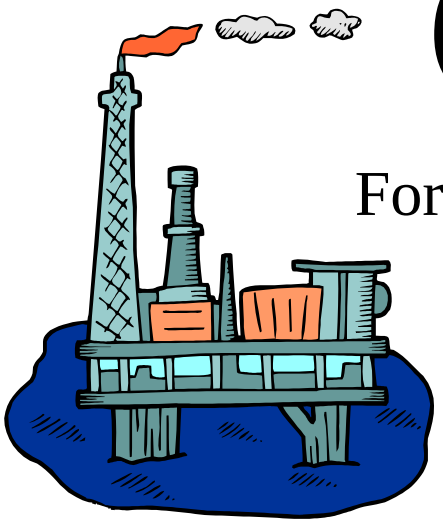
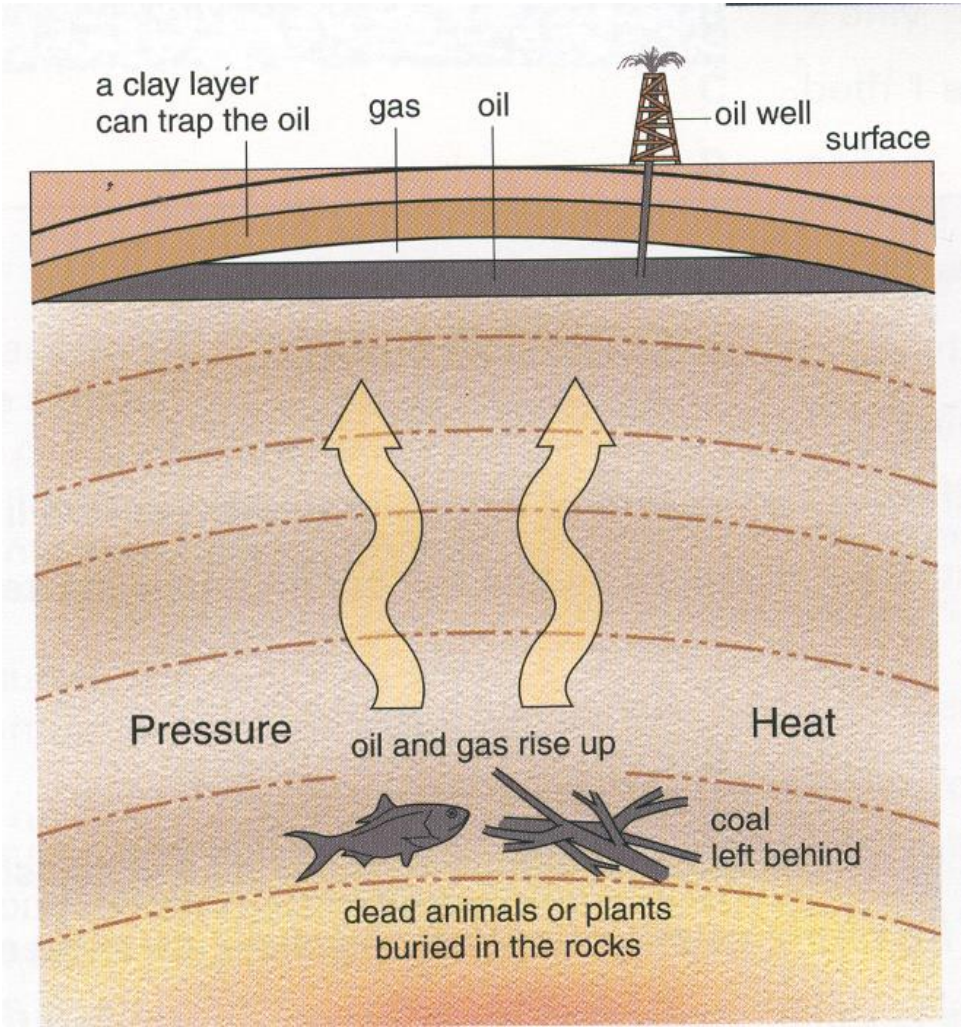
Module 4 – Chemistry in action



Crude oil

Formation, extraction and separation

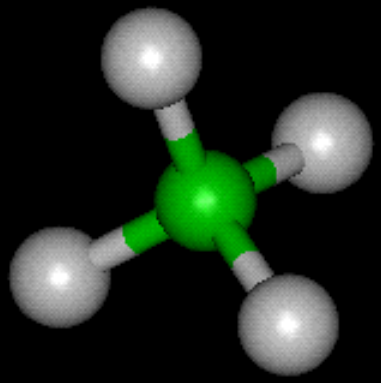
How did crude oil form?



