

Electronic Supplementary Information (ESI)

Nanosized silver bromide: An efficient catalyst for alcohol oxidation in the presence of a multinuclear silver complex

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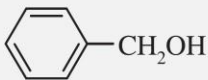
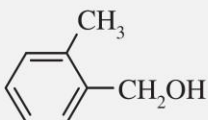
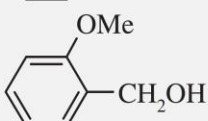
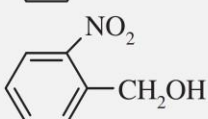
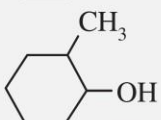
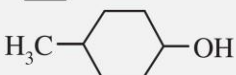
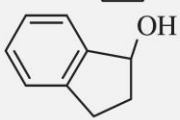
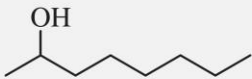
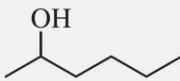
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TableS1 Oxidation of alcohols catalyzed by complex **1** (Adapted with permission from ref. S1. Copyright (2010) by Elsevier.

Entry	Substrate ^a	Conversion (%) ^b	TON ^c
1		100	50
2		100	50
3		100	50
4		100	50
5		88	44
6		93	46.5
7		90	45
8		100	50
9		73	36.5
10		66	33

^a The molar ratios for catalyst: phase transfer agent: substrate: oxidant are 1:10:50:50, respectively. The reactions were run for 2 h at room temperature in a biphasic medium (CH₂Cl₂/H₂O).

^b The GC conversion (%) are measured relative to the starting alcohol after 2 h.

^c TON = (mmol of products)/mmol of catalyst.

Table S2 The alcohol oxidation under different condition.

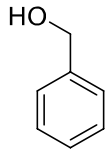
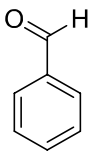
 				
Entry	Oxone (mmol)	BA (mmol)	Conversion (%) ^b	Selectivity (%) ^b
1	0.2	1	5	5
2	0.6	1	25	20
3 ^a	1	1	70	65
4	1	2	15	15
^a The molar ratios for catalyst: t-butyl ammonium bromide (PT): benzyl alcohol: oxone are 1:10:50:50, respectively				
^b GC Yield				



Figure S1 DLS result from the obtained solid from mixing of **1** (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in CH₂Cl₂/water (1/5).

File Name: DLS3.dts Dispersant Name: Water
Record Number: 2671 Dispersant RI: 1.330
Material RI: 1.59 Viscosity (mPa.s): 0.8872
Material Absorption: 0.01 Measurement Date and Time: 2017/07/24 08:55:25

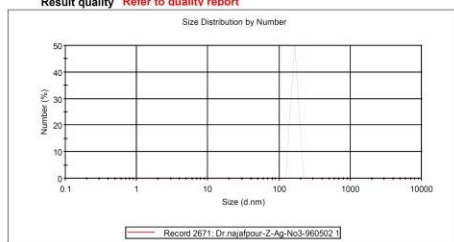
System

Temperature (°C): 25.0 Duration Used (s): 10
Count Rate (kcps): 309.7 Measurement Position (mm): 4.65
Cell Description: Disposable sizing cuvette Attenuator: 6

Results

	Diam. (nm)	% Number	Width (nm)
Z-Average (d.nm): 199	Peak 1: 165.1	100.0	17.12
1.000	Peak 2: 0.000	0.0	0.000
Intercept: 1.04	Peak 3: 0.000	0.0	0.000

Result quality Refer to quality report



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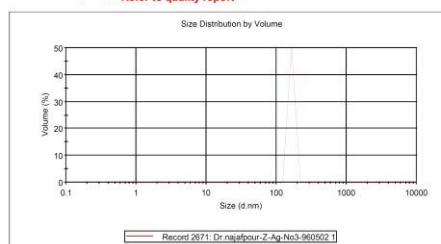


Figure S2 DLS result from the obtained solid from mixing of AgNO_3 (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in CH_2Cl_2 /water (1/5).

