Supporting Information

Solar Assisted Photocatalytic reduction of Methyl Orange Azo Dye over Porous TiO_2 nanostructures

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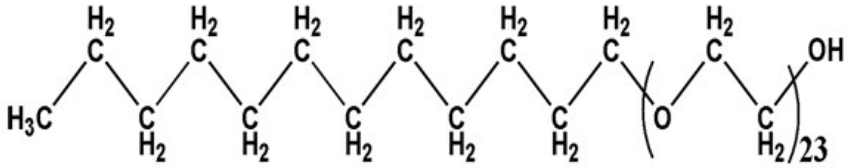
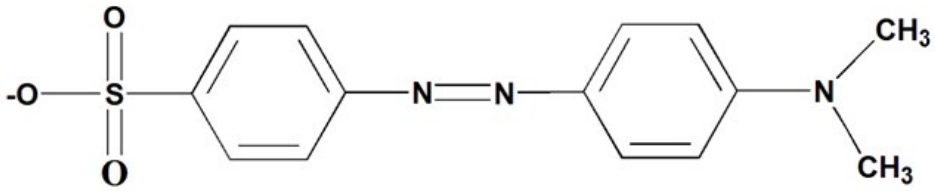


a

Brij-35 Molecular Weight 1225



b

Methyl Orange Molecular Weight 304

Figure S1 (a) Structure of Surfactant Brij-35 (b) Structure of Methyl orange dye.

