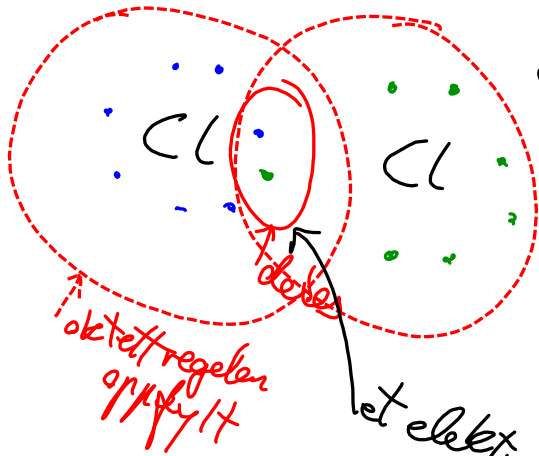


Bindinger

Kovalent binding = elektronparbinding

Atomene deker sine yttre elektroner med hverandre, slik at oktetregelen oppfylles

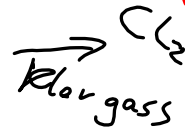


Cl: 7 valenselektroner
 ↳ elektroner i ytterste skall



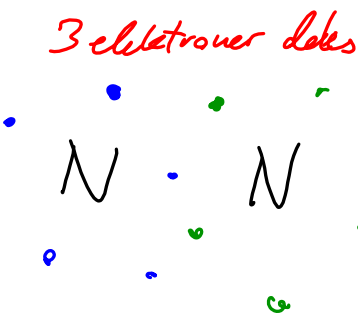
en strek betyr at ett elektronpar deles

O: 6 valenselektroner

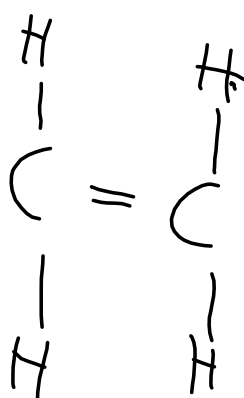
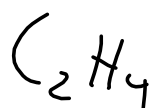
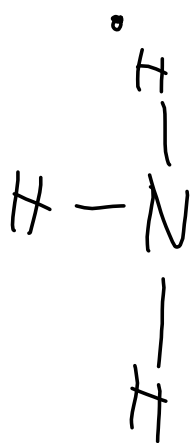
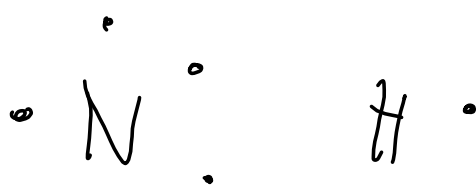
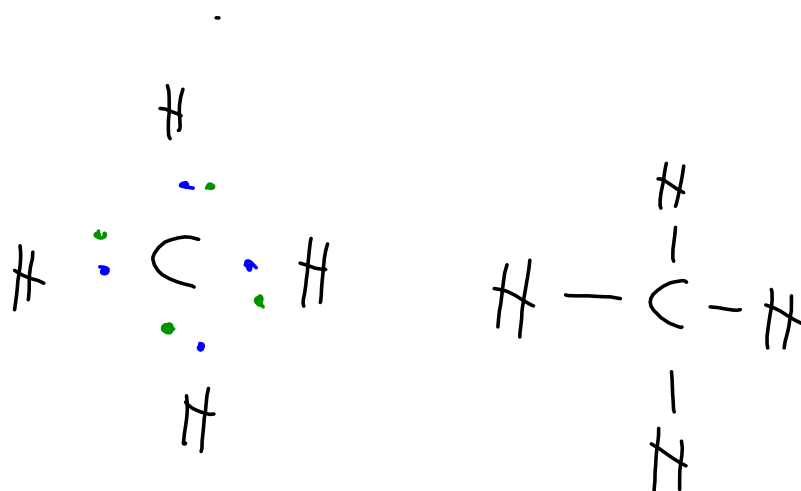
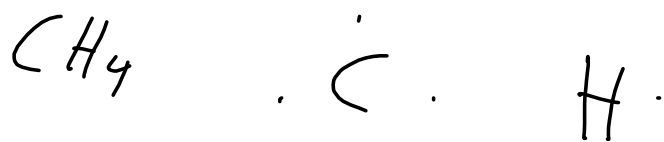


