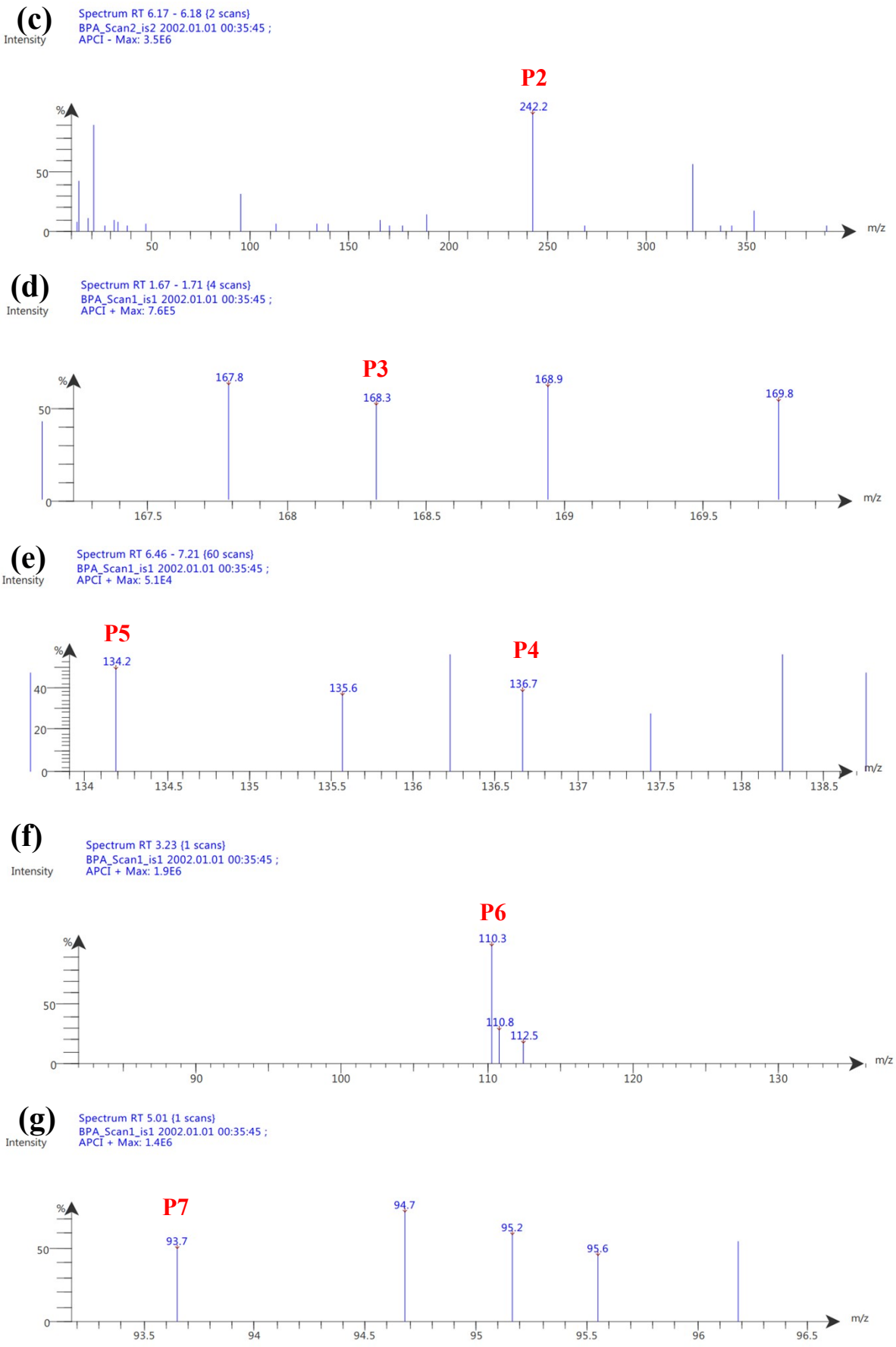


Fig.S3. Adsorption of bisphenol A (BPA) using CCAC.

Fig. S4. Real wastewater collection site.




