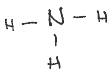
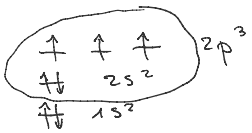
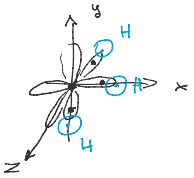
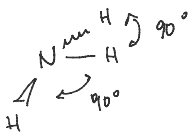
martedì 25 febbraio 2025 10:28

IBRIDAZIONE sp^3 PER N (NH_3) e O (H_2O)



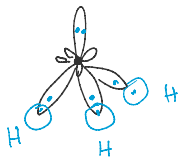


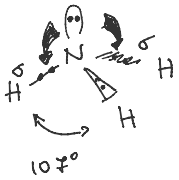


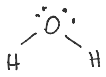


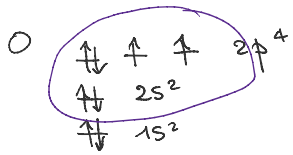
Angoli di legame reali nella molecola NH_3 = 107°

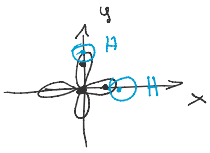
Ibridazione sp^3 ↑↓ ↑ ↑ ↑ 4 orbitali di tipo sp^3

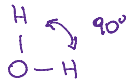








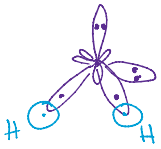




Ma l'angolo di legame è 105°

Ibridazione sp^3

↑↓ ↑↓ ↑ ↑ orb. sp^3



$\underline{B}F_3$ sp^2

$\underline{Be}Cl_2$ sp

IDROCARBURI

Solo H + C

IDROCARBURI
- AROMATICI (Benzene)
- ALIFATICI
  - ALCANI C_nH_{2n+2} SATURI
  - CICLOALCANI C_nH_{2n}
  - ALCHENI C_nH_{2n} INSATURI

ALIFATICI

CICLOALCANI $C_m H_{2m}$

ALCHENI $C_m H_{2m}$ } INSATURI

ALCHINI $C_m H_{2m-2}$ }

GRADI DI INSATURAZIONE

ALCHENE → ALCANO

$C_m H_{2m} + 1 H_2 \rightarrow C_m H_{2m+2}$

Quanto H_2 serve?

1 Molecola di H_2 ⇒ 1 GRADO DI INSATURAZIONE

Dovuto alla presenza del doppio legame ($H_2C=CH_2$)

ALCHINO → ALCANO

$C_m H_{2m-2} + 2 H_2 \rightarrow C_m H_{2m+2}$

2 Molecole di H_2 ⇒ 2 GRADI DI INSATURAZIONE

Dovuti alla presenza del triplo legame ($H-C\equiv C-H$)

→ ALCANO

ALCANI o PARAFFINE (poco reattivo) $C_m H_{2m+2}$

Tutti C sp^3

RADICE + DESINENZA

Met + ANO

Met = 1 atomo di C

Et = 2 C

Prop = 3 C

But = 4 C

$m = 1$ CH_4 — Met ANO

$m = 2$ C_2H_6 — Et ANO

$m = 3$ C_3H_8 — Prop ANO

$m = 4$ C_4H_{10} $CH_3-CH_2-CH_2-CH_3$ — But ANO

$m = 5$ C_5H_{12} $CH_3(CH_2)_3-CH_3$ — Pent ANO

$m = 6$ — Es ANO

$m = 7$ — Et ANO

$m = 8$ — Ott ANO

$m = 9$ — Nom ANO

$m = 10$ — Dec ANO

C_4H_{10}

$CH_3-CH_2-CH_2-CH_3$ — n-butano

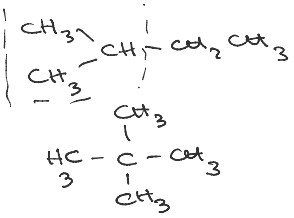
$(CH_3)_2CH-CH_3$ — isobutano

Hanno uguale formula bruta ⇓ sono ISOMERI

C_5H_{12}

$CH_3-CH_2-CH_2-CH_2-CH_3$ — n-pentano

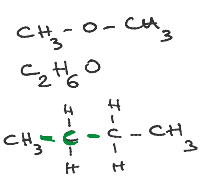
$(CH_3)_2CH-CH_2-CH_3$ — isopentano



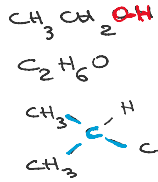
isopentano

neopentano

ISOMERI (= p. brute)
- ISOMERI DI STRUTTURA (o COSTITUZIONALI)
- STEREOISOMERI



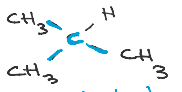
CH_3-O-CH_3
C_2H_6O



CH_3CH_2OH
C_2H_6O

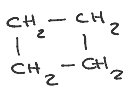
C secondario

n-butano

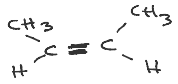


C legato a 3 carboni ⇓ C terziario

isobutano

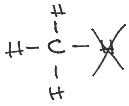


C_4H_8

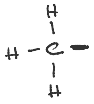


C_4H_8

GRUPPI ALCHILICI

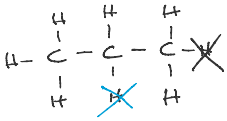


metano — metile



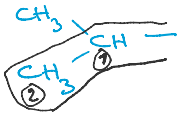
etano — etile

CH_3CH_2-

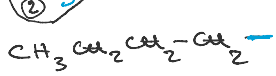


propano — propile

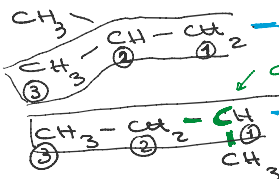
$CH_3CH_2CH_2-$



isopropile (1-metiletil)



