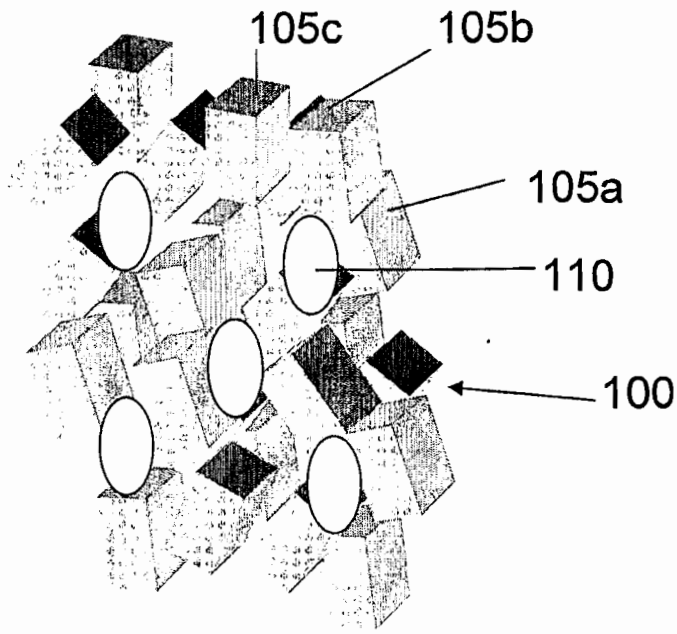


Figure 1A

(PRIOR ART)