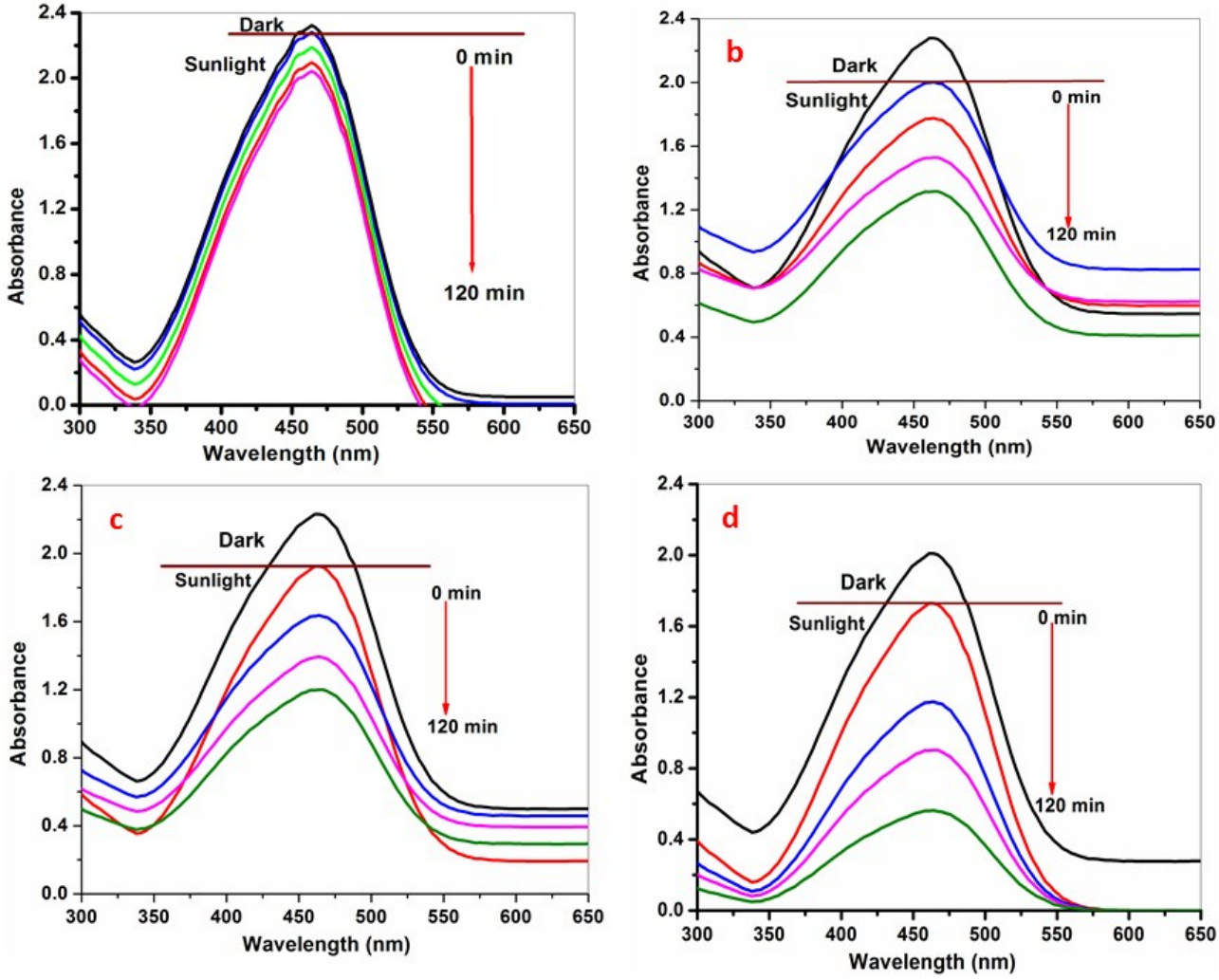


Figure S2 UV-VIS absorption plots of (a) methyl orange dye without catalyst. UV-VIS absorption plots of methyl orange dye in dark for 30 min and then solar light irradiation up to 120 min in presence of catalysts (b) TiO_2/Brij-35 (c) TiO_2/Brij-35/dextran (d) TiO_2/Brij-35/Silica-Nps. (MO concentration ≈ 20 ppm, catalyst dose≈ 12 mg, irradiation time=120 min)

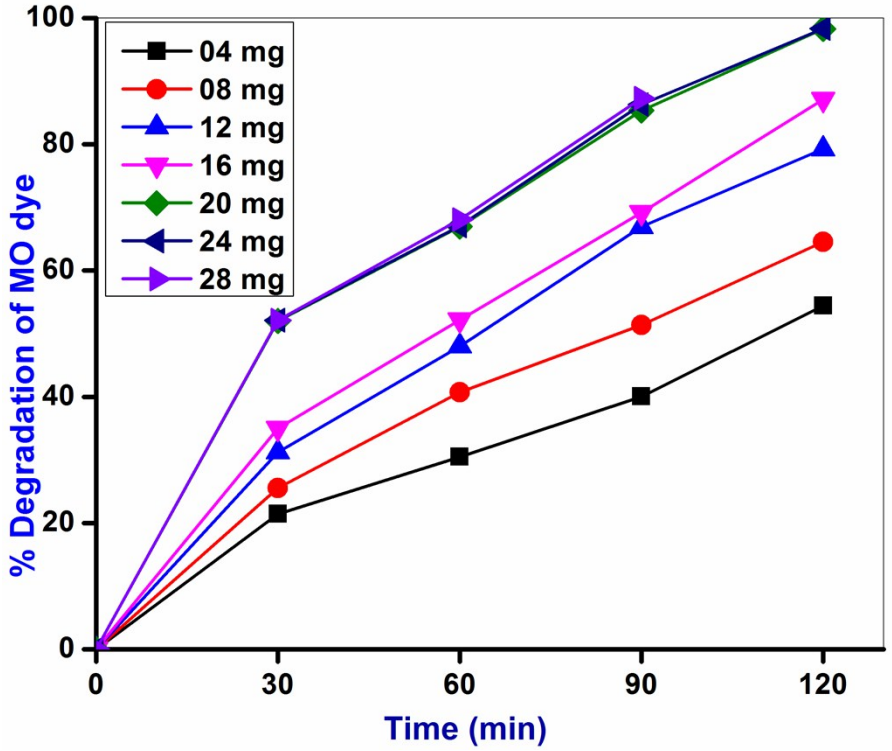


Figure S3 Degradation of MO using different catalyst doses of TiO_2/Brij-35/Silica-Nps with time. (MO concentration ≈ 20 ppm, irradiation time=120 min)

