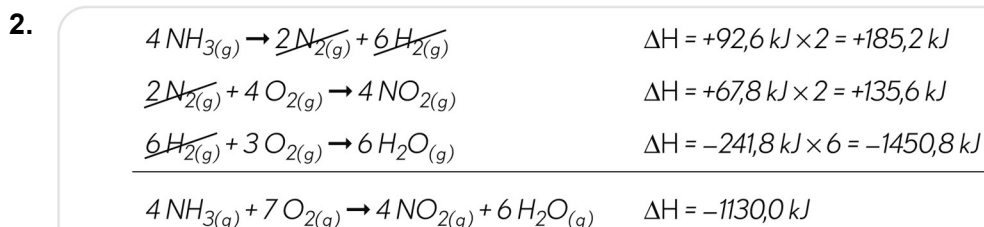
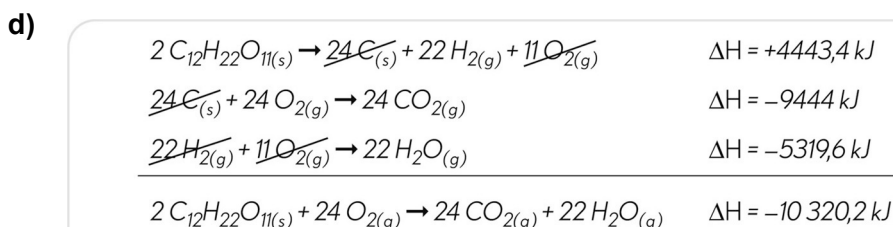
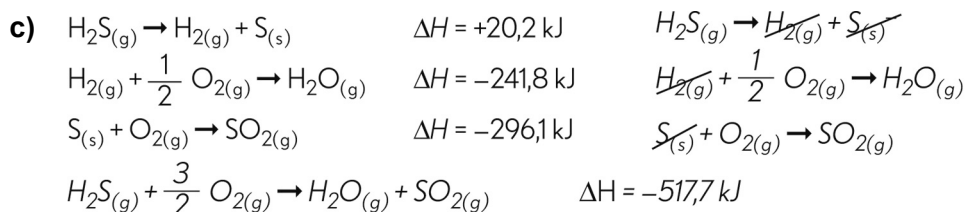
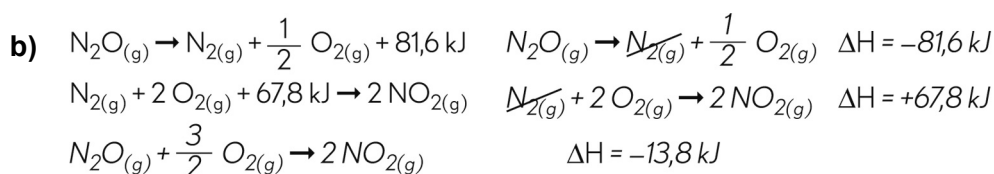
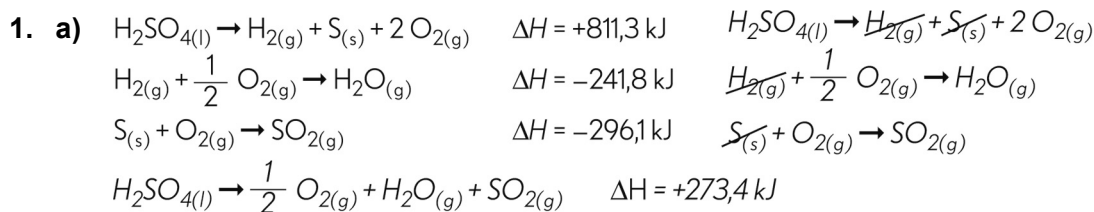


OPTIONscience

CHIMIE

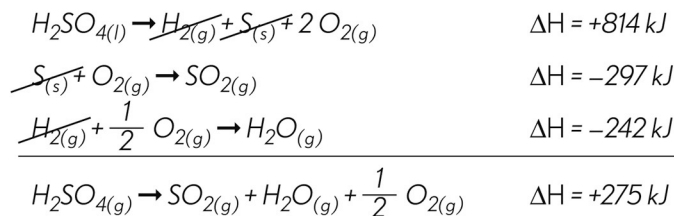
Exercices : corrigé

5.2 La loi de Hess

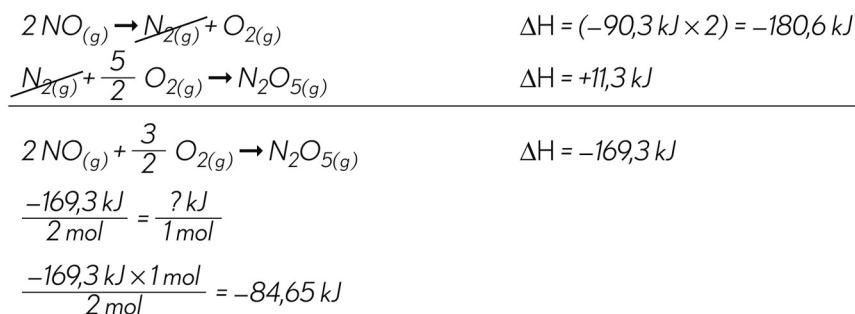


La loi de Hess (suite)

3.