- Fossil fuel
- Dead animals and plants
- No Oxygen
- High temperature
- High pressure
- Millions of years……

Oil and Natural gas

1



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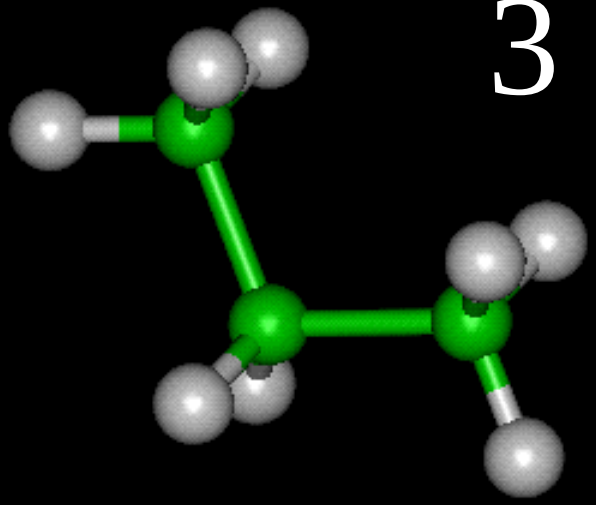
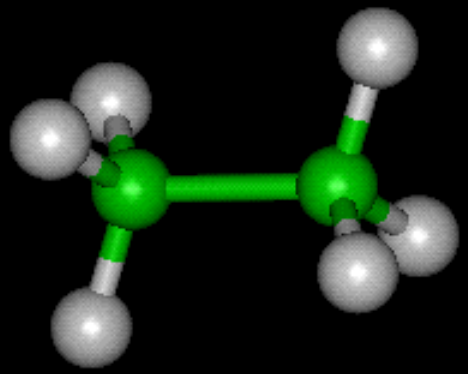
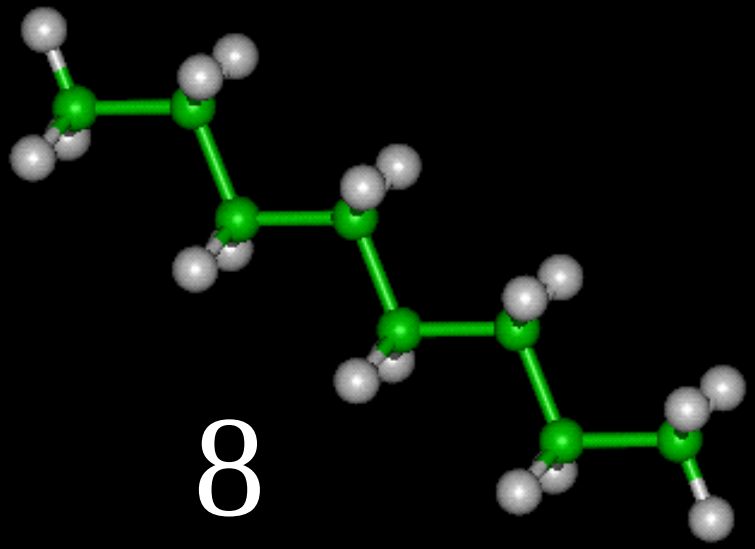