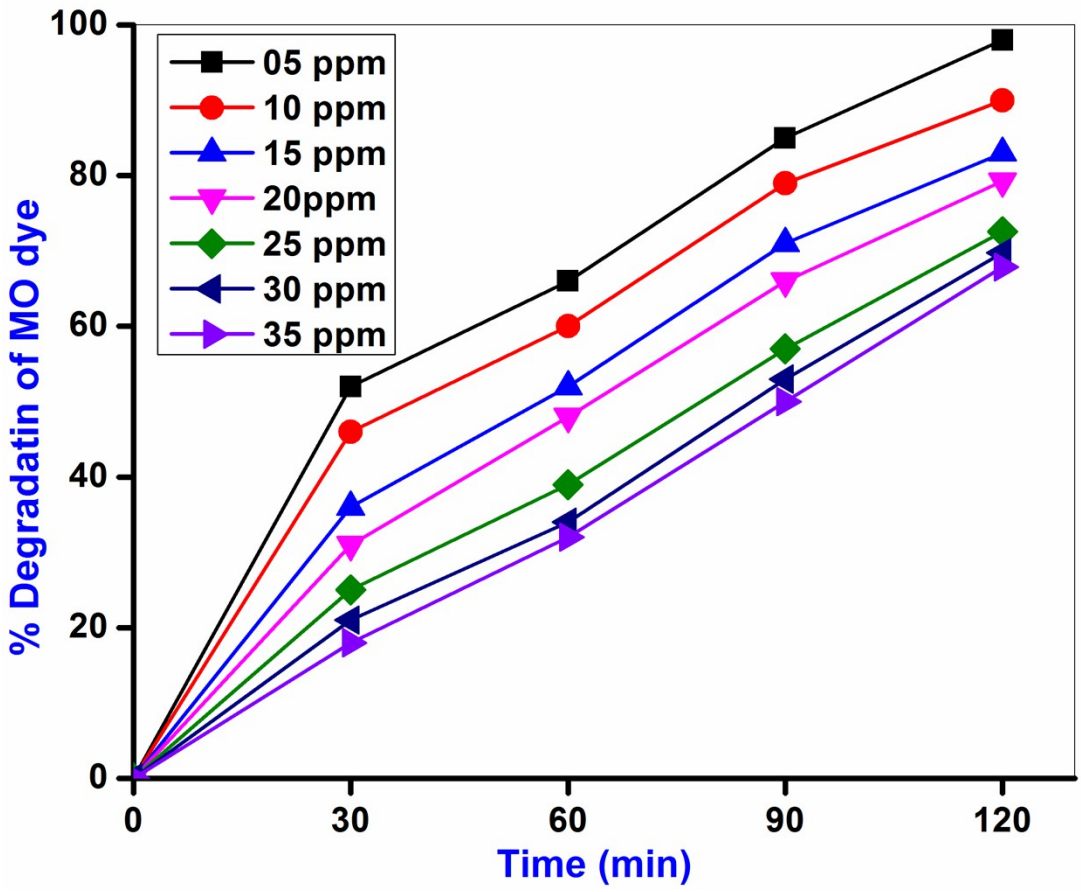


Figure S4 Degradation of MO using different concentrations of MO dye in presence of TiO_2/Brij-35/Silica-Nps catalyst with time. (catalyst dose 12 mg, irradiation time=120 min)