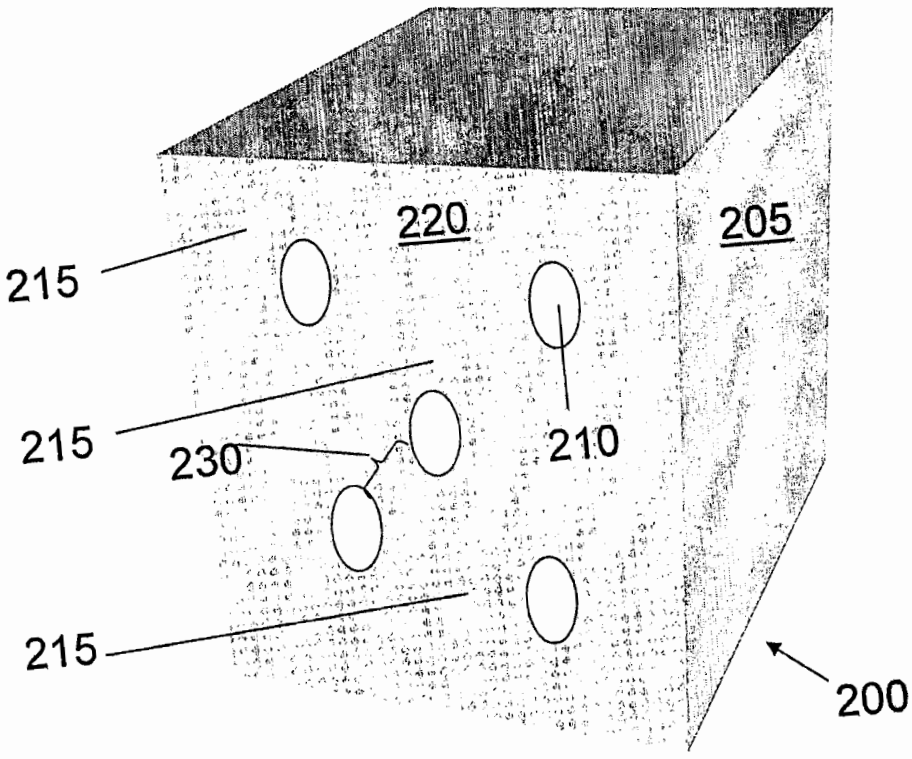


Figure 1B

Figure 1C

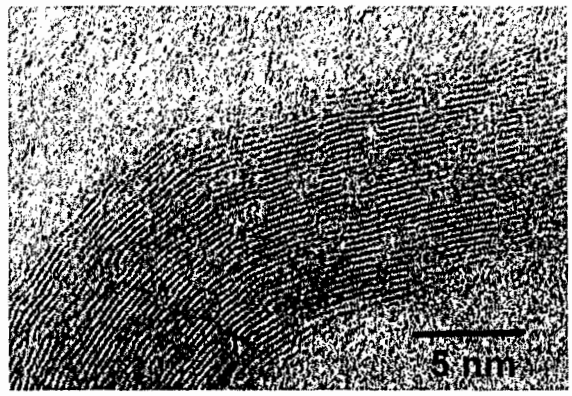


Figure 1D

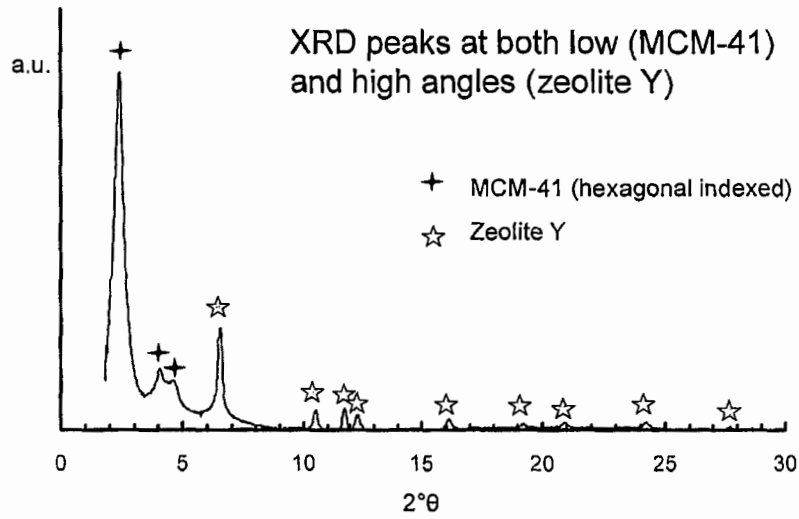

XRD peaks at both low (MCM-41) and high angles (zeolite Y)
a.u.
MCM-41 (hexagonal indexed)
Zeolite Y
0
5
10
15
20
25
30
2°θ

Figure 2

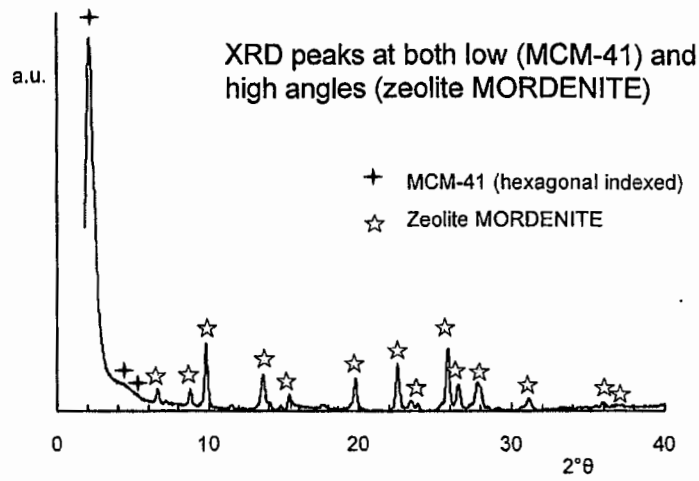

XRD peaks at both low (MCM-41) and high angles (zeolite MORDENITE)
a.u.
MCM-41 (hexagonal indexed)
Zeolite MORDENITE
0
10
20
30
40
2°θ

Figure 3

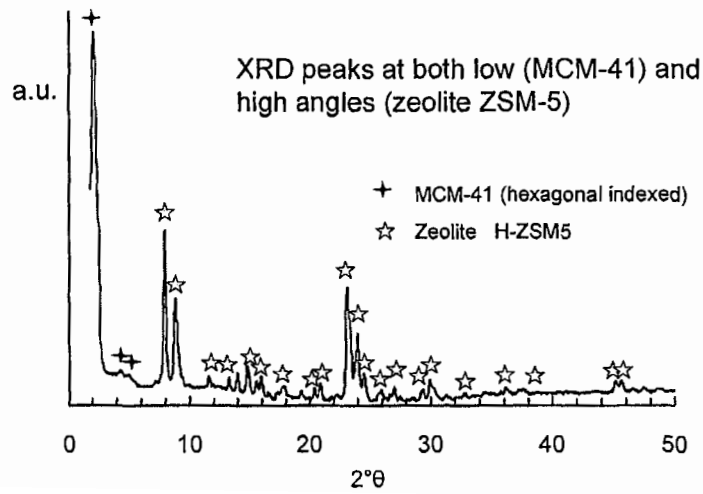

a.u.
XRD peaks at both low (MCM-41) and high angles (zeolite ZSM-5)
MCM-41 (hexagonal indexed)
Zeolite H-ZSM5
0
10
20
30
40
50
2°θ