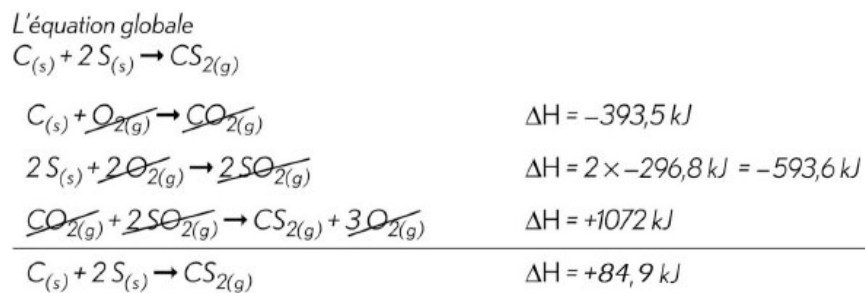


4.



La chaleur molaire de la réaction du monoxyde d'azote est de $-84,7 \text{ kJ/mol}$.

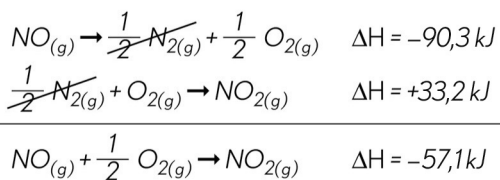
5.



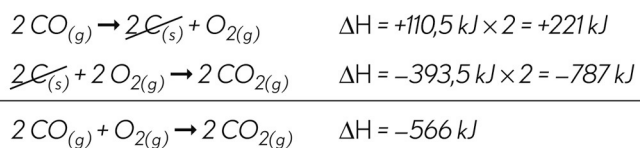
6. a) $\frac{1}{2} \text{N}_2(\text{g}) + \frac{3}{2} \text{F}_2(\text{g}) \rightarrow \text{NF}_3(\text{g}) \quad \Delta\text{H} = -124,7 \text{ kJ}$
- b) $\frac{1}{2} \text{H}_2(\text{g}) + \text{C}(\text{s}) + \frac{1}{2} \text{N}_2(\text{g}) \rightarrow \text{HCN}(\text{g}) \quad \Delta\text{H} = +135 \text{ kJ}$
- c) $2 \text{Al}(\text{s}) + \frac{3}{2} \text{O}_2(\text{g}) \rightarrow \text{Al}_2\text{O}_3(\text{s}) \quad \Delta\text{H} = -1676 \text{ kJ}$
- d) $\text{Mg}(\text{s}) + \text{S}(\text{s}) + 2 \text{O}_2(\text{g}) \rightarrow \text{MgSO}_4(\text{s}) \quad \Delta\text{H} = -1285 \text{ kJ}$

La loi de Hess (suite)

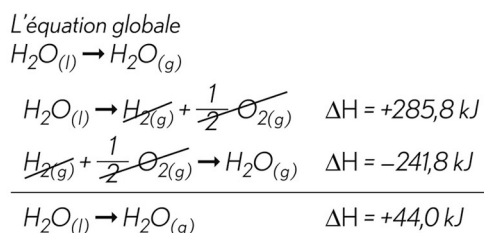
7. a)



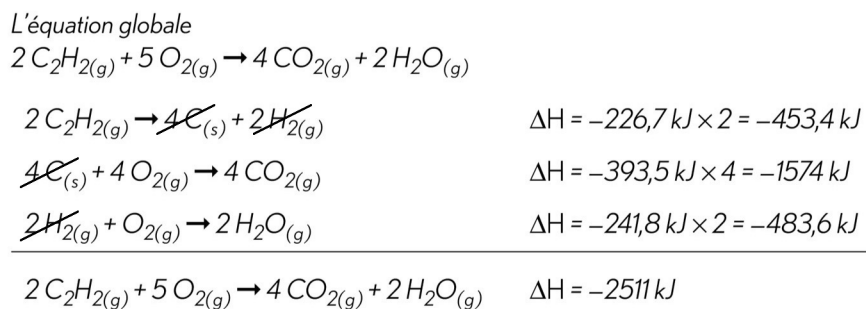
b)



c)



8.



Calcul de la chaleur molaire

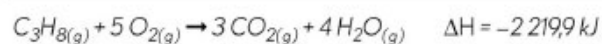
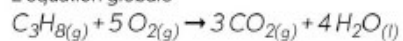
$$\frac{-2511 \text{ kJ}}{2 \text{ mol}} = -1255,5 \text{ kJ/mol}$$

La chaleur molaire de combustion de l'acétylène est de -1256 kJ/mol .

La loi de Hess (suite)

9.

L'équation globale



10. a) Ce mécanisme comporte quatre étapes.

b)

$$H_r = 0 \text{ kJ}$$

c)

$$H_p = -10 \text{ kJ}$$

d)

$$\begin{aligned} \Delta H &= H_p - H_r \\ &= -10 \text{ kJ} - 0 \text{ kJ} = -10 \text{ kJ} \end{aligned}$$

e)

$$\begin{aligned} E_a &= H_{ca} - H_r \\ &= 20 \text{ kJ} - 0 \text{ kJ} = 20 \text{ kJ} \end{aligned}$$

f)

$$H_{ca} = 60 \text{ kJ}$$

g)

$$\begin{aligned} E_a &= H_{ca} - H_r \\ &= 60 \text{ kJ} - 10 \text{ kJ} = 50 \text{ kJ} \end{aligned}$$

h)

$$\begin{aligned} \Delta H &= H_p - H_r \\ &= 10 \text{ kJ} - 0 \text{ kJ} = 10 \text{ kJ} \end{aligned}$$

i)

$$\begin{aligned} \Delta H &= H_p - H_r \\ &= 40 \text{ kJ} - 10 \text{ kJ} = +30 \text{ kJ} \end{aligned}$$

11. c)