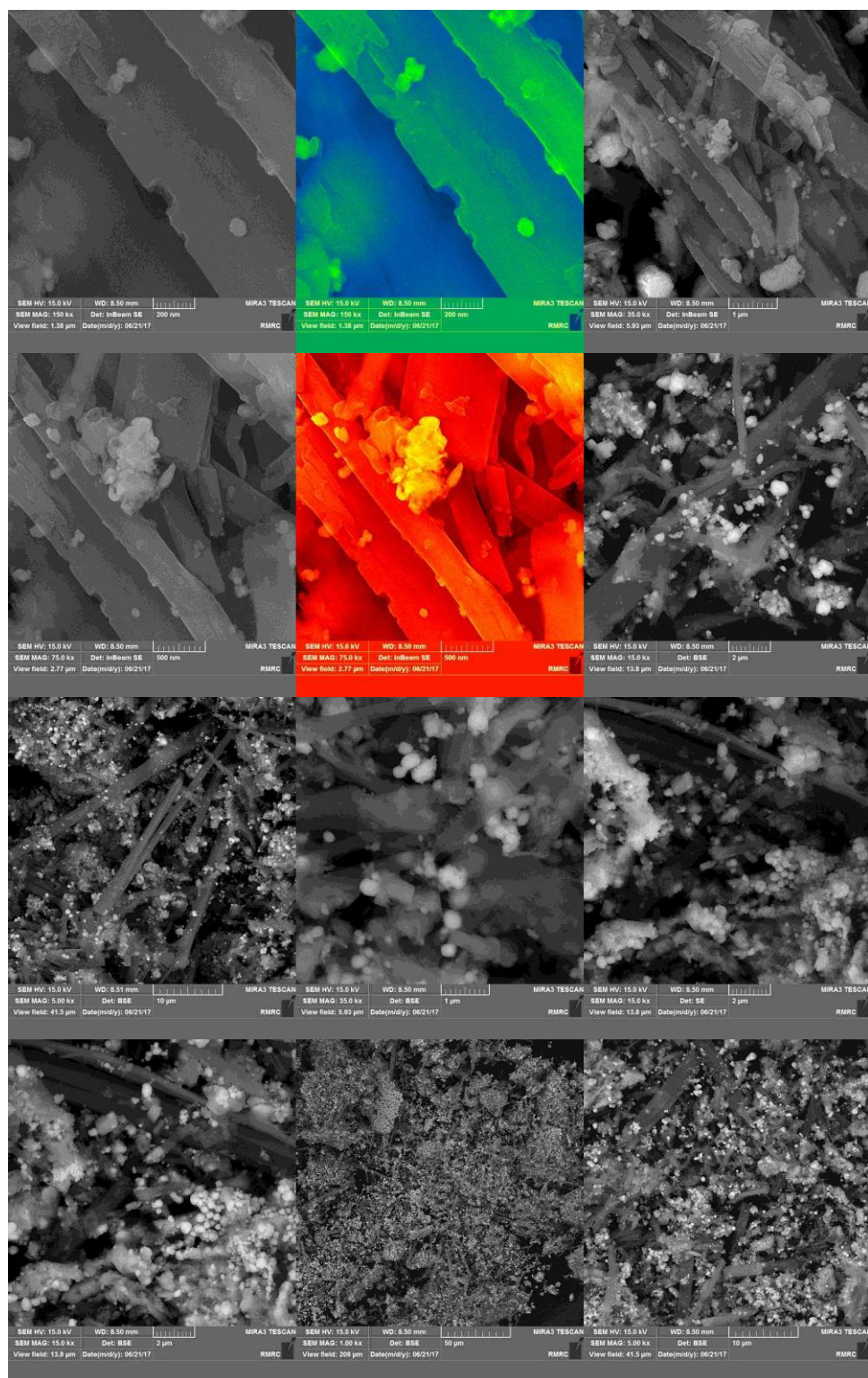


Figure S3 SEM images from the obtained solid from mixing of **1** (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in CH₂Cl₂/water (1/5).