Figure 4

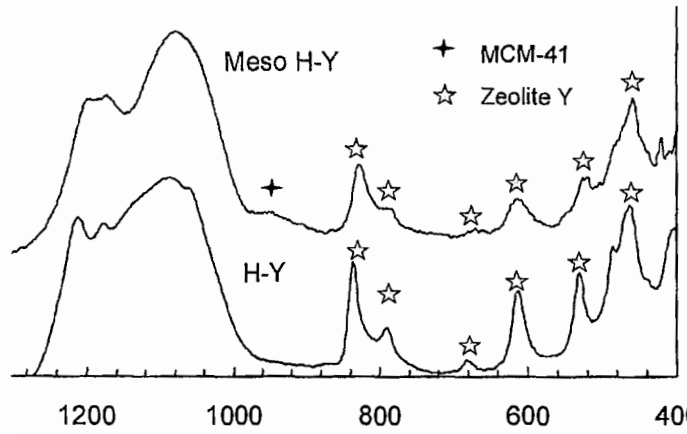


Figure 5

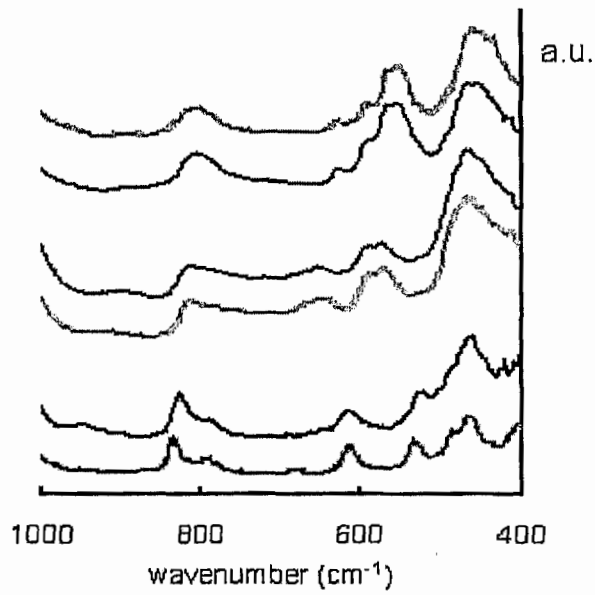


Figure 6

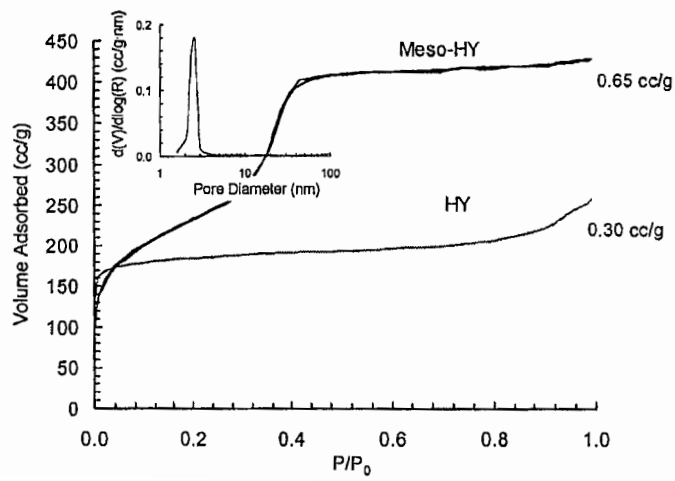

Meso-HY
0.65 cc/g
HY
0.30 cc/g
Volume Adsorbed (cc/g)
P/P0
d(V)/dlog(R) (cc/g nm)
Pore Diameter (nm)

Figure 7

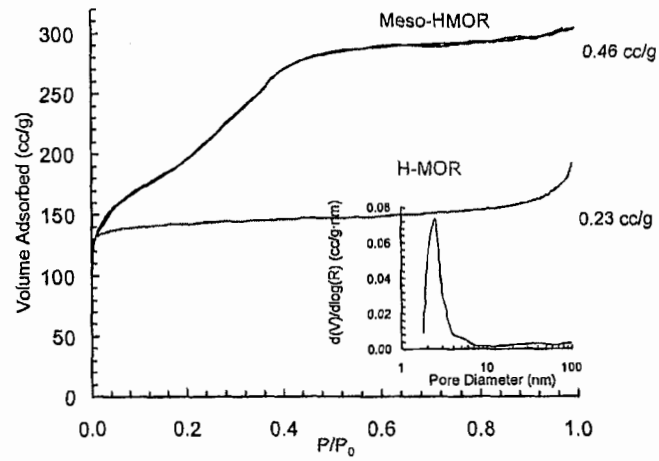

Meso-HMOR
0.46 cc/g
H-MOR
0.23 cc/g
Volume Adsorbed (cc/g)
300
250
200
150
100
50
0
0.0
0.2
0.4
0.6
0.8
1.0
P/P0
d(V)/dlog(R) (cc/g-nm)
0.08
0.06
0.04
0.02
0.00
1
10
100
Pore Diameter (nm)

Figure 8

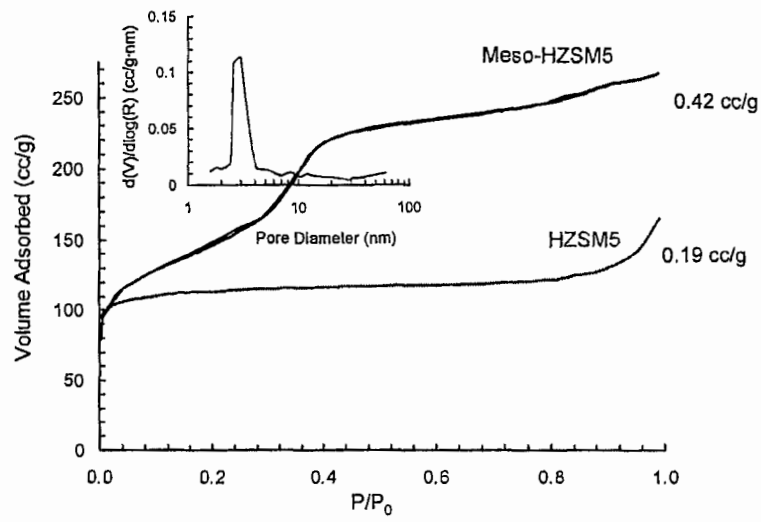

Meso-HZSM5
0.42 cc/g
HZSM5
0.19 cc/g
Volume Adsorbed (cc/g)
P/P0
d(V)/dlog(R) (cc/g·nm)
Pore Diameter (nm)

