Electronic Supplementary Material (ESI) for RSC Advances.

A novel iron(III)-based heterogeneous catalyst for aqueous oxidation of alcohols using molecular oxygen

Debojeet Sahu[a], Ana Rosa Silva[b] and Pankaj Das[a]*

[a]Department of Chemistry, Dibrugarh University, Dibrugarh-786004, Assam, India
[b]CICECO-Aveiro Institute of Materials, University of Aveiro, Portugal

Table S1. Textural data of the silica-based materials determined by BET method.

Materials	Surface area (m^2/g)	Pore volume (cm^3/g)	Pore diameter (nm)
APTES@SiO_2	416	0.65	6.33
Imine@SiO_2	350	0.60	6.20
$FeCl_3$-imine@SiO_2	283	0.43	6.09

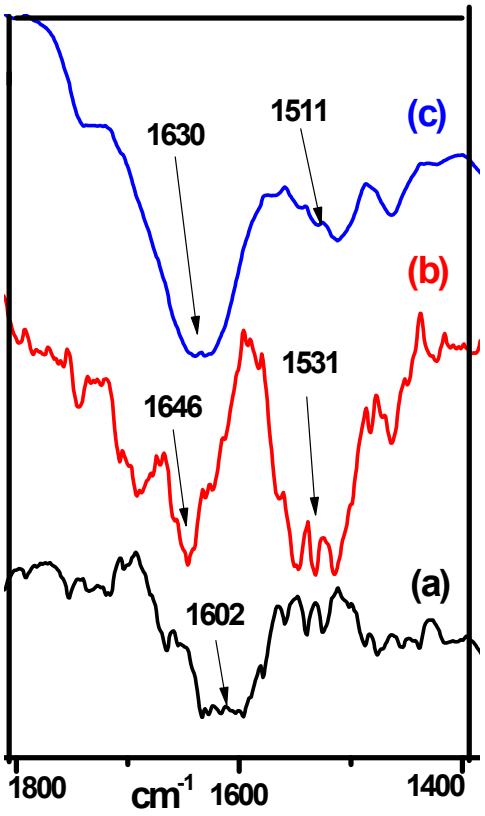


Fig. S1: FT-IR spectra of (a) APTES@SiO_2, (b) imine@SiO_2 and (c) $FeCl_3$-imine@SiO_2.