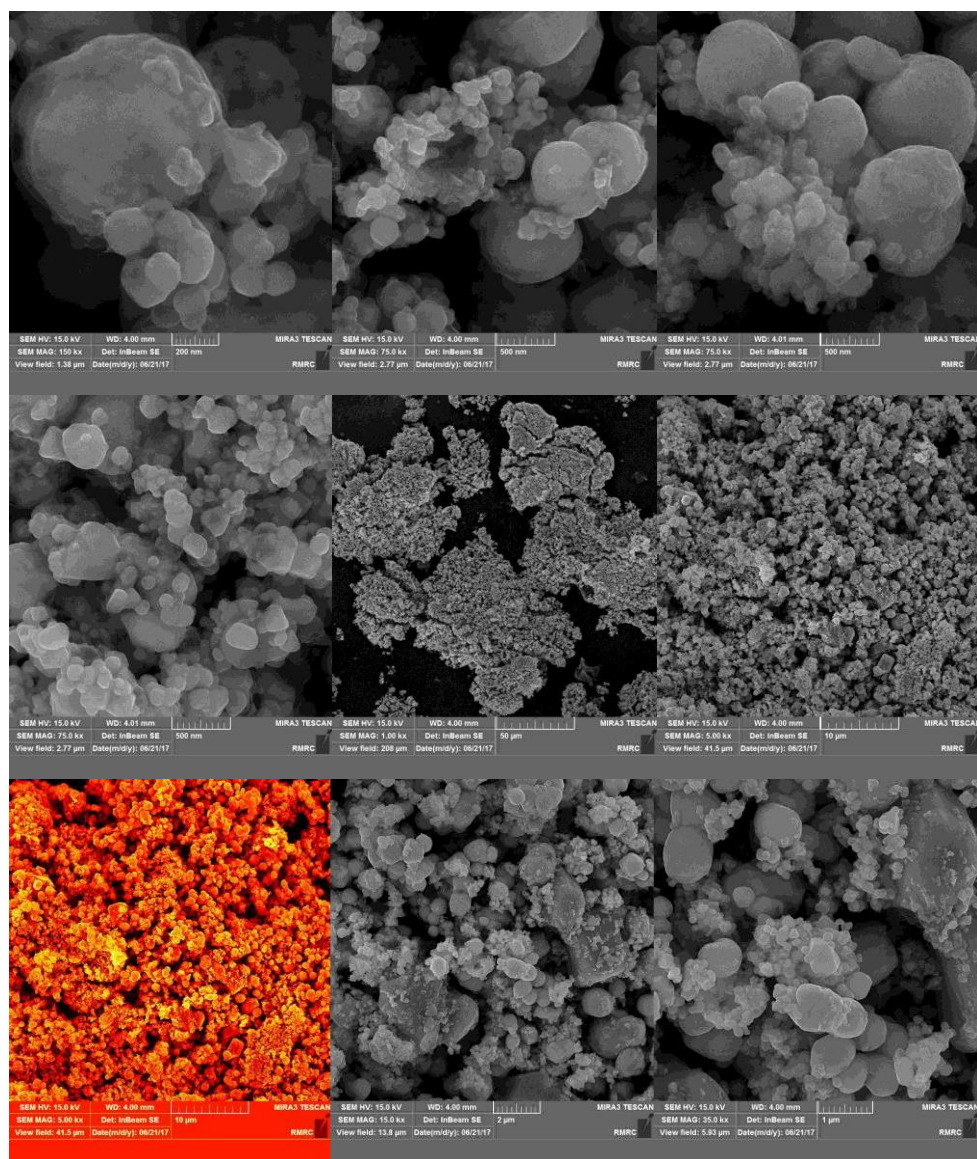


Figure S4 SEM images from the obtained solid from mixing of AgNO_3 (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in $\text{CH}_2\text{Cl}_2/\text{water}$ (1/5).