Figure 9

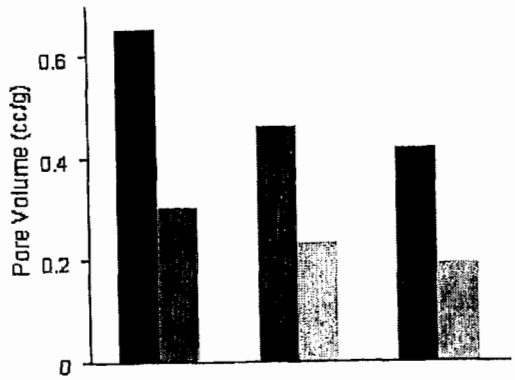


Figure 10

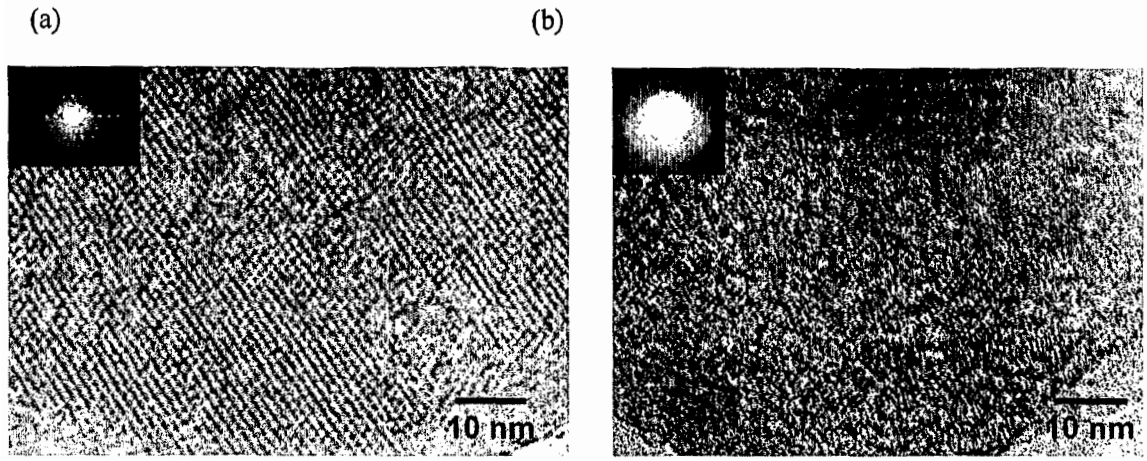


Figure 11

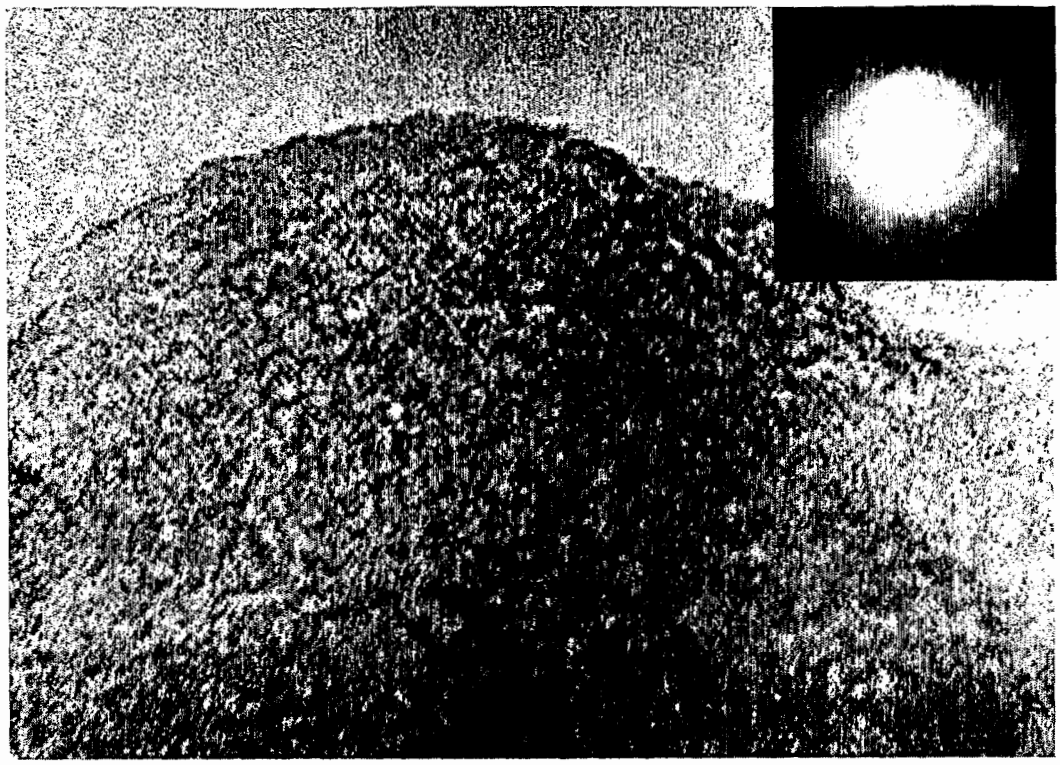


Figure 12

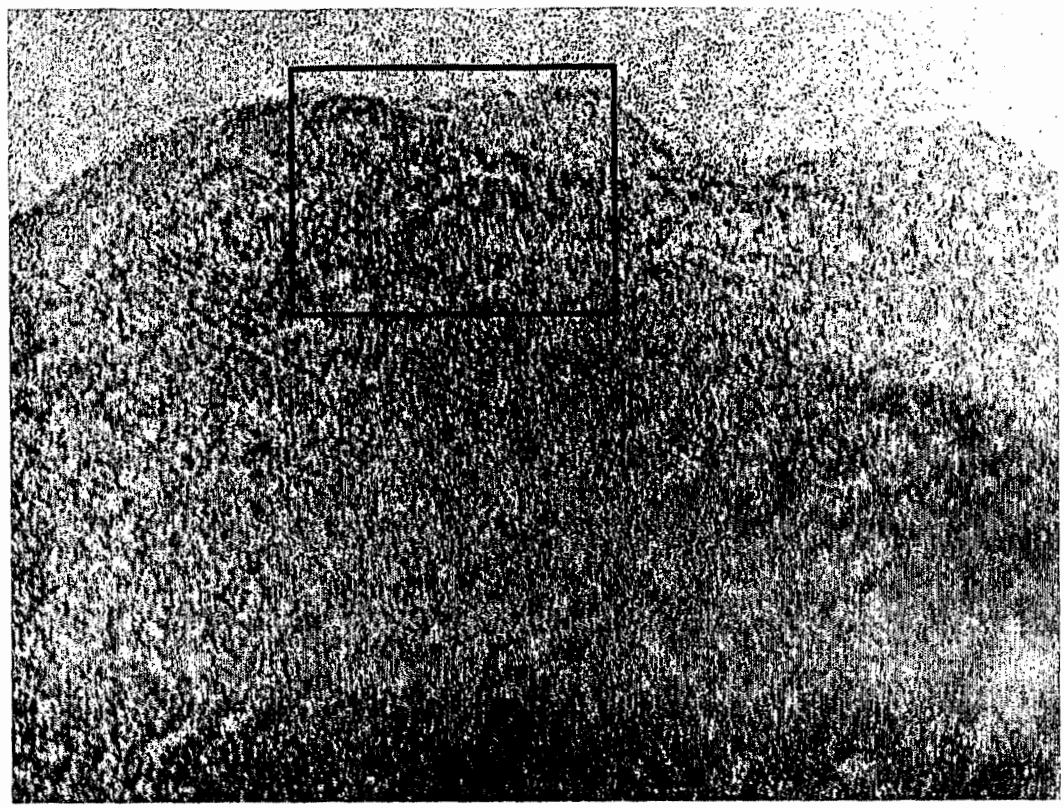


Figure 13

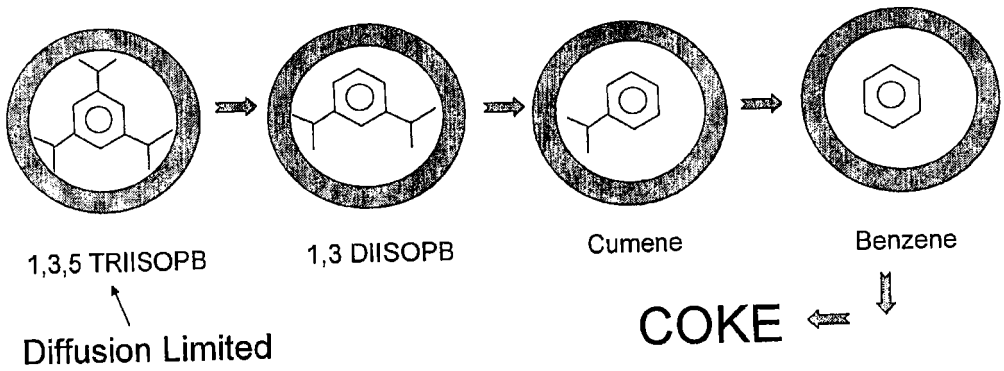

1,3,5 TRIISOPB
1,3 DIISOPB
Cumene
Benzene
COKE