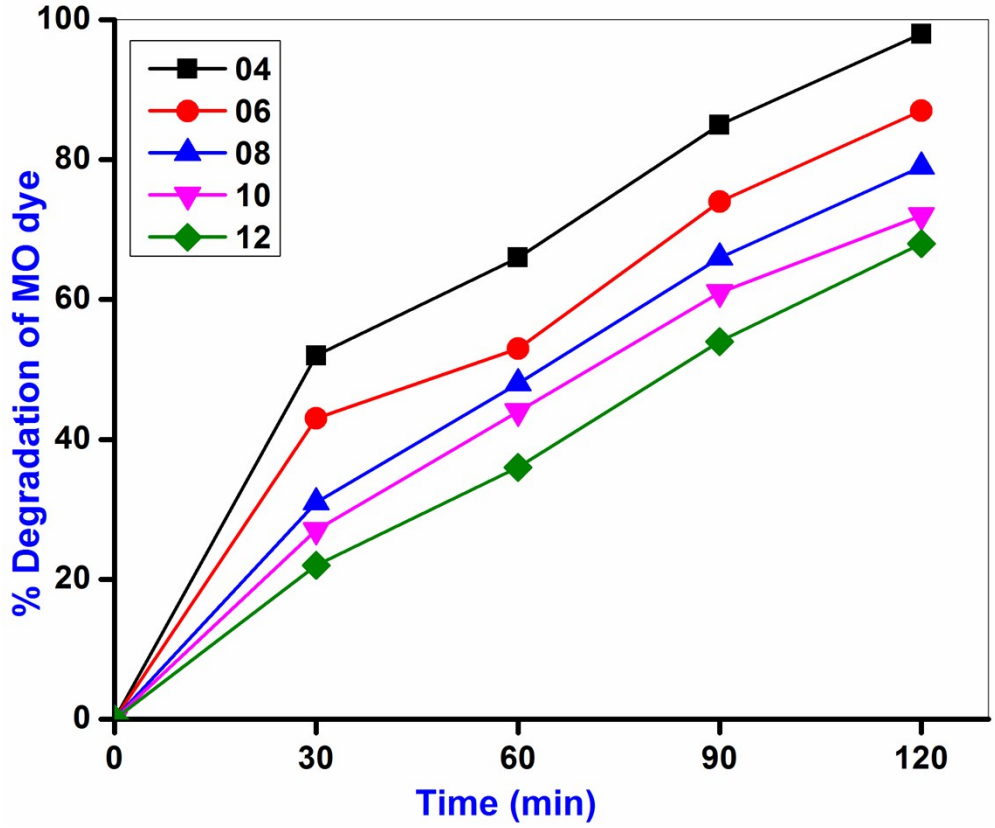
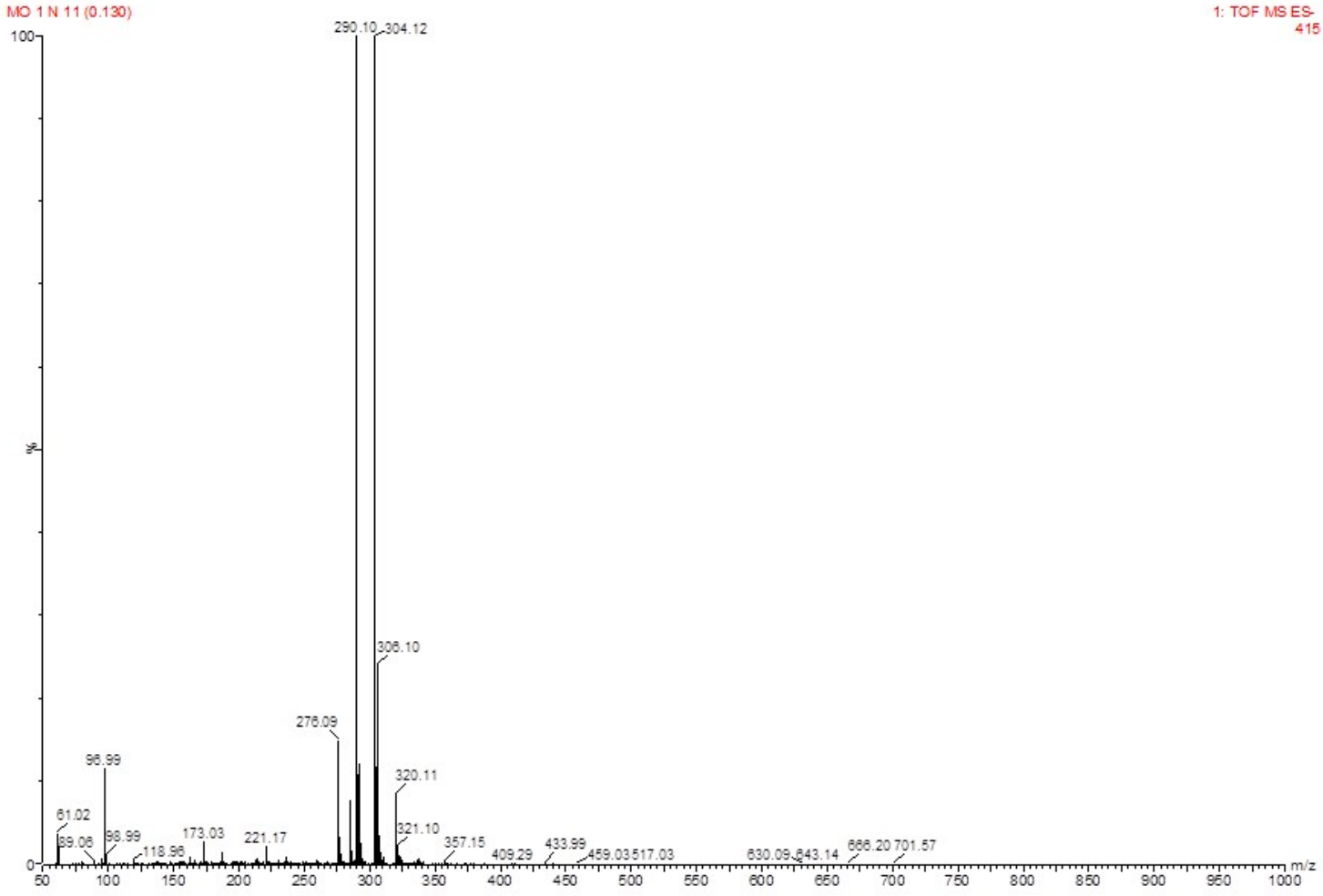
