

**Dr. Kiss Tivadar**

egyetemi adjunktus

SZTE Gyógyszerésztudományi Kar

# Szénhidrogének

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# Kulcsfogalmak

- **szénhidrogének csoportosítása**
- **szénhidrogének szerkezete**
- **homológ sor**
- **szénhidrogének fizikai tulajdonsága**
- **szénhidrogének tipikus kémiai reakciói**
- **kőolaj, földgáz**

# Szénhidrogének csoportosítása

# SZÉNHIDROGÉNEK

telített

telítetlen

aromás

ALKÁN

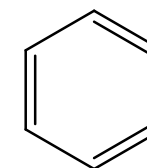
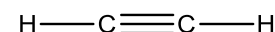
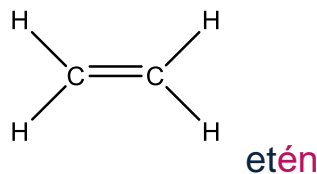
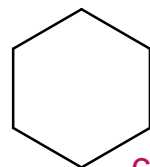
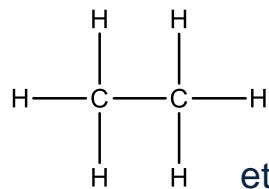
CIKLOALKÁN

ALKÉN

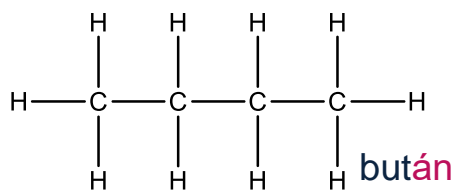
ALKIN

nyílt láncú

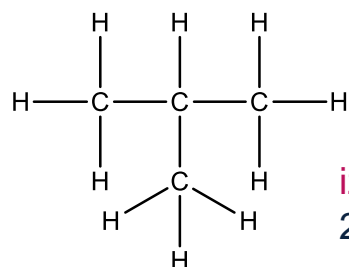
gyűrűs



normál

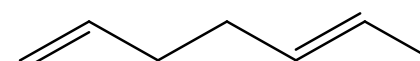
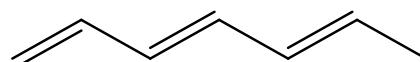


elágazó



$\sigma$ -kötés

$\sigma$ - és  $\pi$ -kötések

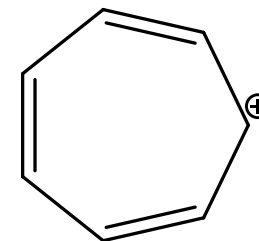
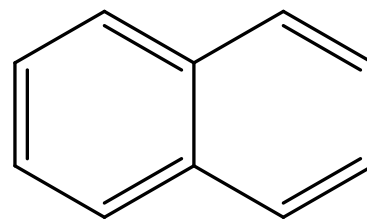
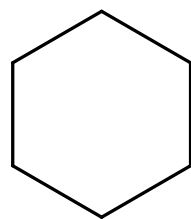
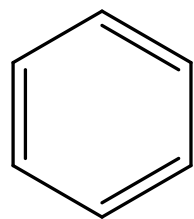
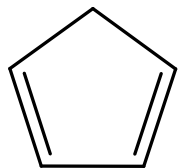
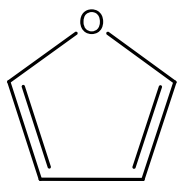


aromás rendszer

# Aromás rendszer

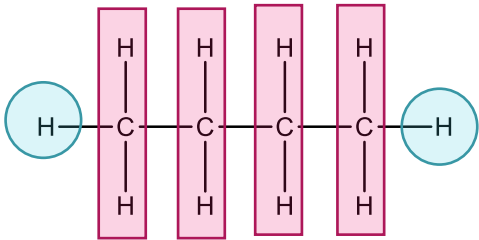
- **Hückel-szabály**

- síkalkatú
- körkörös, megszakítás nélküli delokalizáció
- $N_{e^-} = 4n + 2$



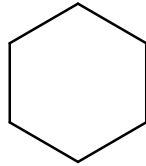
# Szénhidrogének szerkezete

ALKÁN

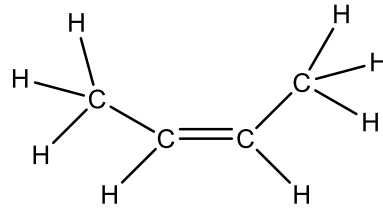


„tekerődő kígyó”