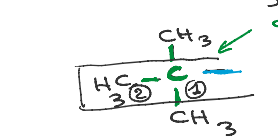
butile



isobutile (2-metilpropil)

carbonio secondario

sec-butile (1-metilpropil)

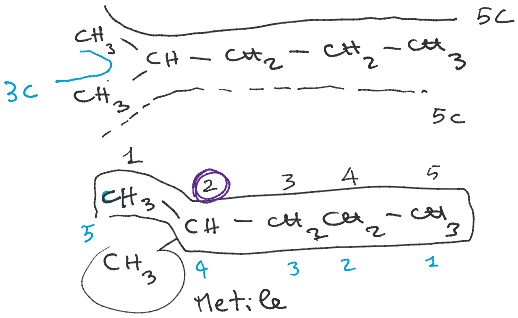


t-butile

carbonio terziario

terz-butile (1,1-dimetiletil)

Nomenclatura IUPAC



5C

3C

5C

1 2 3 4 5

3

4 3 2 1

Metile

ISOESANO

① Individuare la catena più lunga di atomi di C ⇓ Nome principale

PENTANO

② Individuare e denominare i gruppi alchilici innestati nella catena principale

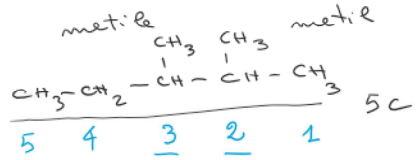
metilpentano

nella catena principale

metil pentano

③ Numerare la catena principale in modo che ai sostituenti spetti la cifra più bassa

2-metil pentano

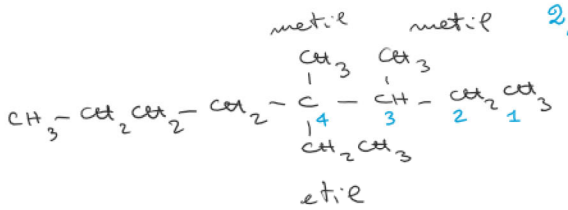


pentano

metil metil pentano

dimetil pentano

2,3-dimetil pentano

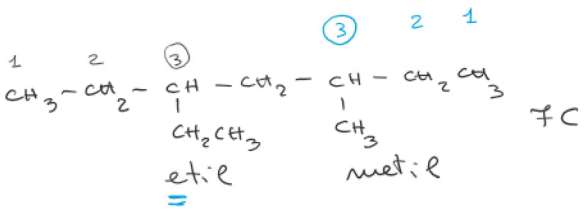


ottano

dimetil etil ottano

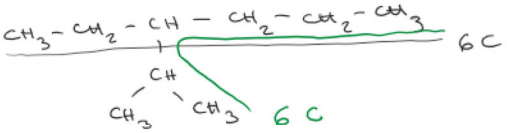
etil dimetil ottano

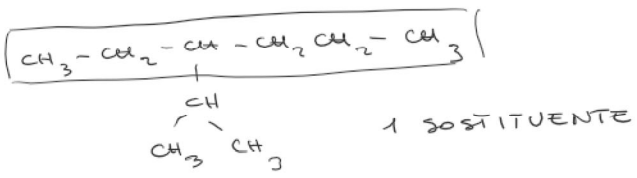
4-etil-3,4-dimetil ottano

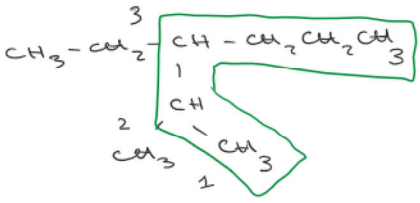


eptano

3-etil-5-metil eptano







Si sceglie la catena più lunga (6C) che presenta più sostituenti

esano

etil metil esano

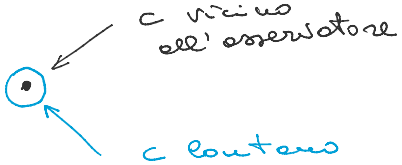
3-etil-2-metil esano

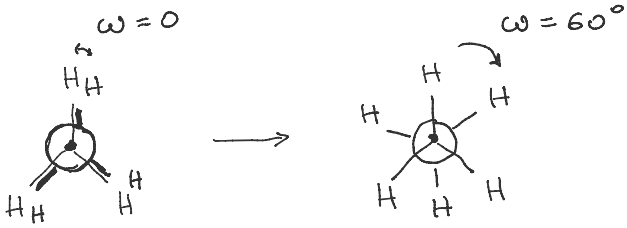
ISOMERI

- DI STRUTTURA
  ≠ strutture
- STEREOISOMERI
  = strutture
  ≠ disposizione spaziale di gruppi/atomi
  - STEREOISOMERI CONFORMAZIONALI
  - STEREOISOMERI CONFIGURAZIONALI

ANALISI CONFORMAZIONALE DELL'ETANO

FORMULE DI NEWMAN





FORMA ECLISSATA

FORMA SFALSATA