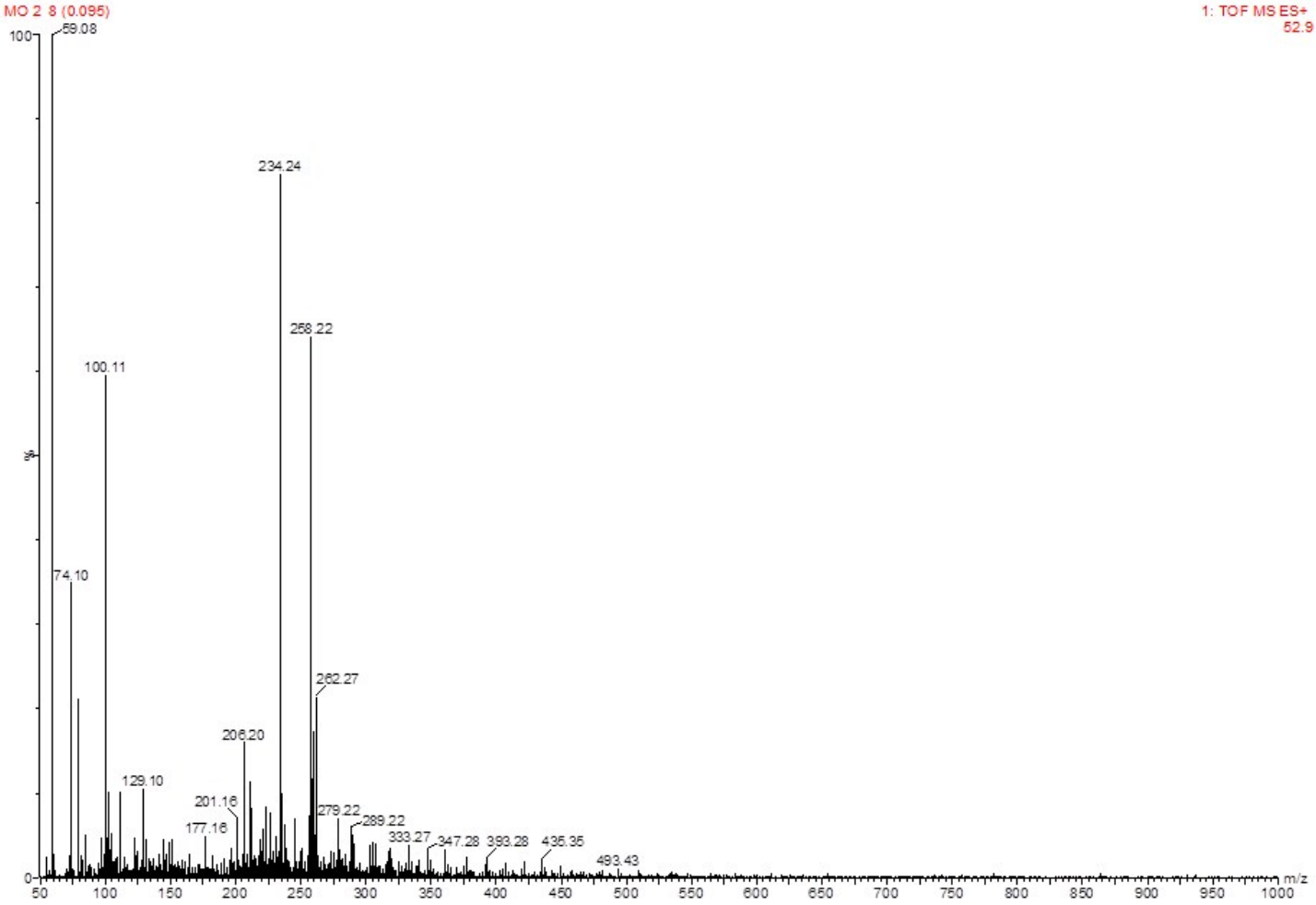