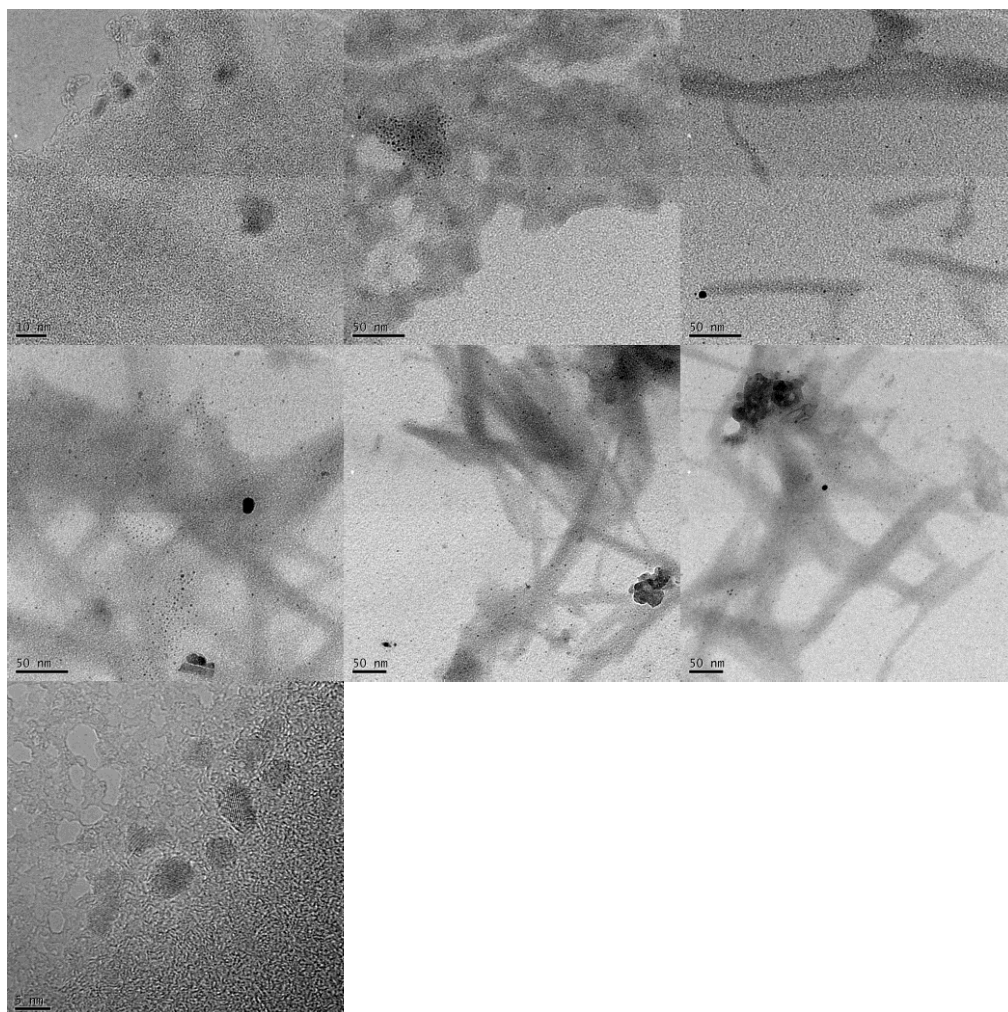


Figure S5 (HR)TEM images from **1**.