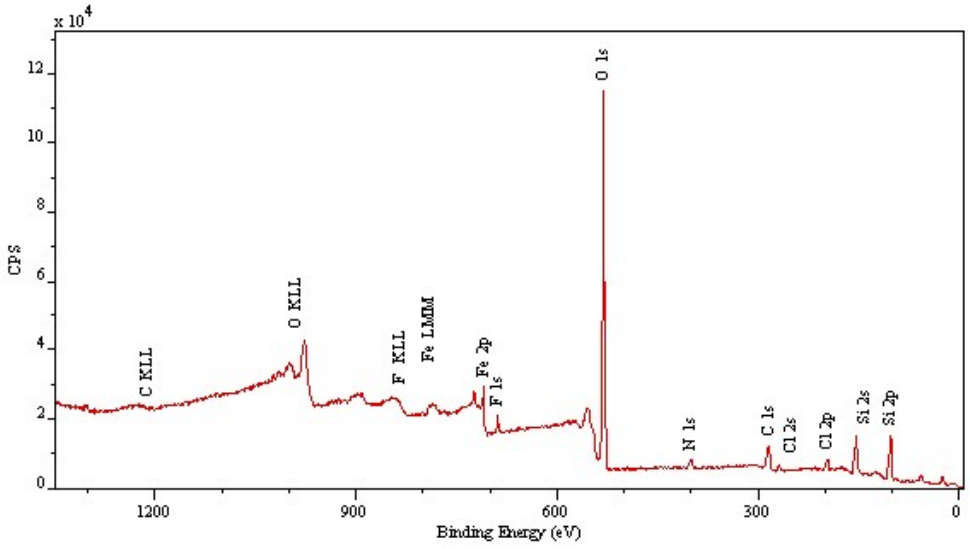


Fig. S2. XPS survey spectrum for $FeCl_3$-imine@SiO_2

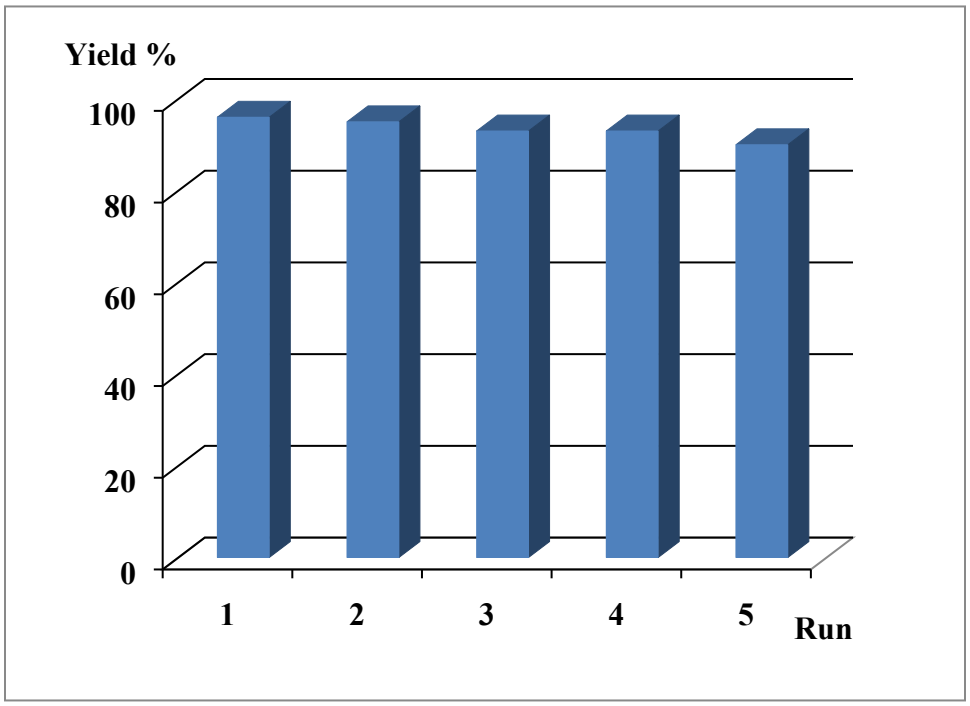