Figure S5 Effect of pH on the degradation of MO dye with time (MO concentration 20 ppm, catalyst dose 12 mg, irradiation time=120 min)

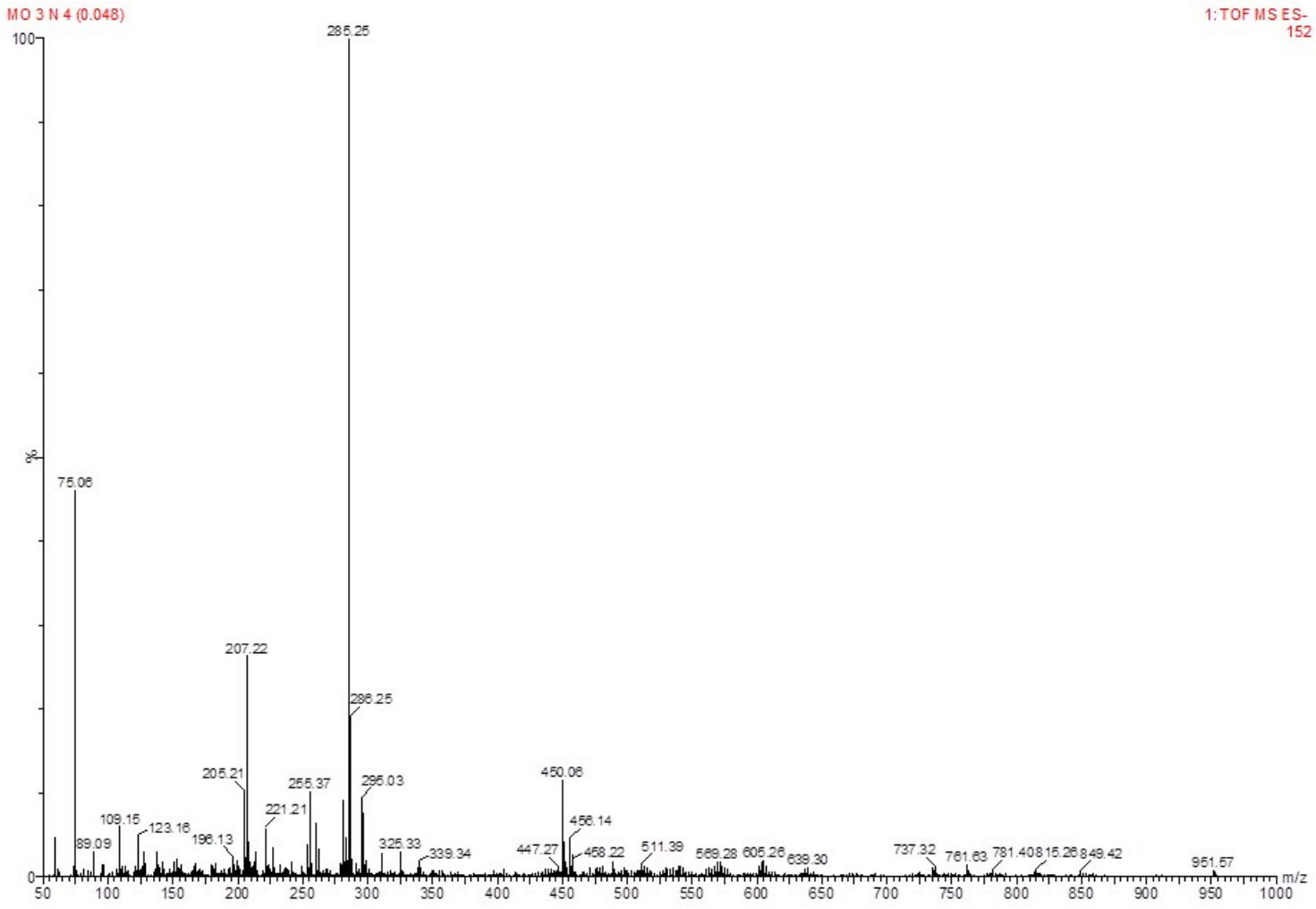
6. ESI-Mass Spectra of Methyl Orange (MO) dye degradation.