Alkanes

2





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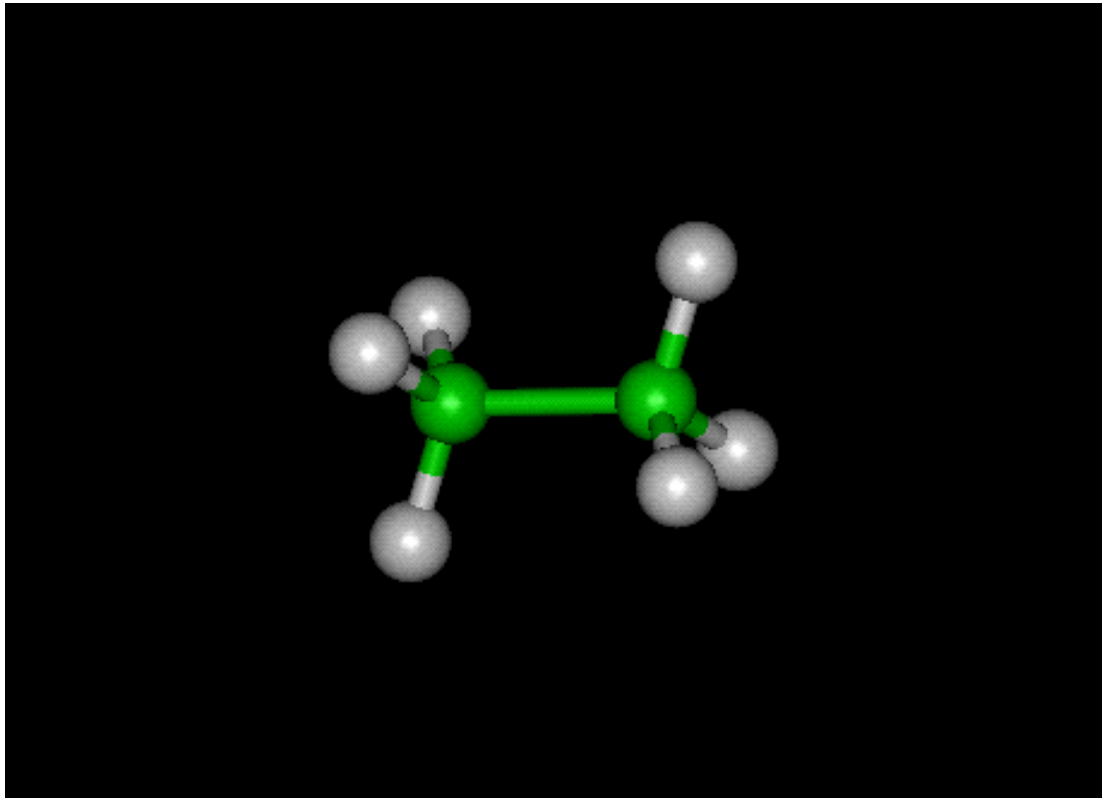
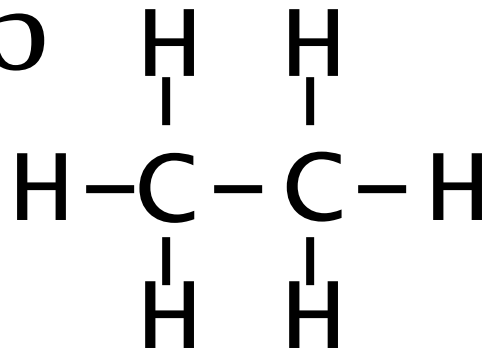
Hydrocarbons – the Alkanes