to elektronpar deles
 dobbelbinding

N har 5 valenselektroner



tre elektronpar deles
 trippelbinding



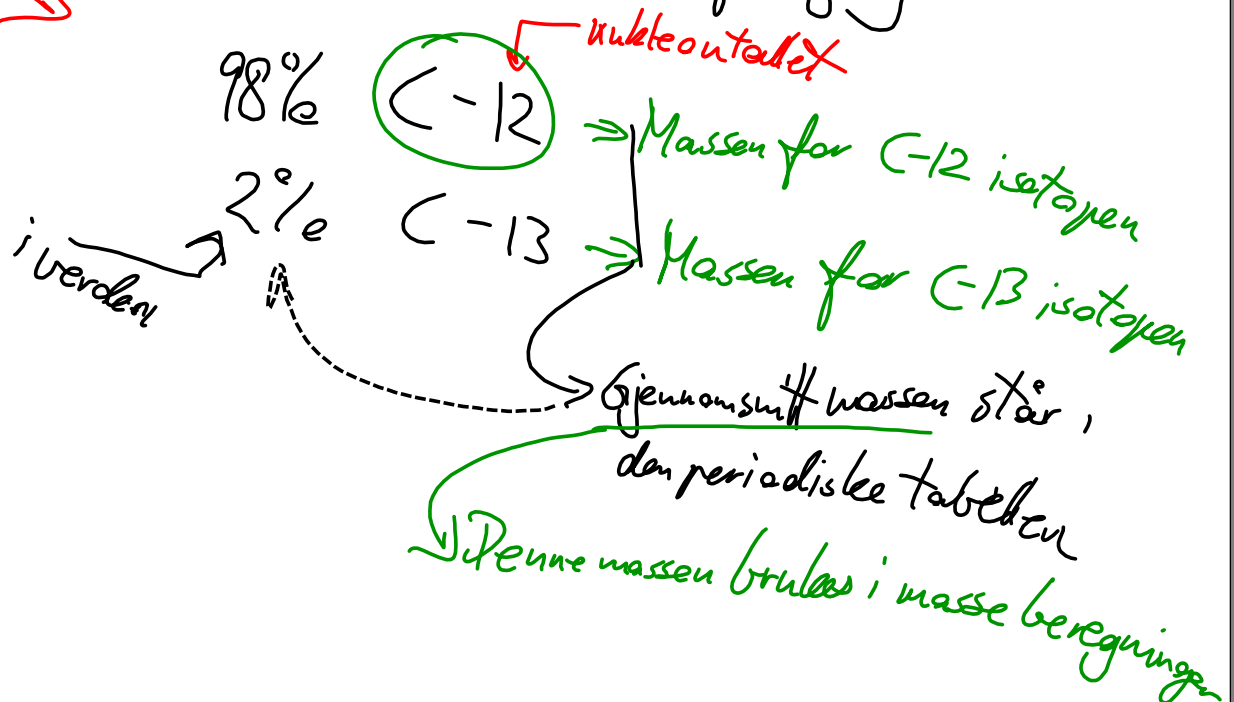
Masse [u]

Atommasse har benevnelsen [u]

Formelmasse ; bare tallet (sløyfer u)

Massen for hvert grunnstoff står i den periodiske tabellen

Isotoper har forskjellig masse fordi antall nøytroner er forskjellig



Mol

↑ antall : $N_A = 6,02 \cdot 10^{23}$

Eks

1 mol C-atomer $\Rightarrow 6,02 \cdot 10^{23}$ C-atomer

Atommasse enheten

$$u = 1,66 \cdot 10^{-27} \text{ kg}$$

$$= 1,66 \cdot 10^{-24} \text{ g}$$

Eks: C $\Rightarrow 12,01 [u]$

$$1 \text{ mol C} \Rightarrow 12,01 [u] \cdot 1,66 \cdot 10^{-24} \left[\frac{\text{g}}{u} \right] \cdot 6,02 \cdot 10^{23}$$

$$12,01 [u] \cdot 1 \left[\frac{\text{g}}{u} \right] = 12,01 [g]$$

How der massen til stoff i u
Så vil et mol av dette stoffet ha massen i [g]