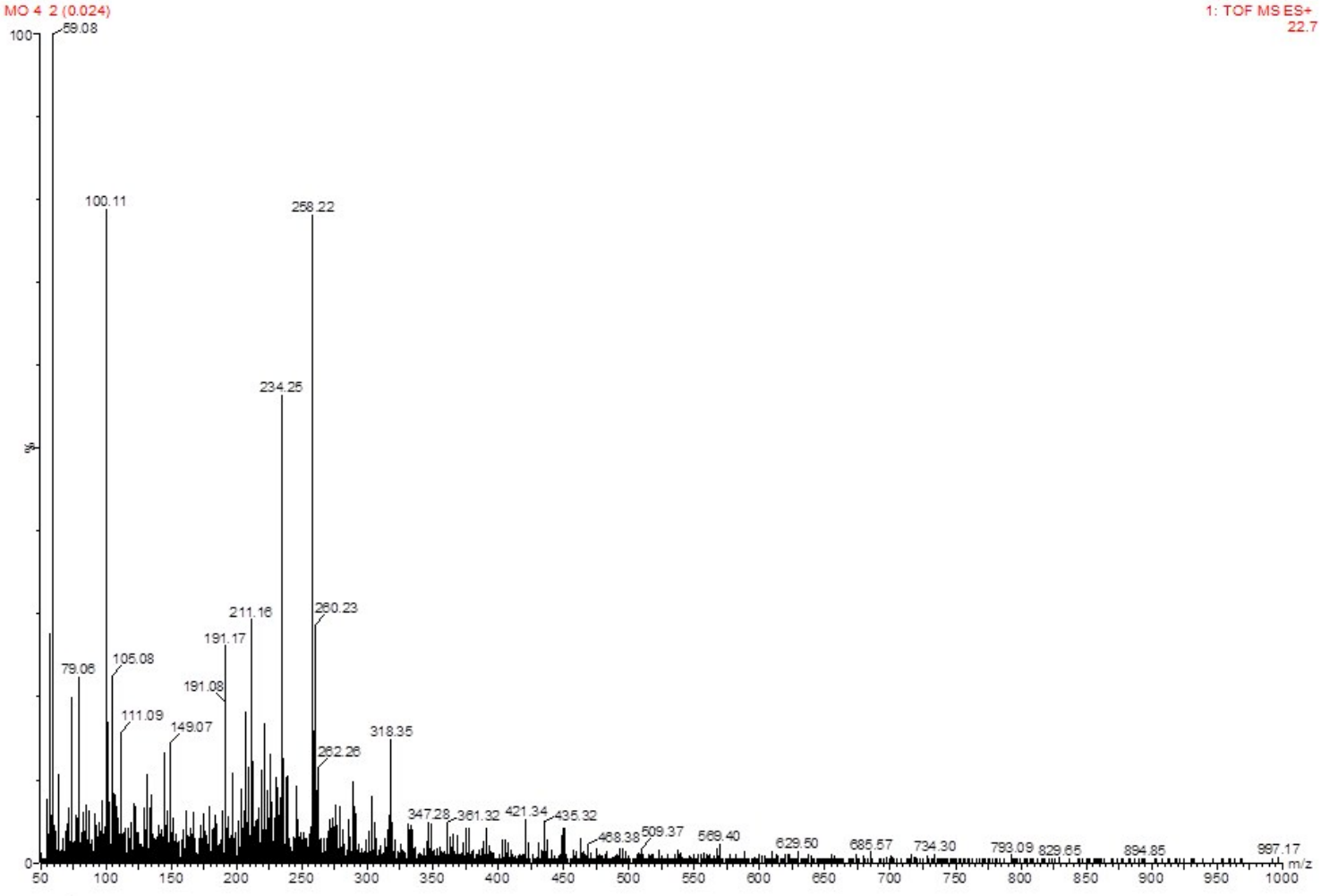
a


MO 2 8 (0.095)
1: TOF MS ES+
52.9
100
%
0
59.08
234.24
258.22
100.11
74.10
262.27
206.20
129.10
201.16
177.16
279.22
289.22
333.27
347.28
393.28
436.35
493.43
m/z
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000

