

/

03 / 12 / 2007

27 / 05 / 2007

## ABSTRACT

The catalyst was prepared from red bentonite ore after the removal of unreactive materials toward catalysis (carbonate and bicarbonate). This catalyst was used in the catalytic treatment of naphtha from (Baba) Kirkuk . The naphtha was passed to the reactor in the vapour phase and treated at (450, 500 and 550)° C at constant rate.

The hydrocarbon composition for the treated naphtha samples were studied by determining the amount of n-paraffins, aromatics and olefinics. Moreover additional measurments of refractive index and density were determined. The chemical structure of n-paraffins were analysed using gas chromatography (GC) depending on the (UOP) standard methods (UOP-690). Olefinic content was also determined using standard American method ASTM-D1492. The paraffins amount increasd up to (48.913%) in the treated naphtha, compared with (39.4065%) in the untreated naphtha. Aromatic hydrocarbons reached up to (22.5773%), compared with 11.8843 % in the untreated naphtha, with the amount of naphthenic to 28.5097 % in the treated naphtha compared with 48.7092 % in the untreated naphtha . The amount of olefinic hydrocarbons increased up to 2.5 % at (550)°C compared with (0.0 %) in the untreated naphtha.



°(550 500 450)

.(GC)

°550 °500

% 0.0

% 2.5

°(550)

...

(1)





(2)

°(188-40)

(60-50)

(3)

:

(VIII)

<sup>(4)</sup>Touville

(Fe,Co &Ni)

<sup>(5)</sup> Gillespie

(6)

°(600 - 400)

(5A°)

<sup>(7)</sup> Wright

(Thallium-promoted Iron)

(C<sub>16</sub>-C<sub>6</sub>)

(8)



---

---

Al<sub>2</sub>O<sub>3</sub>/ SiO<sub>2</sub>

35

. °(550-450)

-: (1)

(10 9)

(11)

-: (2)

-: -

(%10)

( : 12:1)

-: (SHMP ) -

( 50)

( 10)

( 500)

( 1)

(SHMP)

%10

100

(15)

( 200)



( -: - )

°(300) °(120)  
°(700)  
(12)

-: (3)  
30  
°(1400-100) ( 4 x 30)  
(350)  
( 150) (450)  
(4)

450)  
(550 500)  
:  
(4)

-:

-: 1.4  
 10 10  
 (60-55)

( )

-: 2.4

-:  
 -: 1.2.4  
 ( 250) 15  
 ( 0.5)

$N = (Wt. \times 1000) / (eq. \text{ Wt.} \times V)$

-:  
 = N -:  
 = Wt.  
 = Eq. Wt.  
 = V  
2.4.4

( )

: (13) 3.4

( 25) ( 8)  
 ( 10) ( 20)  
 (60-50) ( 30)

---

---

( 15)

( 10)

(5)

(42)

24

(60)

(10)

(UOP-690)

**4.4**

(ATAGO, JAPAN)

(20)

**5.4**

( 5)

:

$d = w / v$

(<sup>3</sup> / ) = d :

( ) = w

(<sup>3</sup> ) = v

(14)

( ..... )  
)  
(550 500 450) ((  
(1)

(1)

<b>ASTM-D1492</b>				
0.0	0.0	9.4	16.1	
0.58	0.69	7.23	26.76	<b>450</b>
1.44	1.52	12.16	26.19	<b>500</b>
2.62	2.68	20.72	26.85	<b>550</b>

.(ASTM-D1492)

2.5

.( )

°550 500



°450

(GC)

(2)

C<sub>6</sub>)

(500 450)

C<sub>14</sub> C<sub>13</sub> C<sub>12</sub> C<sub>11</sub>

(C<sub>9</sub> C<sub>8</sub> C<sub>7</sub>

.(2 1 )

(2)

Sample		450	500
n-C <sub>5</sub>	0.040	0.162	0.108
n-C <sub>6</sub>	0.0169	2.937	1.776
n-C <sub>7</sub>	0.140	14.806	6.632
n-C <sub>8</sub>	3.289	23.722	14.572
n-C <sub>9</sub>	13.178	21.860	19.776
n-C <sub>10</sub>	23.459	17.337	23.332
n-C <sub>11</sub>	31.491	9.991	17.635
n-C <sub>12</sub>	17.031	5.747	10.732
n-C <sub>13</sub>	7.937	2.557	4.059
n-C <sub>14</sub>	3.410	0.861	1.374
Total paraffins	99.99	99.98	99.99

(3 ) °550

°(500 450)

550

(3)

0.7172	1.412460	
0.7132	1.405425	<b>450</b>
0.7158	1.402415	<b>500</b>
0.7307	1.416480	<b>550</b>

(15)