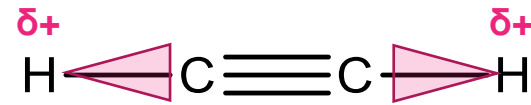
CIKLOALKÁN



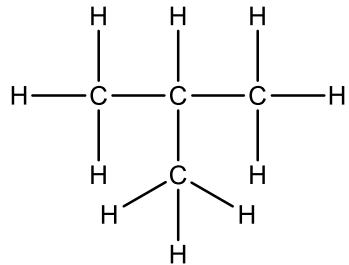
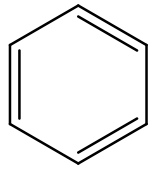
ALKÉN



ALKIN



aromás

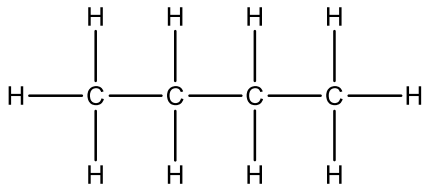


„labda”

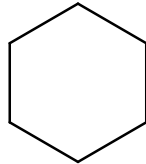
- apoláris molekulák
- diszperziós kölcsönhatás
- **homológ sor**

# Szénhidrogének fizikai tulajdonságai

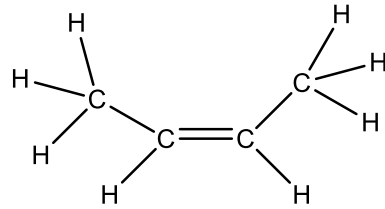
ALKÁN



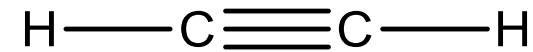
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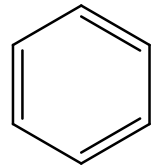
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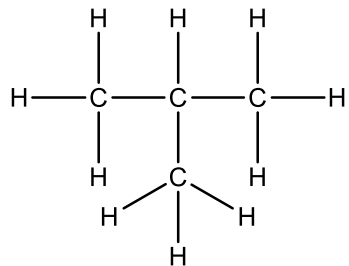
ALKIN



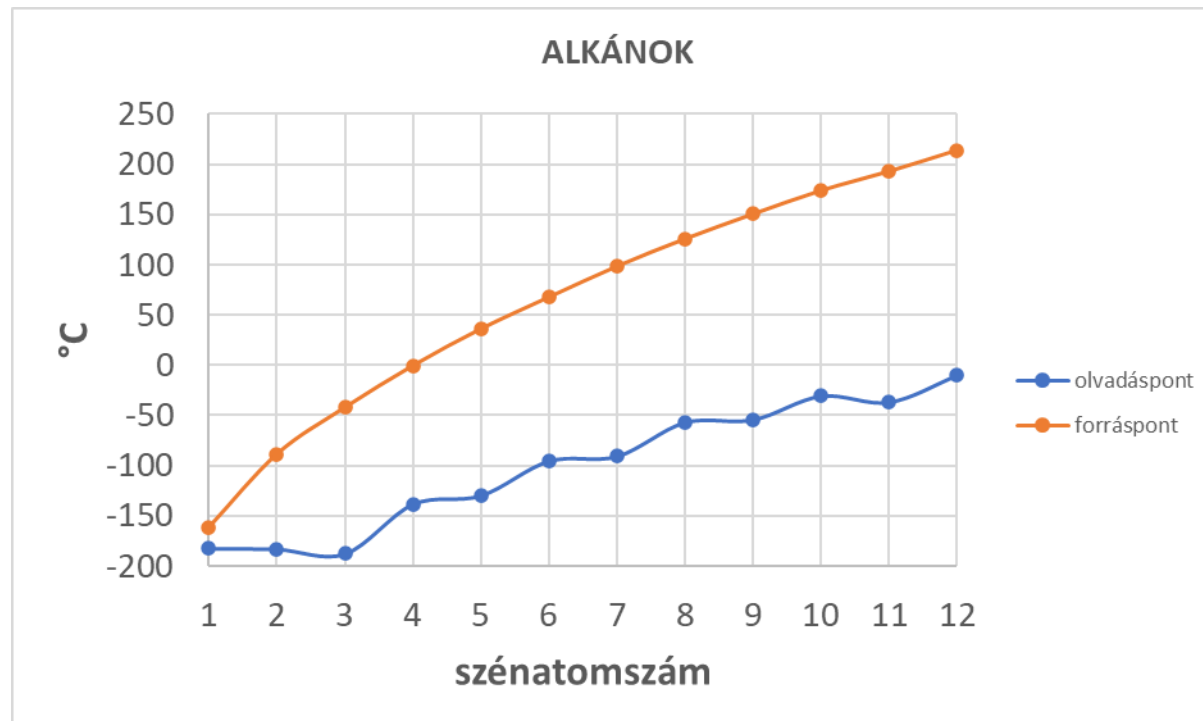
aromás



„tekerődő kígyó”