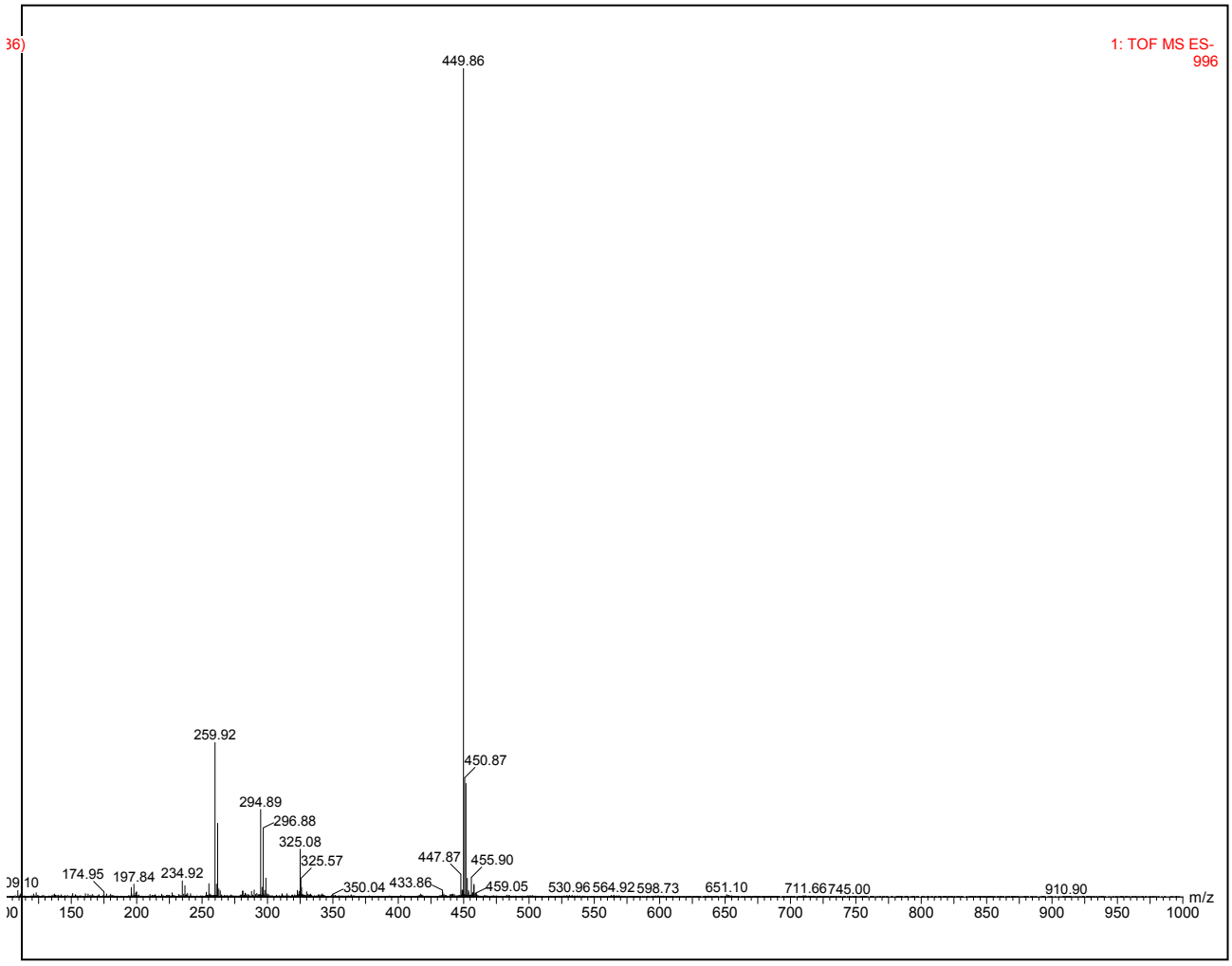
b


MO 3 N 4 (0.048)
1: TOF MS ES-
152
100
%
0
285.25
75.06
207.22
286.25
205.21
255.37
295.03
450.06
221.21
456.14
109.15
123.16
89.09
196.13
325.33
339.34
447.27
468.22
511.39
569.28
605.26
639.30
737.32
761.63
781.40
815.26
849.42
951.57
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
m/z

c


MO 4 2 (0.024)
1: TOF MS ES+
22.7
100
%
0
59.08
100.11
258.22
234.25
211.16
260.23
191.17
105.08
79.06
191.08
111.09
149.07
318.35
262.26
347.28
361.32
421.34
435.32
468.38
509.37
569.40
629.50
685.57
734.30
793.09
829.65
894.85
997.17
m/z
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000

d


1: TOF MS ES-
996
449.86
259.92
450.87
294.89
296.88
325.08
325.57
447.87
455.90
174.95
197.84
234.92
350.04
433.86
459.05
530.96
564.92
598.73
651.10
711.66
745.00
910.90
m/z
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000

e

Figure S 6. ESI-Mass spectra of MO dye degradation at different time intervals (a) 30 min (b) 60 min (c) 90 min (d) 120 min (e) Original solution of MO (20 ppm)