Diffusion Limited

Figure 14

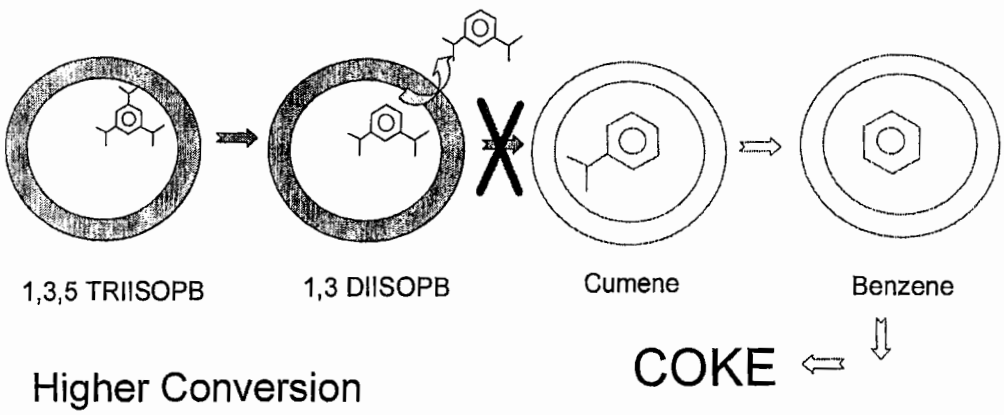

1,3,5 TRIISOPB
1,3 DIISOPB
Cumene
Benzene
COKE
Higher Conversion

Figure 15

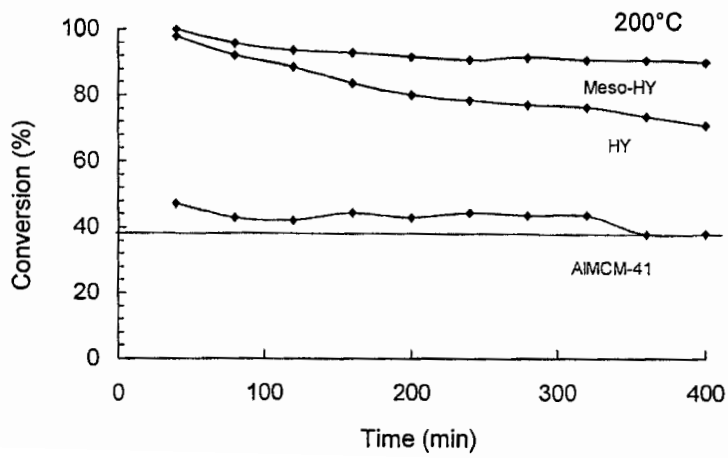

200°C
Meso-HY
HY
AlMCM-41
Conversion (%)
Time (min)
0
20
40
60
80
100
0
100
200
300
400

Figure 16

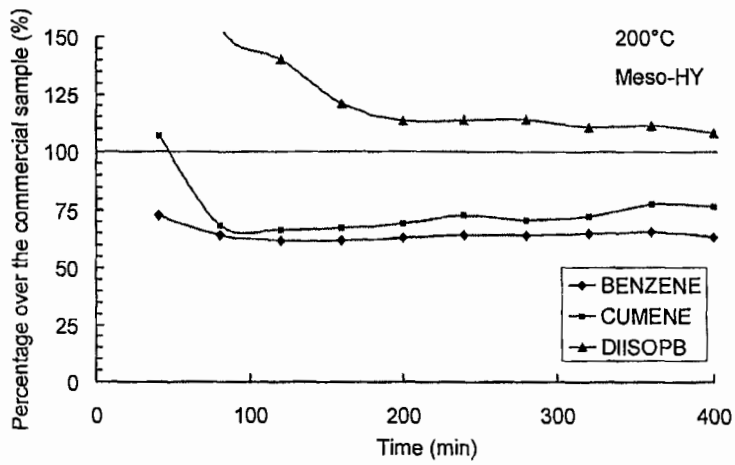

Percentage over the commercial sample (%)
150
125
100
75
50
25
0
0
100
200
300
400
Time (min)
200°C
Meso-HY
BENZENE
CUMENE
DIISOPB

Figure 17

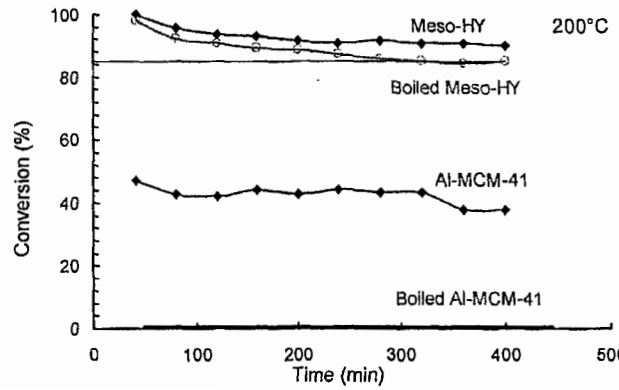

100
80
60
40
20
0
Conversion (%)
0
100
200
300
400
500
Time (min)
Meso-HY
200°C
Boiled Meso-HY
Al-MCM-41
Boiled Al-MCM-41