Etanol : C_2H_6O

✓ Masse

$$2 \text{ C} : 2 \cdot 12,01 [u] = 24,02 [u]$$

$$6 \text{ H} : 6 \cdot 1,01 [u] = 6,06 [u]$$

$$O : 16,00 [u] = 16,00 [u]$$

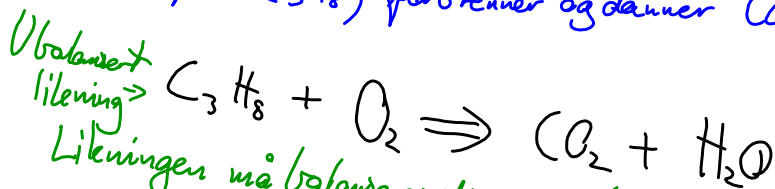
$$\text{Sum } 46,08 [u]$$

1 mol C_2H_6O har massen 46,08 [g]

Støkiometriske beregninger

Masseberegning på grunnlag av balanserte reaksjonslikninger

Ekst: Propan (C_3H_8) forbrenner og danner CO_2 og H_2O



Likningen må balanseres for masseberegninger kan gjøres

Det skal være like mange atomer av hvert slag (gumstøff) på hver side av likningen

\rightarrow Da er likningen balansert



Finner massen til hvert ledd (molekyl)

Venstre side

3 C	:	3 · 12,01	=	36,03	}	Propan 44,03
8 H	:	8 · 1,00	=	8,00		
10 O	:	10 · 16,00	=	160,00		
				204,03		

Høyre side

3 C																									
10 O																									
8 H																									
<table style="border-collapse: collapse; margin-left: 10px;"> <tr> <td style="padding-right: 10px;">3 C_2O</td> <td colspan="4"></td> </tr> <tr> <td style="padding-right: 10px;">6 C</td> <td style="padding-right: 10px;">=</td> <td style="padding-right: 10px;">6 · 12,01</td> <td style="padding-right: 10px;">=</td> <td style="padding-right: 10px;">72,06</td> </tr> <tr> <td style="padding-right: 10px;">3 O</td> <td style="padding-right: 10px;">=</td> <td style="padding-right: 10px;">3 · 16,00</td> <td style="padding-right: 10px;">=</td> <td style="padding-right: 10px;">48,00</td> </tr> <tr> <td colspan="4"></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;">120,06</td> </tr> </table>						3 C_2O					6 C	=	6 · 12,01	=	72,06	3 O	=	3 · 16,00	=	48,00					120,06
3 C_2O																									
6 C	=	6 · 12,01	=	72,06																					
3 O	=	3 · 16,00	=	48,00																					
				120,06																					

44,03 [g]

Propan forbrenner og danner CO_2 120,06 [g]

Hvor stor prosentdel C er det i
etanol C_2H_6O ?

$$\begin{array}{r} 2 \cdot C : 2 \cdot 12,01 = 24,02 \\ 6 \cdot H : 6 \cdot 1,00 = 6,00 \\ O : 16,00 = 16,00 \\ \hline 46,02 \end{array}$$

$$C : 12,01$$

$$\frac{12,01}{46,02} = 0,26 \Rightarrow 26\% \text{ C i } C_2H_6O$$

Metanol CH_4O

Hvor stor prosentdel C er det i metanol?

$$\begin{array}{r} C : 12,01 = 12,01 \\ 4H : 4 \cdot 1,00 = 4,00 \\ O : 16,00 = 16,00 \\ \hline 32,01 \end{array} \quad C : 12,01$$

$$\frac{12,01}{32,01} = 0,37 \Rightarrow 37\% \text{ C i metanol}$$