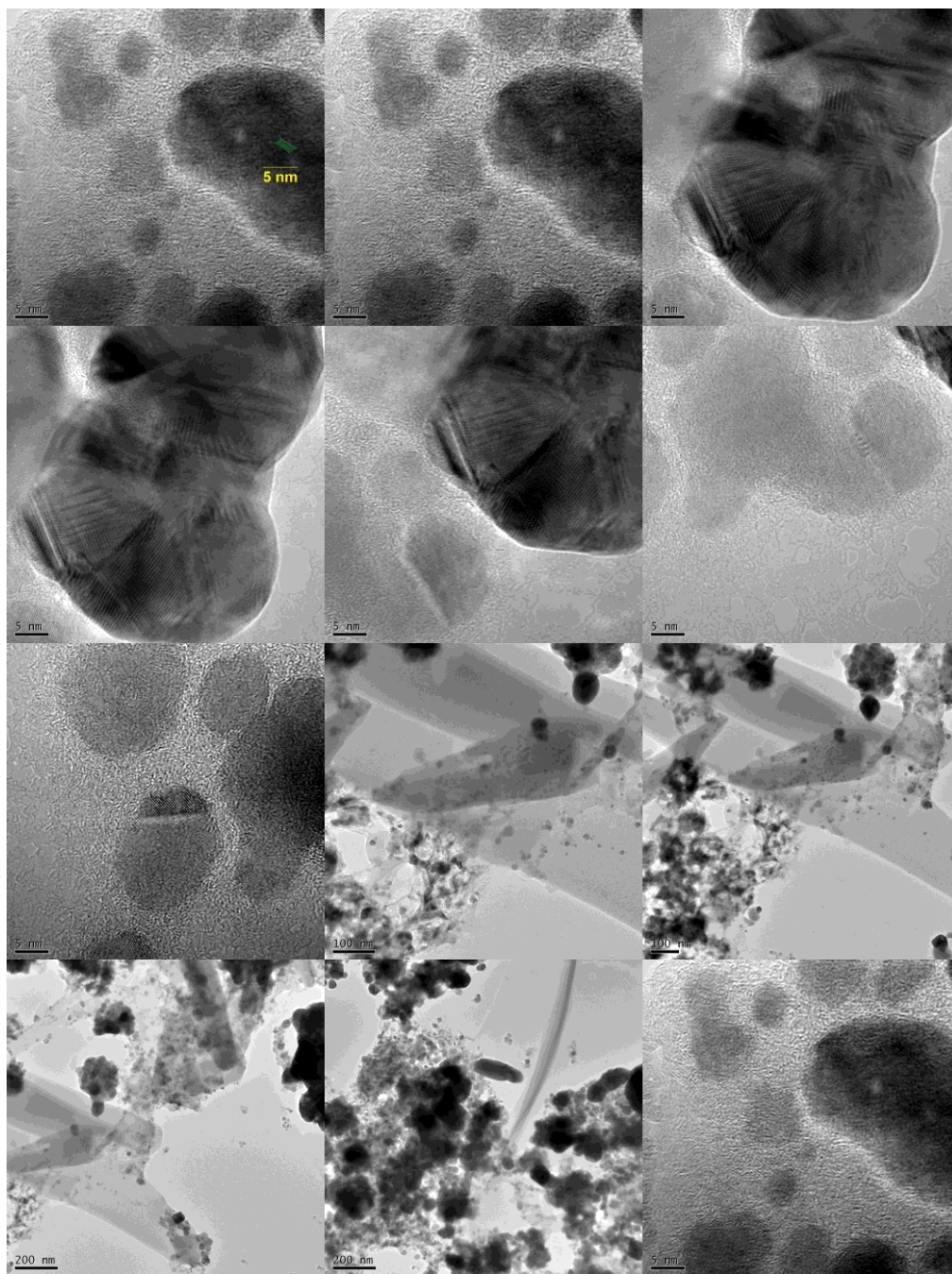


Figure S6 (HR)TEM images from the obtained solid from mixing of **1** (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in CH₂Cl₂/water (1/5).