(c)
Intensity
Spectrum RT 6.17 - 6.18 (2 scans)
BPA_Scan2_is2 2002.01.01 00:35:45 ;
APCI - Max: 3.5E6
P2
242.2
%
50
0
50
100
150
200
250
300
350
m/z
(d)
Intensity
Spectrum RT 1.67 - 1.71 (4 scans)
BPA_Scan1_is1 2002.01.01 00:35:45 ;
APCI + Max: 7.6E5
P3
167.8
168.3
168.9
169.8
%
50
0
167.5
168
168.5
169
169.5
m/z
(e)
Intensity
Spectrum RT 6.46 - 7.21 (60 scans)
BPA_Scan1_is1 2002.01.01 00:35:45 ;
APCI + Max: 5.1E4
P5
P4
134.2
135.6
136.7
%
40
20
0
134
134.5
135
135.5
136
136.5
137
137.5
138
138.5
m/z
(f)
Intensity
Spectrum RT 3.23 (1 scans)
BPA_Scan1_is1 2002.01.01 00:35:45 ;
APCI + Max: 1.9E6
P6
110.3
110.8
112.5
%
50
0
90
100
110
120
130
m/z
(g)
Intensity
Spectrum RT 5.01 (1 scans)
BPA_Scan1_is1 2002.01.01 00:35:45 ;
APCI + Max: 1.4E6
P7
93.7
94.7
95.2
95.6
%
50
0
93.5
94
94.5
95
95.5
96
96.5
m/z