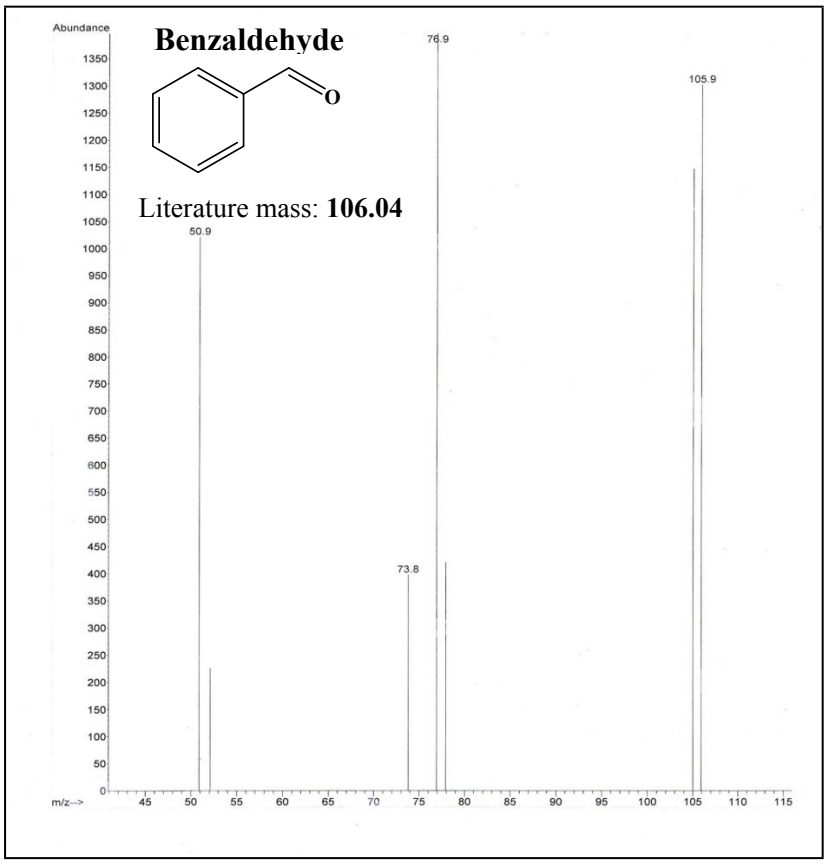
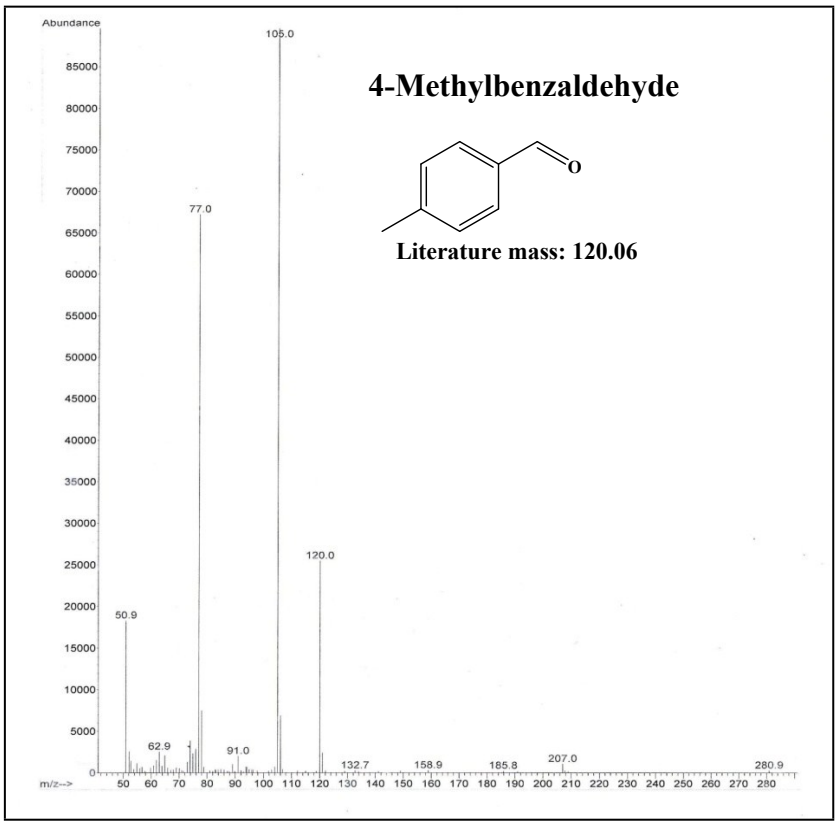
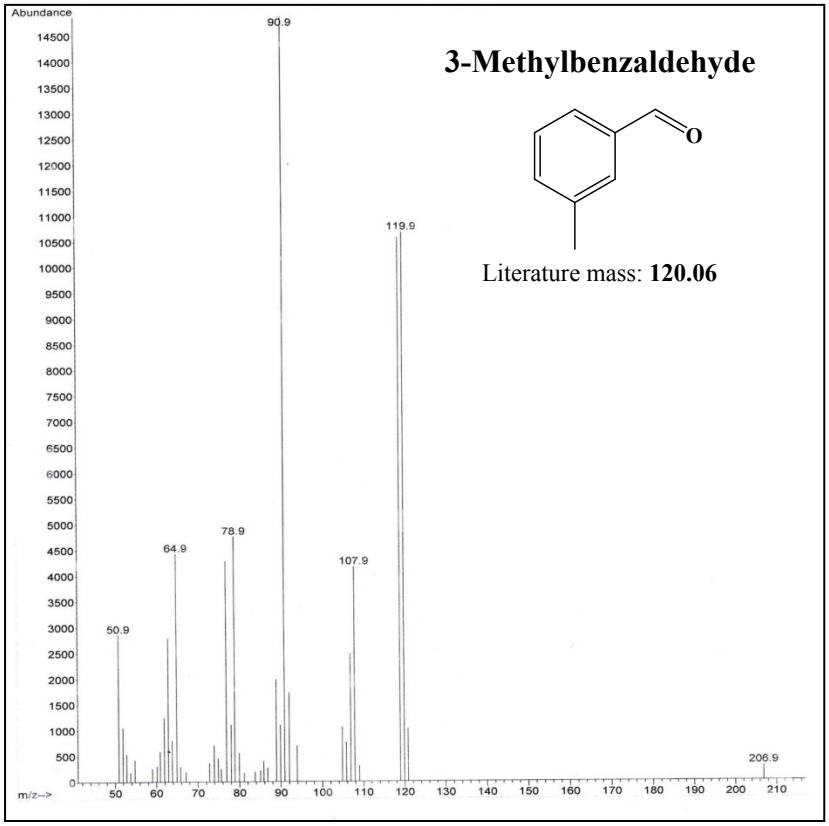