%24

%41

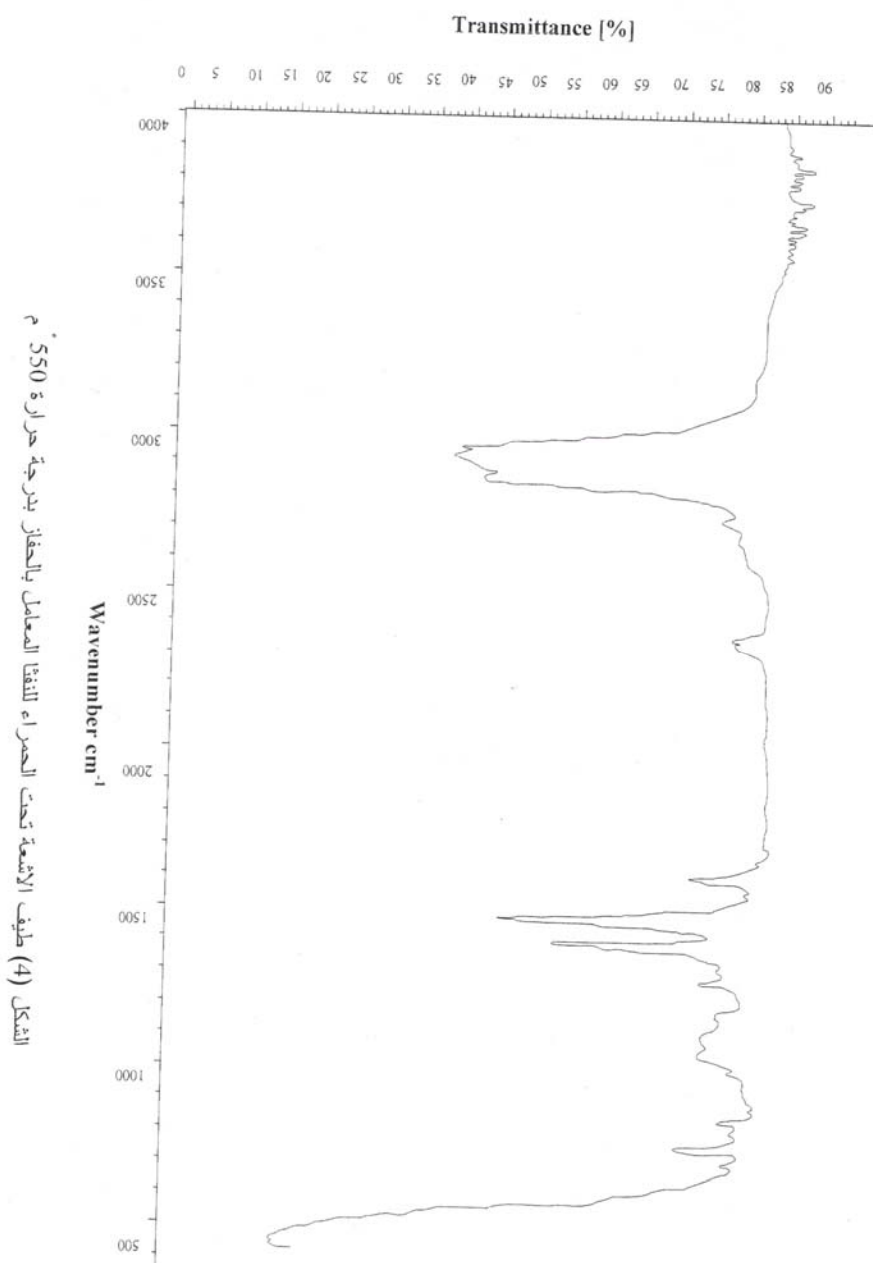
%90

. (4 3 ) 550

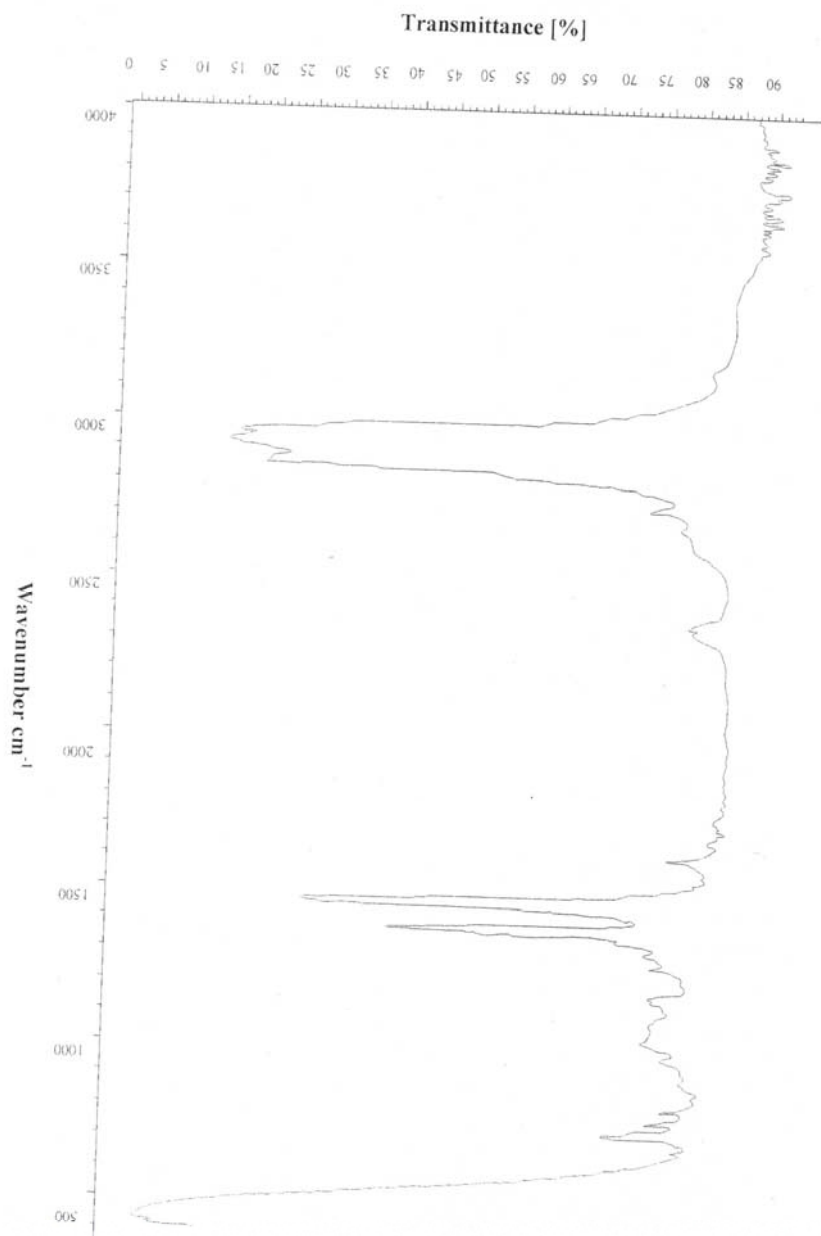
جدول (4) يوضح النسب المئوية للمركبات البارافينية والاروماتية والنفثينية المحسوبة بطريقة براندس

48.7092	11.8843	39.4065	
37.061	14.026	48.9130	450
36.8243	16.164	47.0117	500
28.5097	22.5773	48.9130	550

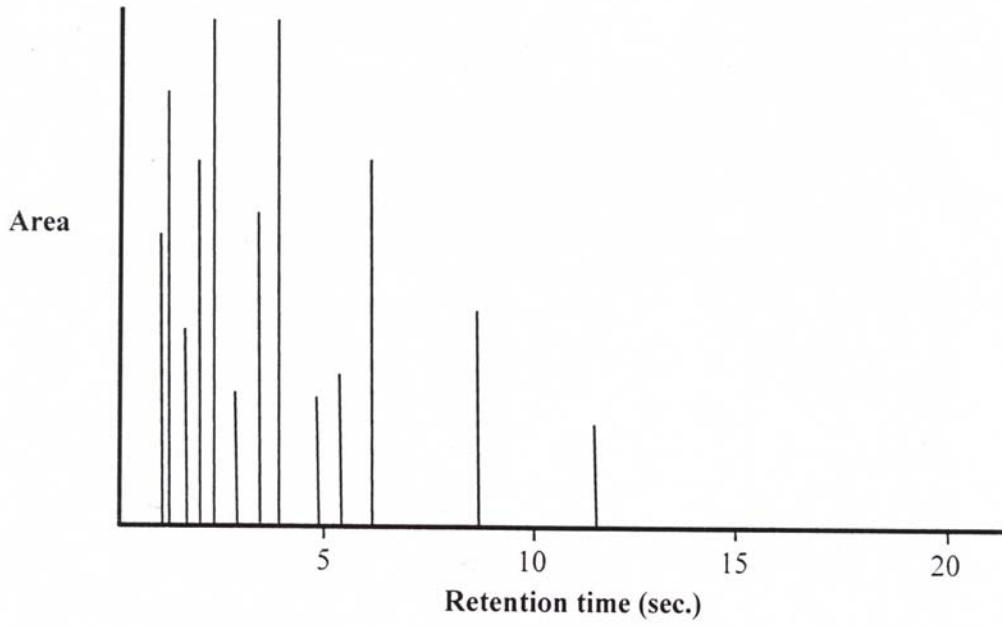
- 
- 
1. Sheldon, R. A. and H. Van Bekkum "Fine Chemical Through Heterogeneous Catalysis". 1<sup>st</sup> Ed. John wiley and Sons Company, Germany (2001).
  2. Thomas, C. L., "Catalytic Processes and Proven Catalysts". Academic Press London (1970).
  3. Speight, J. G., "Handbook of Petroleum Product Analysis". John wiley and Sons Company. Newjersey (2002).
  4. Touvelle, M. S., et al. "Production of Naphtha and Light Olefins". U. S. Patent, No. 0,063,082 A1 (2002).
  5. Gillespie, R. D. "Isomerization Catalyst and Processes". U. S. Patent, No. 249,231 A1 (2004).  
 .(2006) 33-20 :18 . . . .6
  7. Wright, F. J., et al. "Process for producing alcohols using iron-thallium catalysts" U. S. Patent, No.4,504,600 (1985).
  8. Al-Mashhdany, M. H., M. Sc. Thesis, College of Science, University of Mosul (2003). (In Arabic).  
 " (1979) . . . .9
  10. Zandiel ,Y.M. (1978) , "Bentonite Deposits form Iraq". Ph. D. Thesis, University of Sheffield, England.
  11. Sussman, J. "Physical method in Determination Mineraloge". 2<sup>nd</sup>.Ed, Academic press, London, p. 2-6 .
  12. Patnaik, P. "Handbook of Inorganic Chemicals". 2<sup>ed</sup>. McGraw-Hall comp. New york. 2003.
  13. Freund, M. et al. "Paraffin Products". 1<sup>st</sup>. Elsevier Scientific com. 1982.
  14. Pearce, R and Patterson, W.R "Catalysis and Chemical Processes" Blackie and Son Ltd. London (1981).
  15. Brandes, G, "The chemical structure of petroleum fractions (I)", Analysis, by IR spectroscopy, Brennstoff-chem; 37, 263-267; chem. Abst. 5, 6959 (1957).