Figure 18

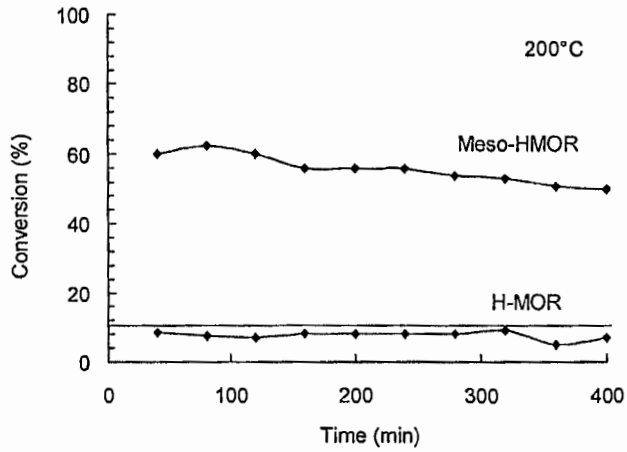

100
80
60
40
20
0
Conversion (%)
200°C
Meso-HMOR
H-MOR
0
100
200
300
400
Time (min)

Figure 19

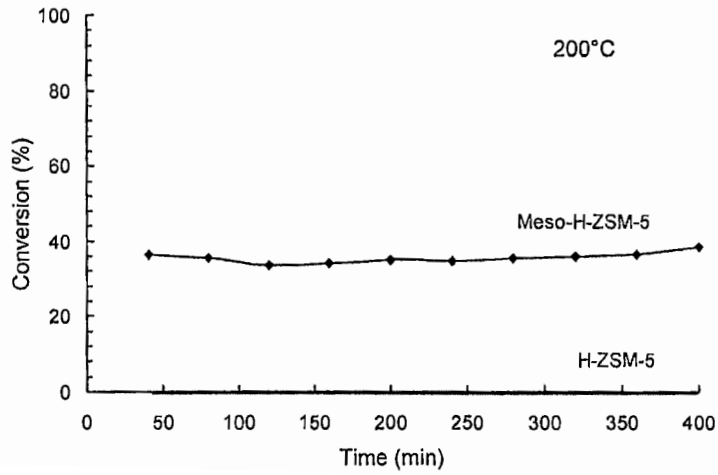
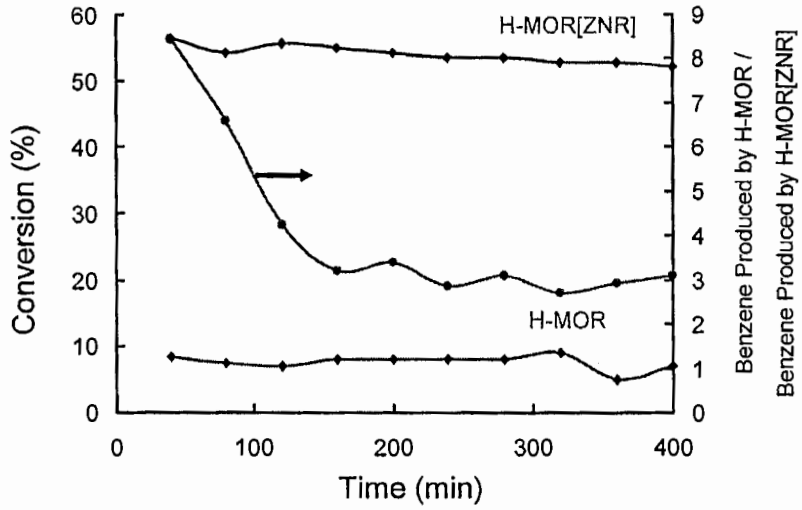

100
80
60
40
20
0
Conversion (%)
200°C
Meso-H-ZSM-5
H-ZSM-5
0
50
100
150
200
250
300
350
400
Time (min)

Figure 20A


H-MOR[ZNR]
H-MOR
Conversion (%)
Benzene Produced by H-MOR / Benzene Produced by H-MOR[ZNR]
Time (min)
0
10
20
30
40
50
60
0
1
2
3
4
5
6
7
8
9
0
100
200
300
400

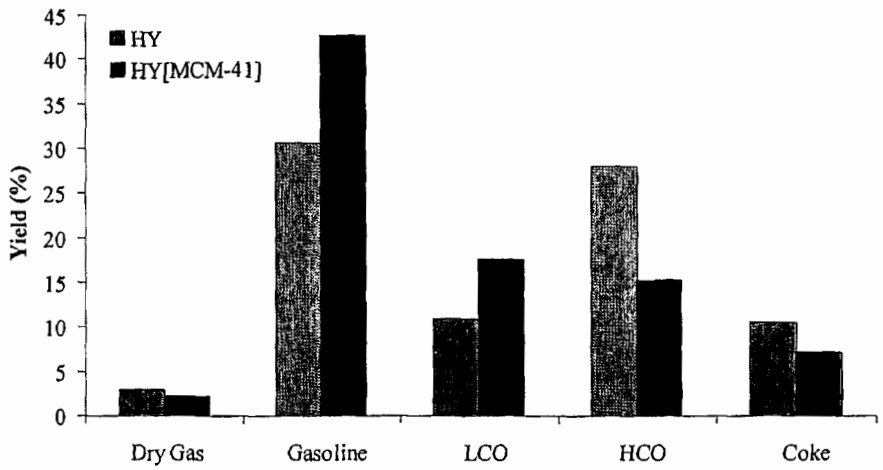


Figure 20B: depicts microactivity test (MAT) results of a conventional fully crystalline zeolite H-Y (Si/Al=15) and its fully crystalline mesostructured version H-Y[MCM-41].