Fig. S3. Bar diagram showing the recyclability of benzyl alcohol oxidation using $FeCl_3$-imine@SiO_2.

MS spectra of the products determined by GC-MS

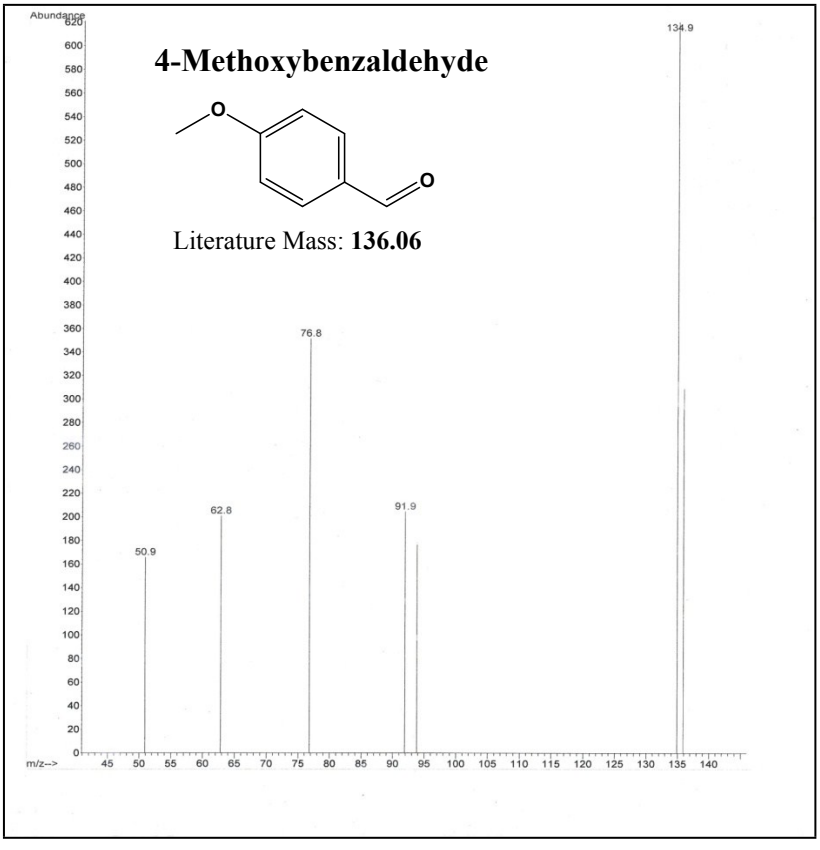






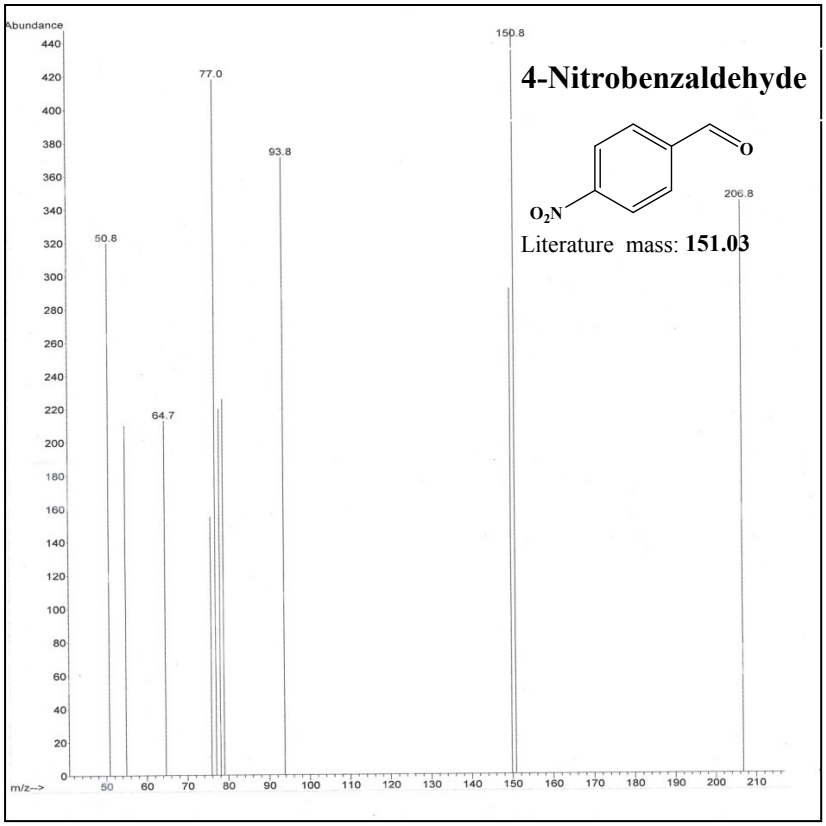
3-Methylbenzaldehyde

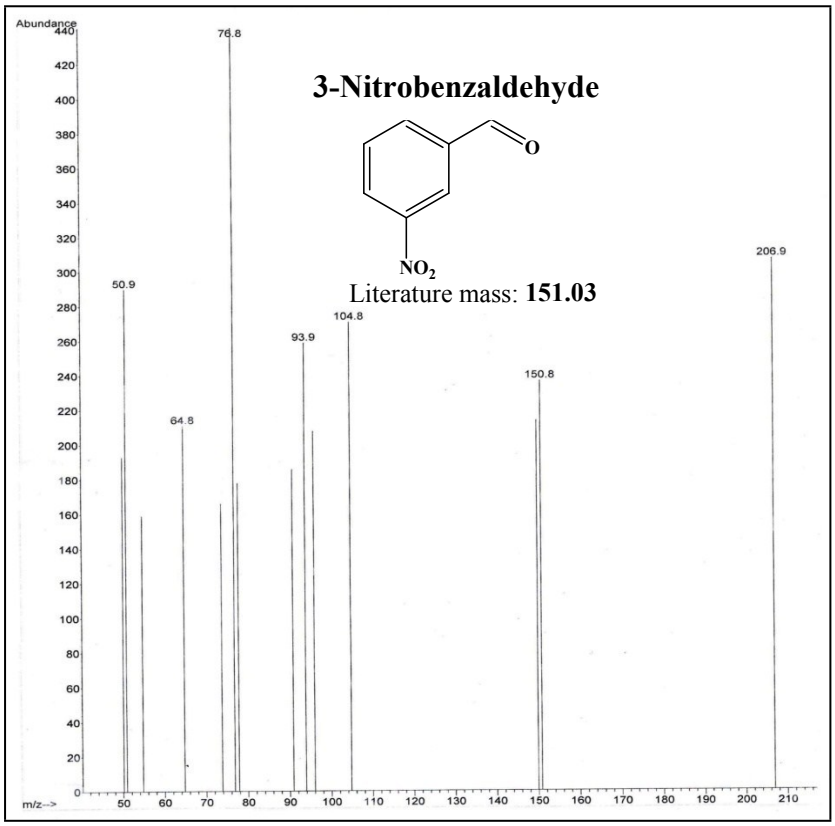
Literature mass: **120.06**



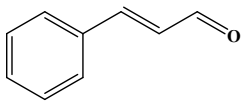
4-Methoxybenzaldehyde

Literature Mass: **136.06**


Abundance
m/z-->
150.8
77.0
93.8
50.8
64.7
206.8
4-Nitrobenzaldehyde
O
O2N
Literature mass: 151.03

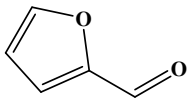

Abundance
m/z-->
76.8
3-Nitrobenzaldehyde
O
NO2
Literature mass: 151.03
206.9
50.9
104.8
93.9
150.8
64.8