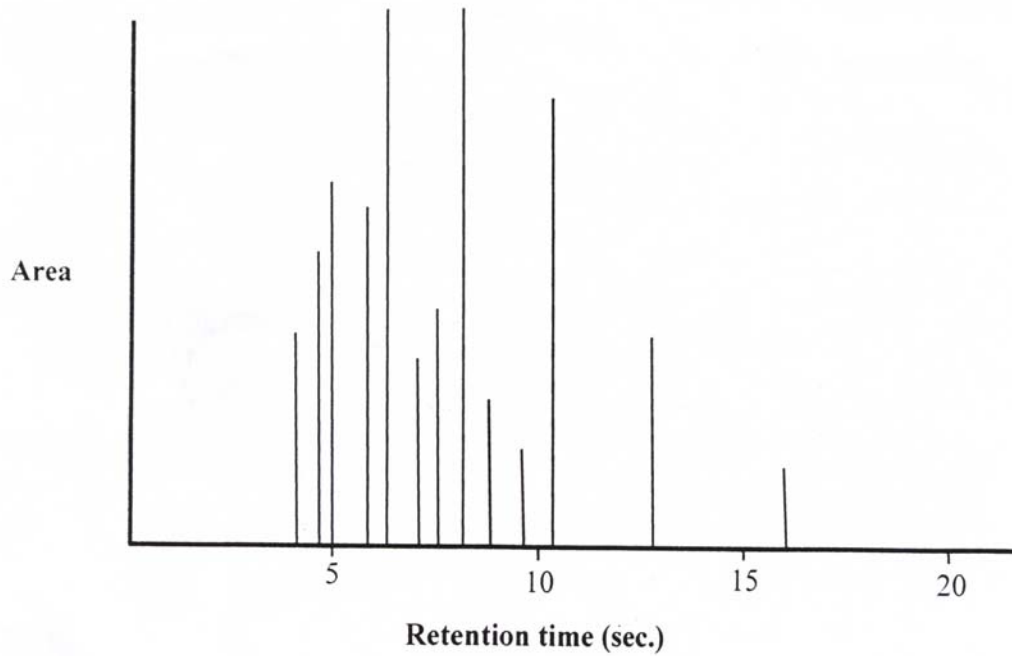
الشكل (4) طيف الأشعة تحت الحمراء للنفثا المعامل بالحافز بدرجة حرارة 550 °م



الشكل (3) طيف الأشعة تحت الحمراء للنفثا المعامل بالحفظ بدرجة حرارة 450 °م



شكل (1) كروماتوغرافيا الغاز للبارافينات المستقيمة المفصولة من النفط المعاملة بالحفاز عند درجة الحرارة 450 °م.



شكل (2) كروماتوغرافيا الغاز للبارافينات المستقيمة المفصولة من النفط المعاملة بالحفاز عند درجة الحرارة 500 °م.