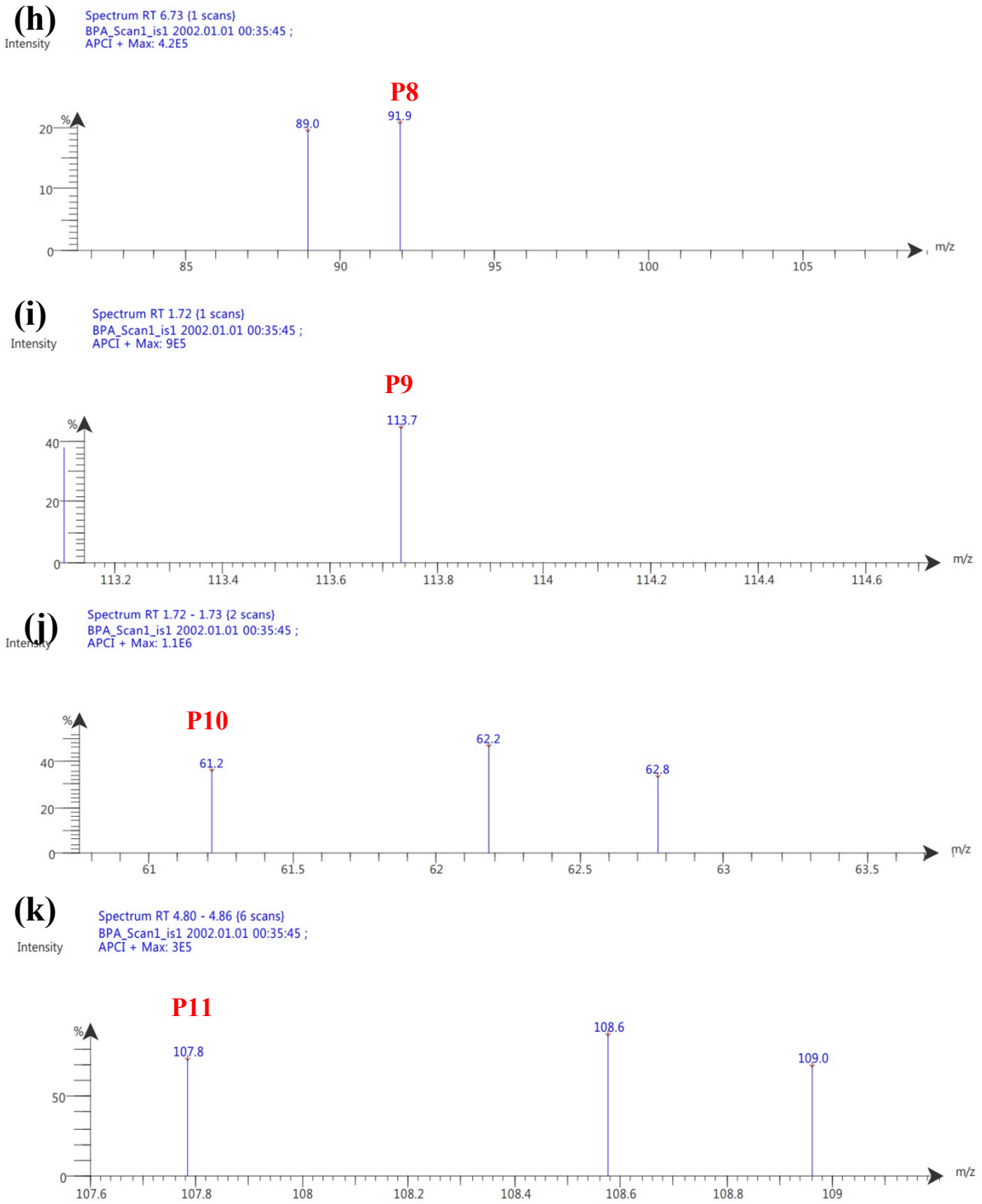


Fig. S5. LC-MS profile of BPA after photocatalytic degradation.

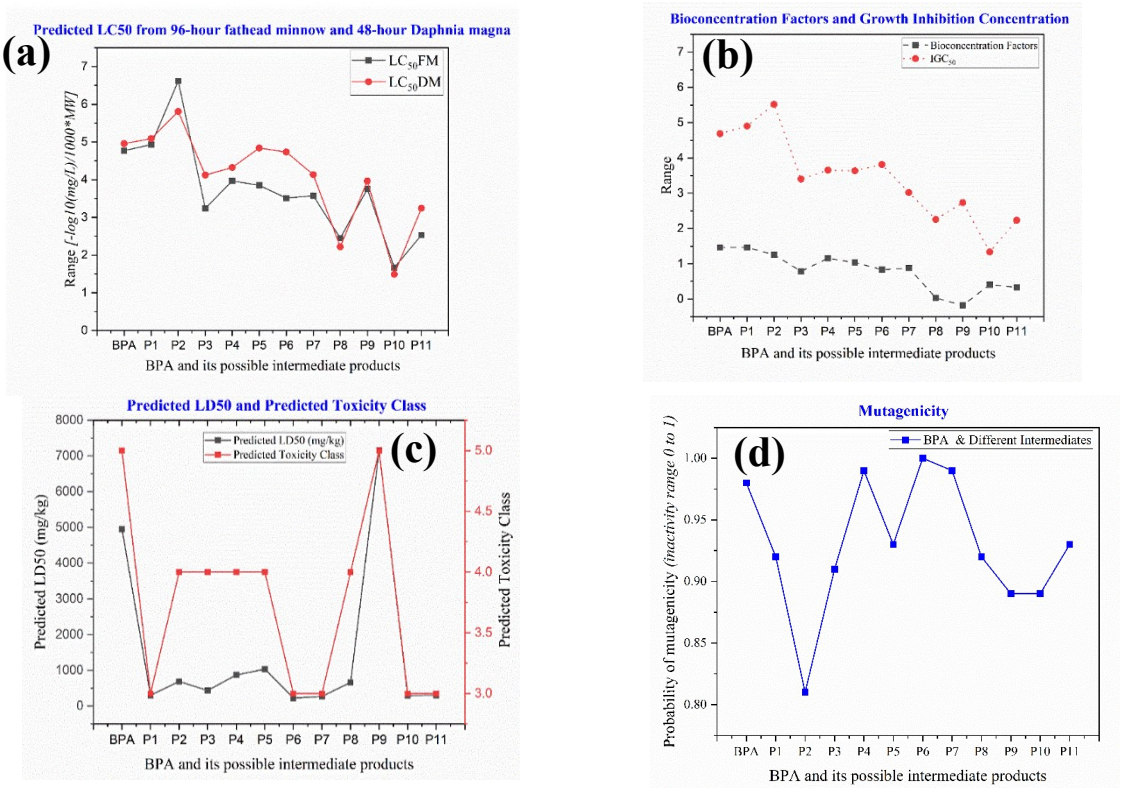


Fig.S6. Toxicity study conducted via theoretical insights (a) LC50 FM and DM, (b) bioaccumulation factor and GIC, (c) Predicted LD50 and toxicity class, and (d) Mutagenicity for BPA and its intermediates.