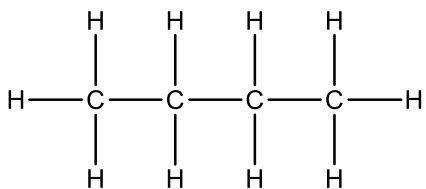
„labda”



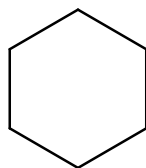
- apoláris molekulák
- diszperziós kölcsönhatás
- **homológ sor**

# Szénhidrogének fizikai tulajdonságai

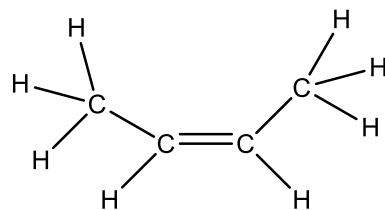
ALKÁN



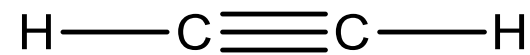
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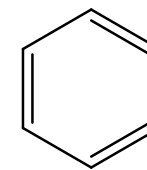
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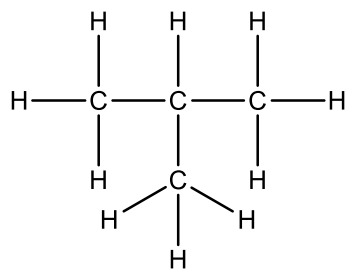
ALKIN



aromás



„tekerődző kígyó”



„labda”

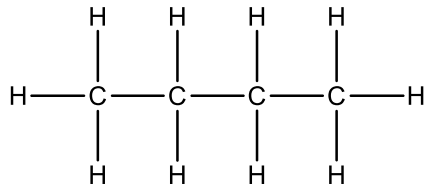


- apoláris molekulák
- diszperziós kölcsönhatás
- **homológ sor**

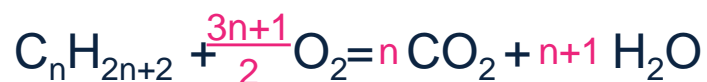


# Szénhidrogének kémiai tulajdonságai

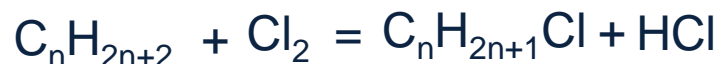
ALKÁN  
*paraffin*



égés:



szubsztitúció:



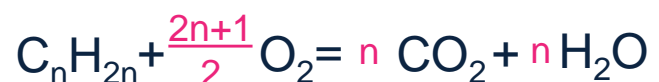
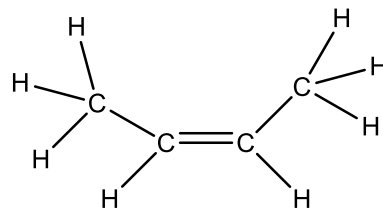
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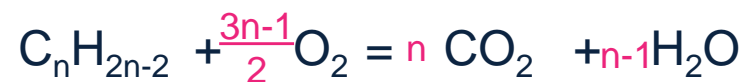
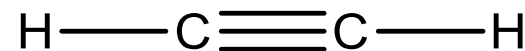
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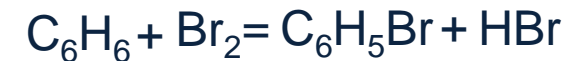
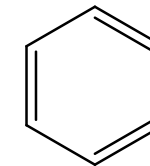
ALKÉN  
*olefin*