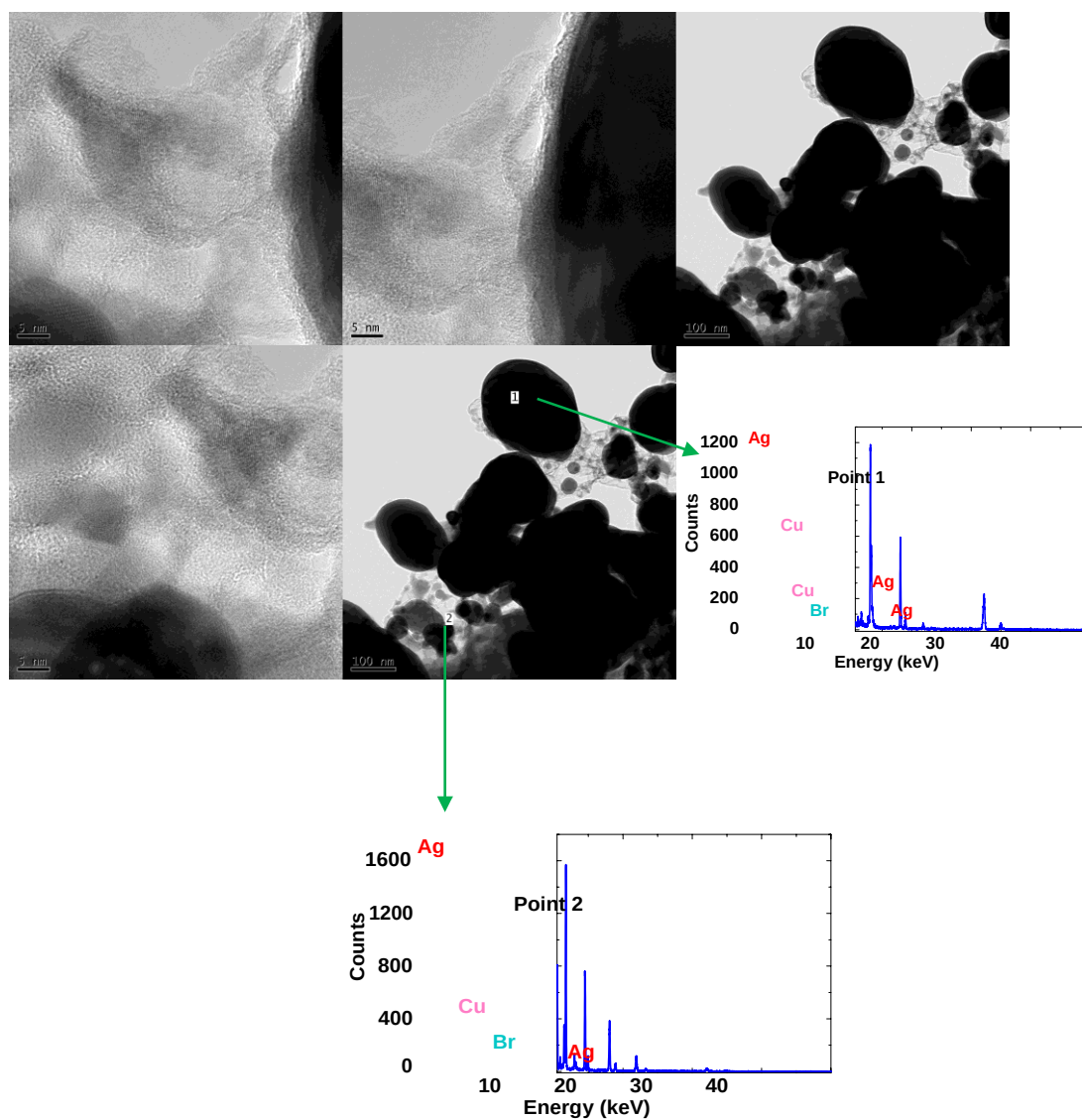


Figure S7 (HR)TEM and EXD-TEM images from the obtained solid from mixing of AgNO_3 (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in $\text{CH}_2\text{Cl}_2/\text{water}$ (1/5).