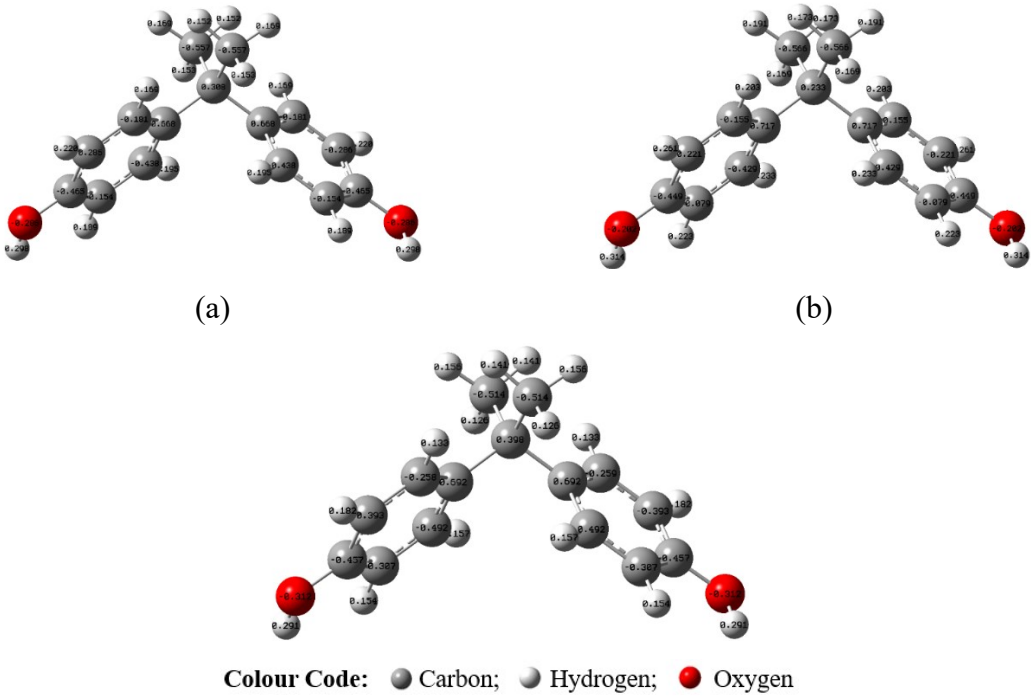


Fig S7. Fukui function corresponding to **(a)** radical (f^0), **(b)** electrophilic (f^-), and **(c)** nucleophilic (f^+), susceptibility of BPA.

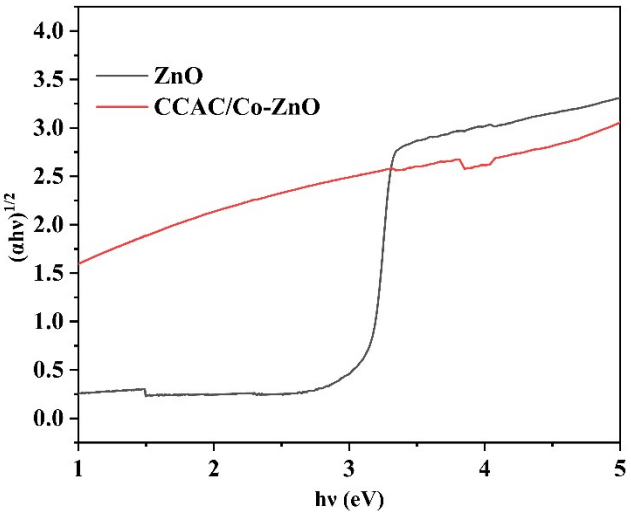


Fig.S8. Tauc's plot for indirect band gap type