Cinnamaldehyde

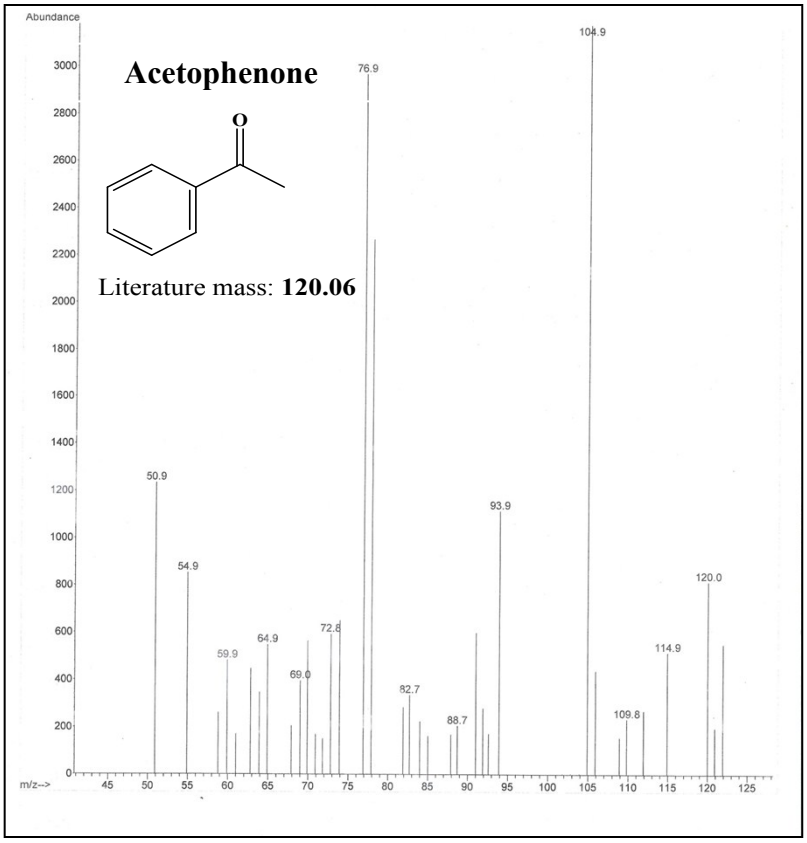


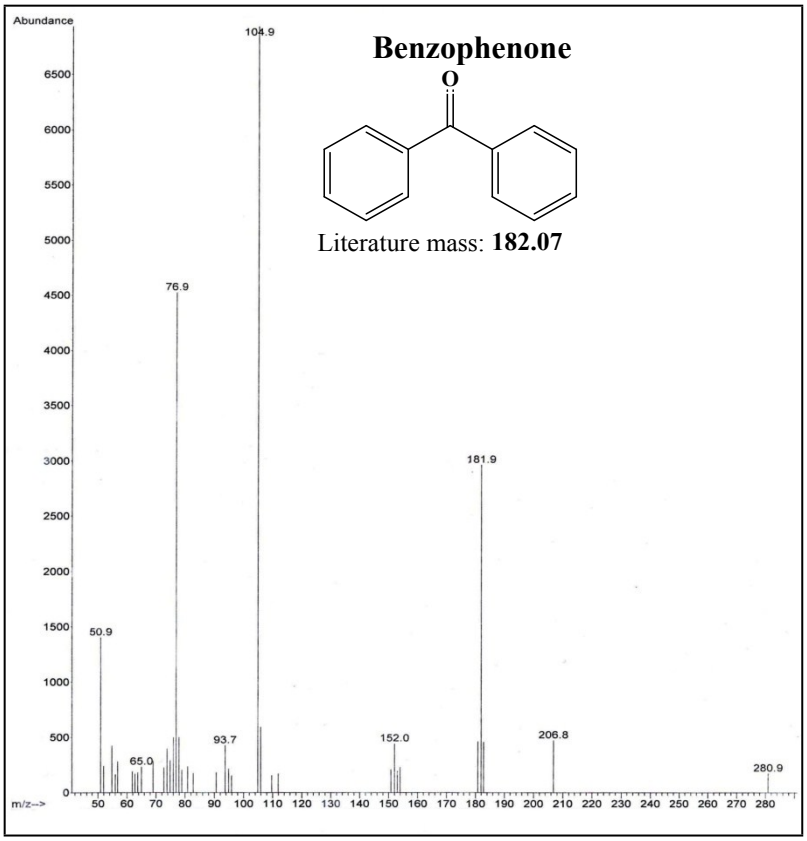
Literature mass: **132.06**

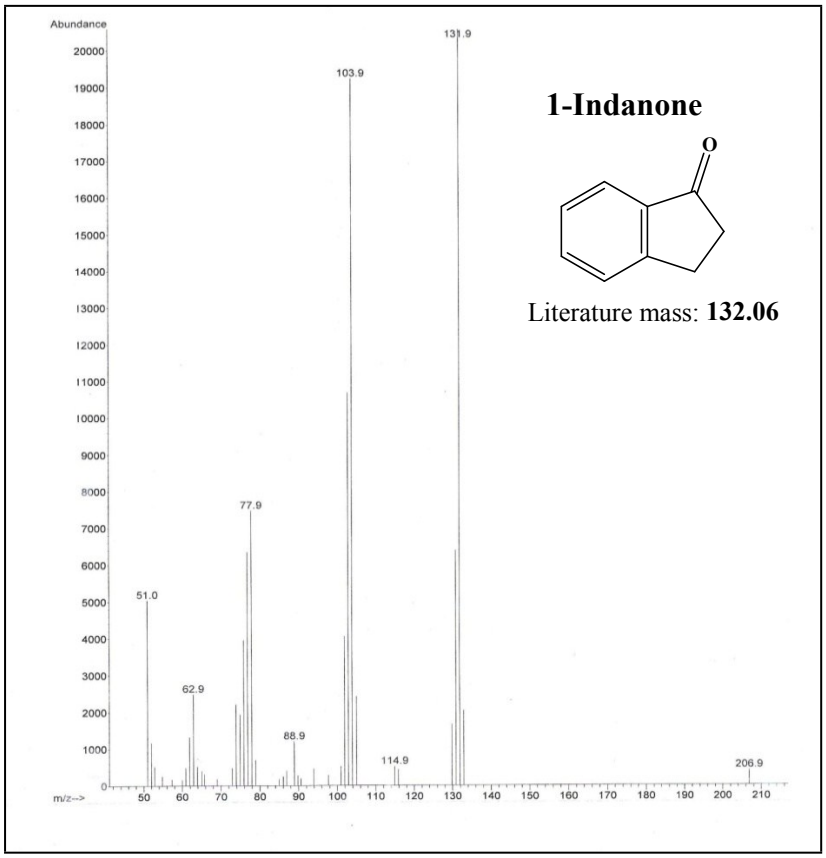
Furfuraldehyde

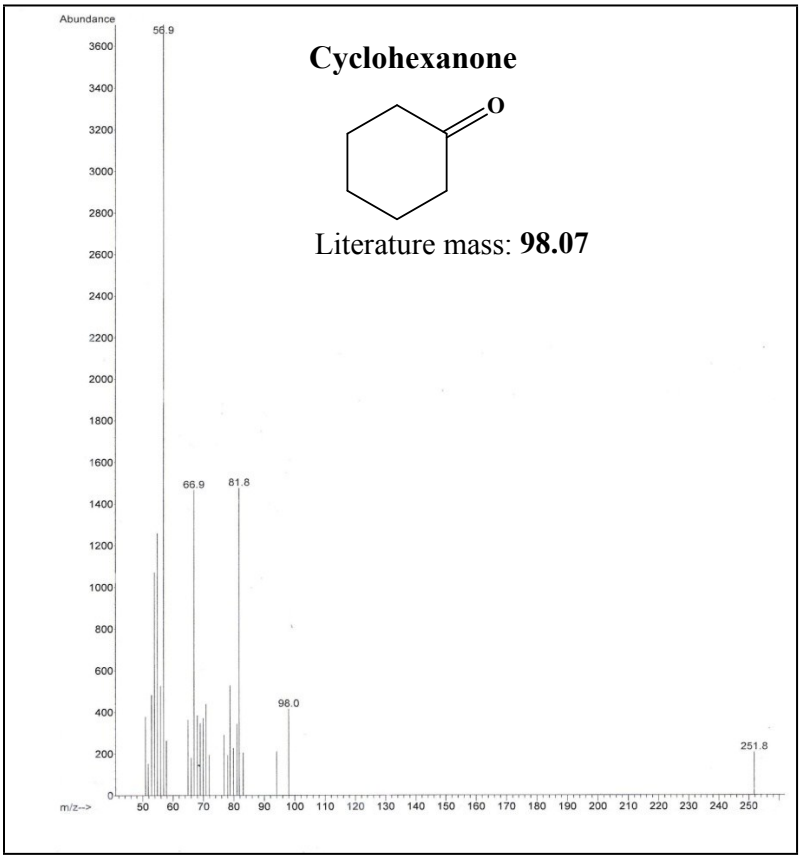


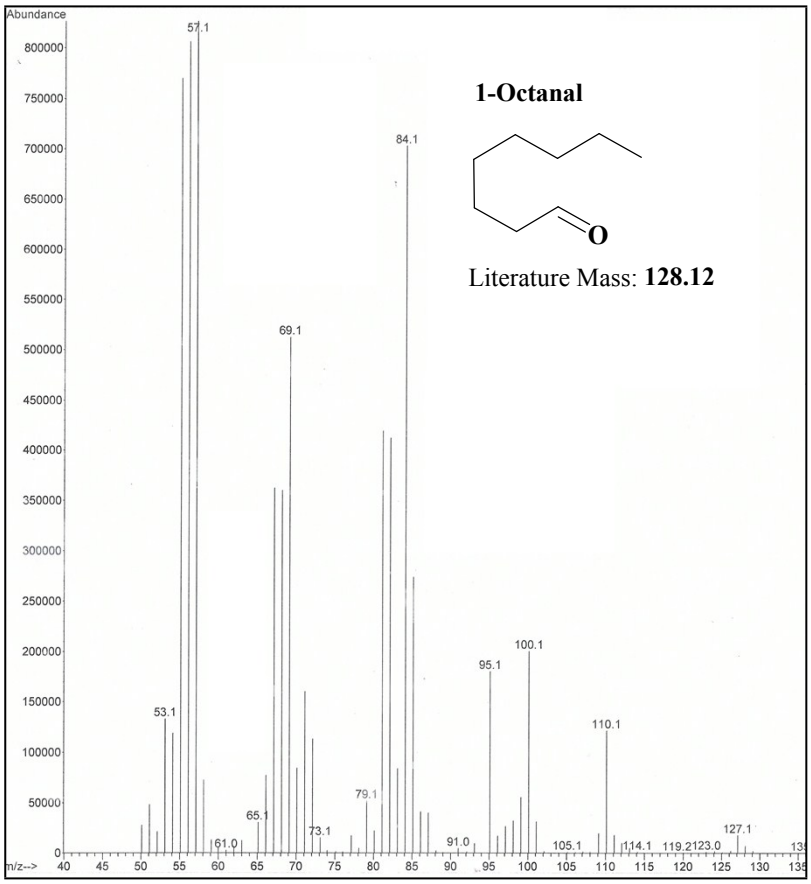
Literature mass: **96.02**

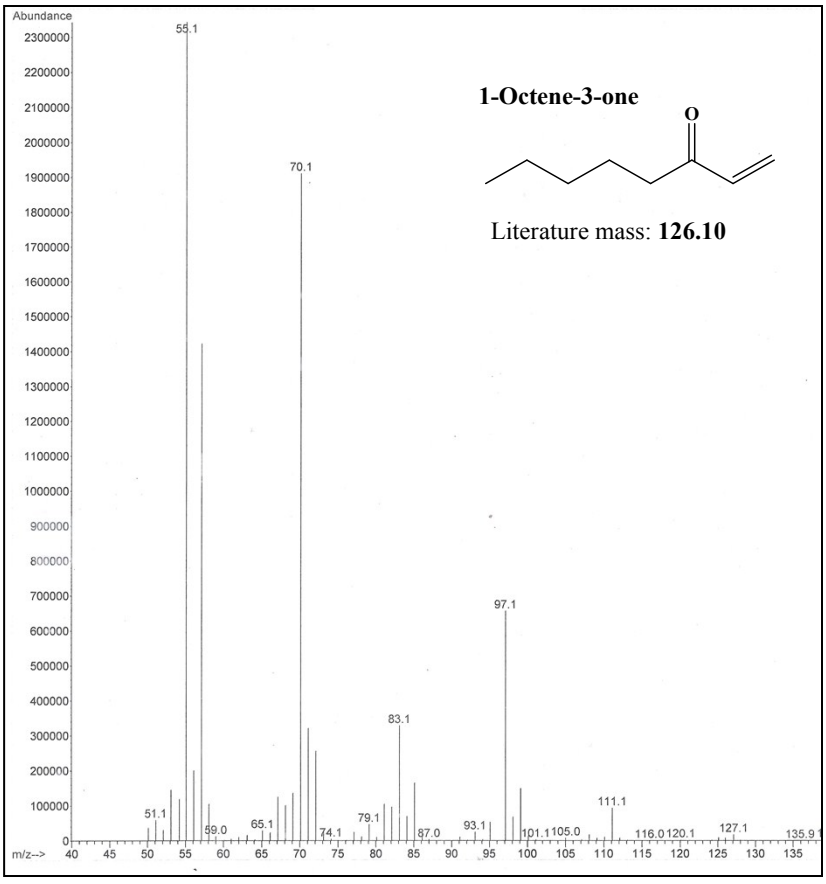

Abundance
Acetophenone
O
Literature mass: 120.06
104.9
76.9
50.9
93.9
54.9
120.0
72.8
64.9
59.9
114.9
69.0
82.7
109.8
88.7
m/z-->


Abundance
Benzophenone
O
Literature mass: 182.07
104.9
76.9
181.9
50.9
93.7
152.0
206.8
65.0
280.9
m/z-->


Abundance
131.9
103.9
77.9
51.0
62.9
88.9
114.9
206.9
m/z-->
1-Indanone
O
Literature mass: 132.06


Abundance
56.9
66.9
81.8
98.0
251.8
m/z-->
Cyclohexanone
O
Literature mass: 98.07


Abundance
57.1
84.1
69.1
100.1
95.1
53.1
110.1
79.1
65.1
73.1
61.0
91.0
105.1
114.1
119.2
123.0
127.1
m/z-->
1-Octanal
O
Literature Mass: 128.12


Abundance
55.1
70.1
97.1
83.1
111.1
51.1
59.0
65.1
79.1
74.1
87.0
93.1
101.1
105.0
116.0
120.1
127.1
135.9
m/z-->
1-Octene-3-one
O
Literature mass: 126.10