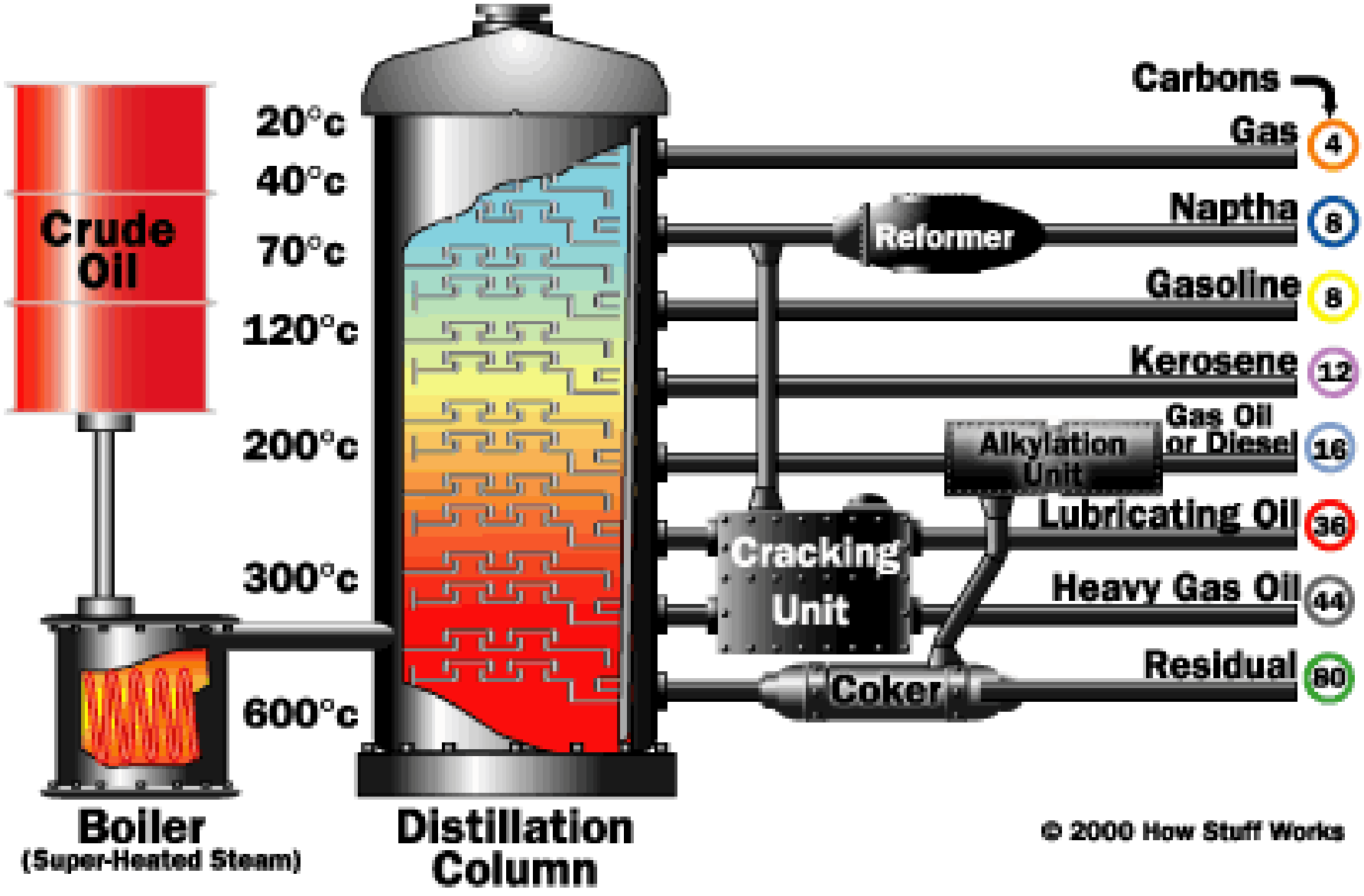


C_2H

6



Ethane


Crude Oil
20°c
40°c
70°c
120°c
200°c
300°c
600°c
Carbons
Gas
4
Naptha
8
Gasoline
8
Kerosene
12
Gas Oil or Diesel
16
Lubricating Oil
36
Heavy Gas Oil
44
Residual
60
Reformer
Alkylation Unit
Cracking Unit
Coker
Boiler
(Super-Heated Steam)
Distillation Column
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Fraction	Boiling range (°C)	Number of carbon atoms	Uses
LPG – liquid petroleum gas	below 25	1-4	
Petrol	25-70	5-9	
Naphtha	70-180	8-10	
Kerosene (Paraffin)	180-240	10-16	
Diesel	240-250	15-20	
Lubricating oil	250—350	20-30	
Heavy oils	350	30-40	
Bitumen		50 and above	

Summary questions

1) What conditions are needed for the formation of crude oil?

2) What is the name of the compounds found in crude oil?

3) How are the compounds separated?

4) Which physical property does the separation process rely on?

5) How many bonds does a carbon atom need?

6) How many bonds does a hydrogen atom need?