ALKIN

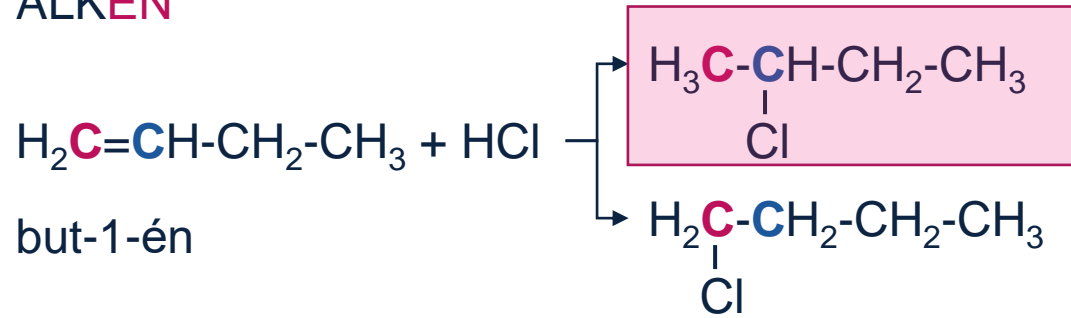


aromás

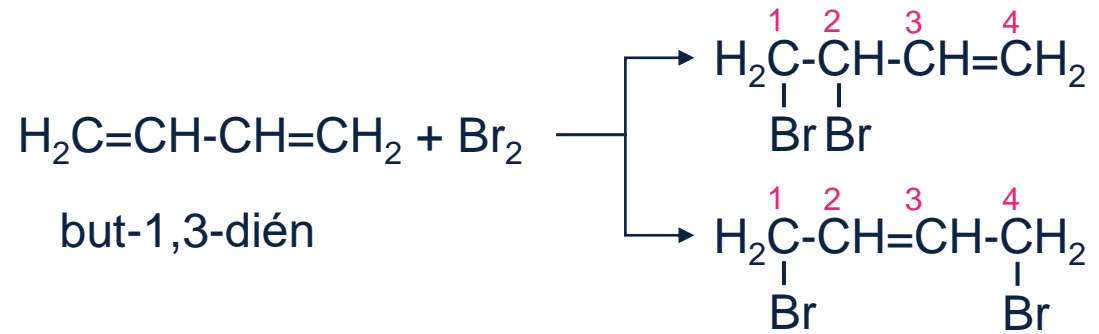


# Szénhidrogének kémiai tulajdonságai

## ALKÉN



Markovnyikov-  
szabály



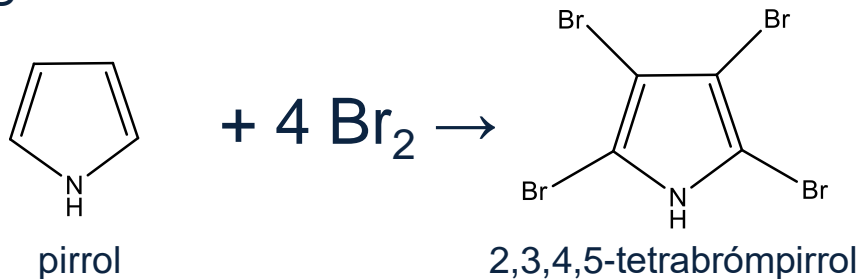
konjugált  
rendszer

## ALKIN



nátrium-karbid

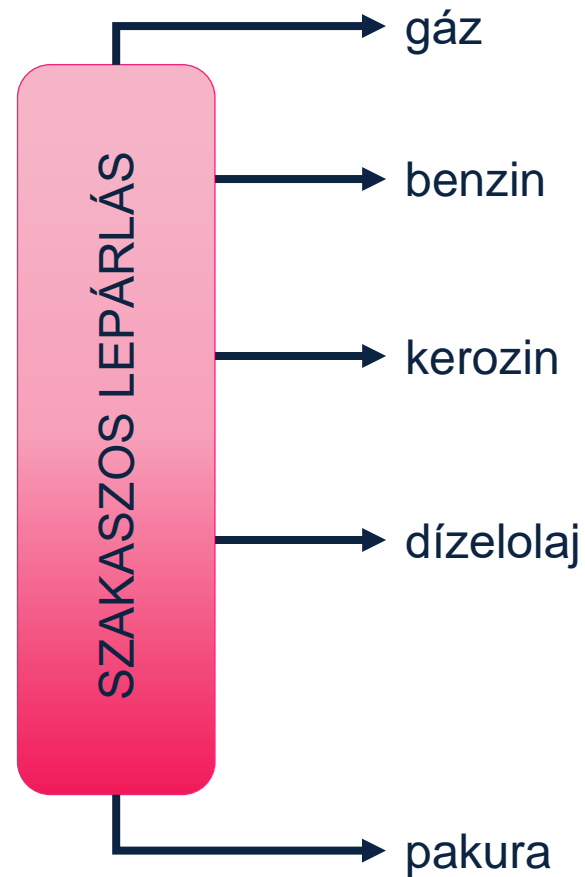
## AROMÁS



**Kőolaj, földgáz**

# Kőolaj, földgáz – FRAKCIONÁLT DESZTILLÁCIÓ

**KŐOLAJ**  
szénhidrogének  
heteroatomos szerves vegyületek  
víz  
fémek



*frakciók:  
szénhidrogén keverékek*

**Köszönöm a figyelmet!**