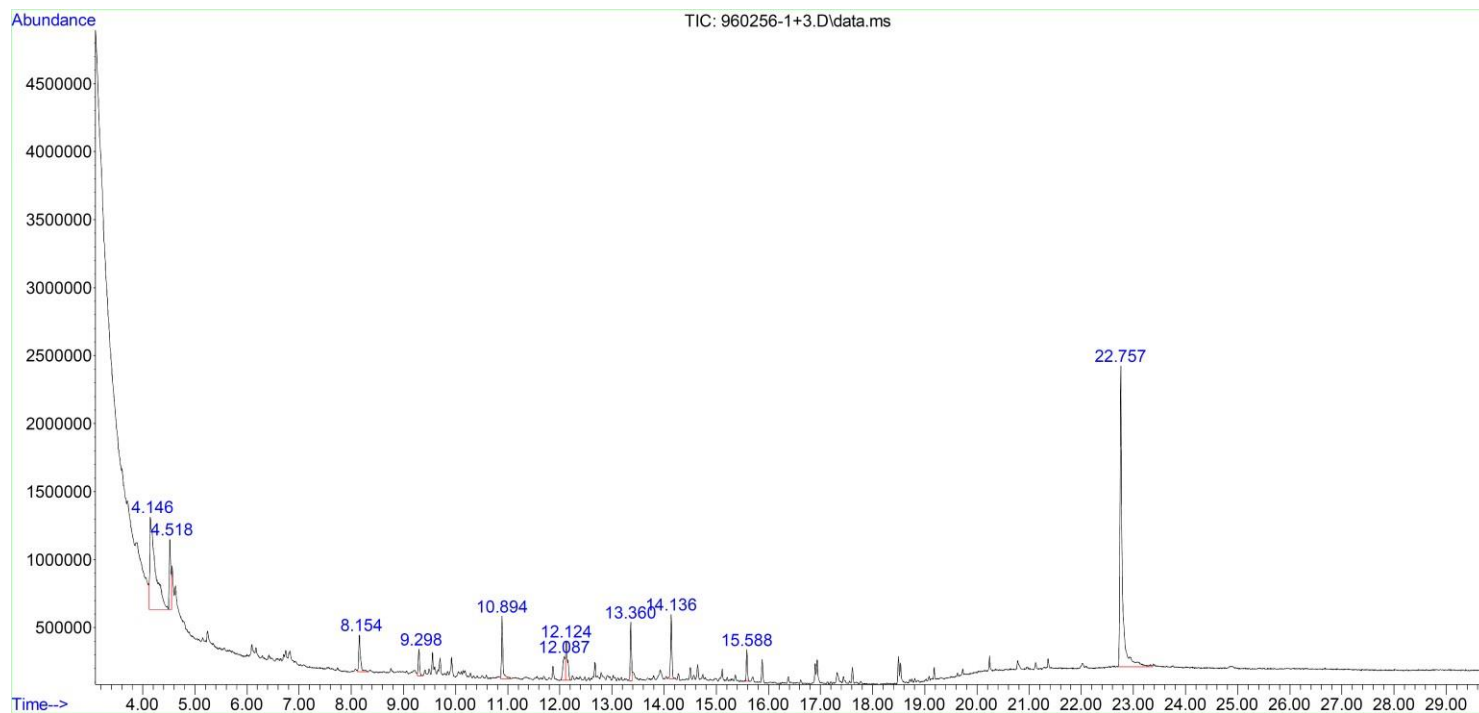


Figure S8 Liquid chromatography-electrospray ionization-mass of mixed reaction of **1** (0.1 mmol), BA (5.0 mmol), Oxone (5.0 mmol), and PT (1.0 mmol) in $\text{CH}_2\text{Cl}_2/\text{water}$ after 2.5 h.

Reference

S1 M. M. Najafpour, M. Hołynska, M. Amini, S. H. Kazemi, T. Lis, M. Bagherzadeh, *Polyhedron*, 2010, **29**, 2837.