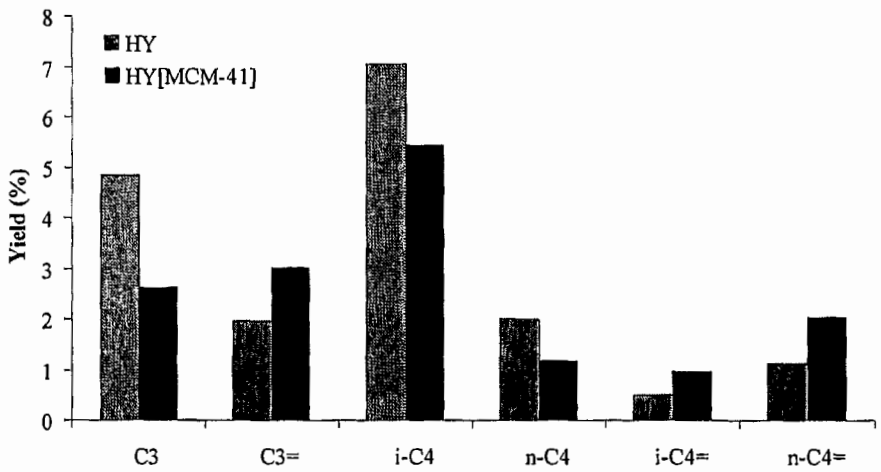
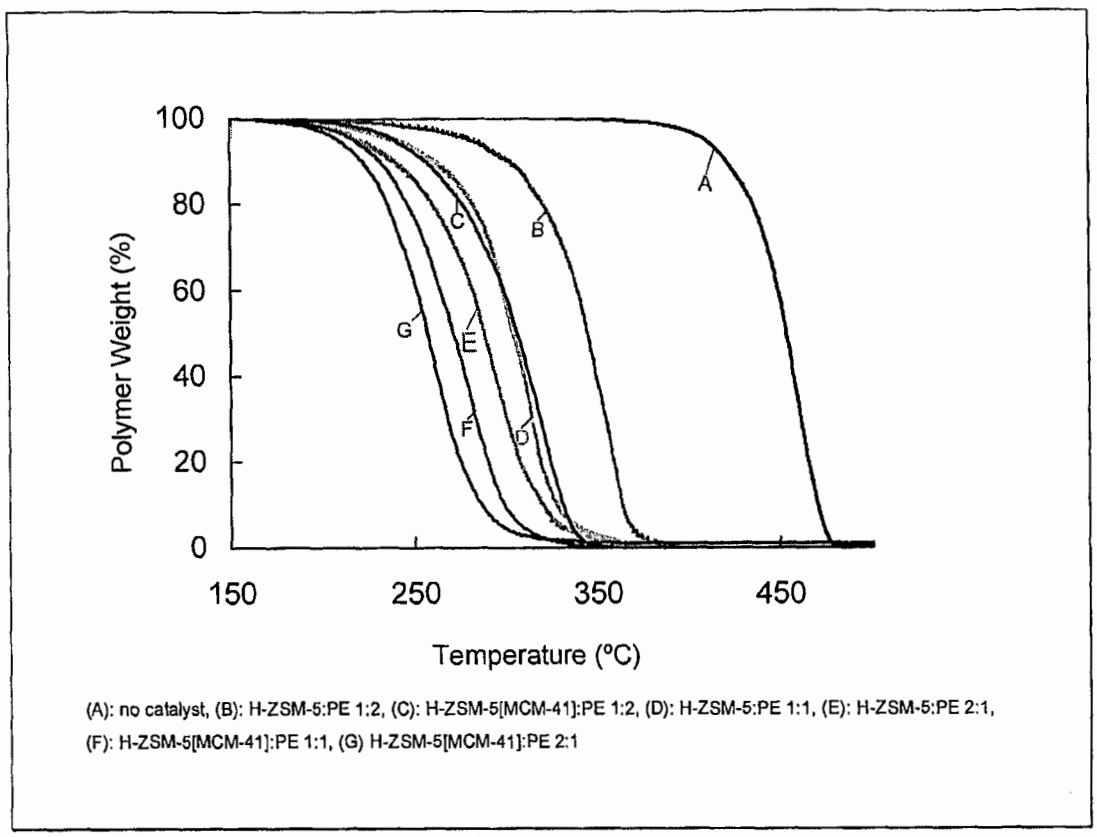


Figure 20C: depicts the composition of the LPG fraction obtained by Microactivity test (MAT) of a conventional fully crystalline zeolite H-Y (Si/Al=15) and its fully crystalline mesostructured version H-Y[MCM-41].

Figure 21



(A): no catalyst, (B): H-ZSM-5:PE 1:2, (C): H-ZSM-5[MCM-41]:PE 1:2, (D): H-ZSM-5:PE 1:1, (E): H-ZSM-5:PE 2:1, (F): H-ZSM-5[MCM-41]:PE 1:1, (G) H-ZSM-5[MCM-41]:PE 2:1

Figure 22

