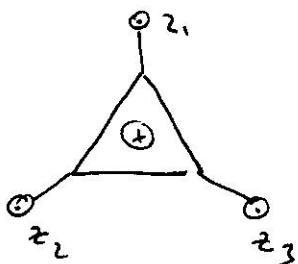


B) Modes "out of plane"

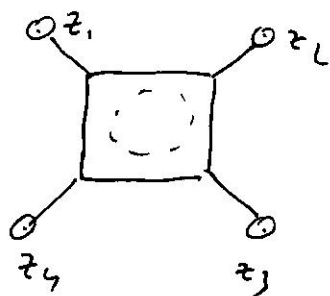
Les vecteurs de la base sont les $z_i \perp$ au plan de la molécule.



$$D_{3h} \quad \begin{array}{c|cccccc} & E & 2C_3 & 3C_2 & \sigma & 2S_6 & 3\sigma_h \\ \Gamma_2 & 3 & 0 & -1 & -3 & 0 & 1 & A_2'' \oplus E'' \end{array}$$

$$\Gamma_{oop} = \Gamma_2'' \oplus E'' \Rightarrow \text{une bande IR}$$

IR R

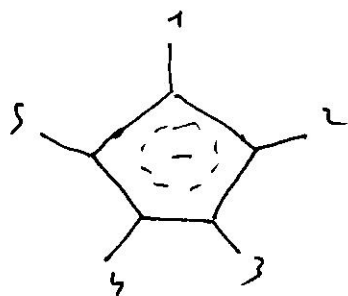


$$D_{4h} \quad \begin{array}{c|cccccccc} & E & 2C_4 & C_2 & 2C_2' & 2C_2'' & i & 2S_8 & \sigma_h & 2\sigma_v & 2\sigma_d \\ \Gamma_2 & 4 & 0 & 0 & -2 & 0 & 0 & 0 & -4 & 2 & 0 \end{array}$$

$$\Gamma_{oop} = E_g \oplus A_{2u} \oplus B_{2u}$$

R IR rien

=> une bande IR

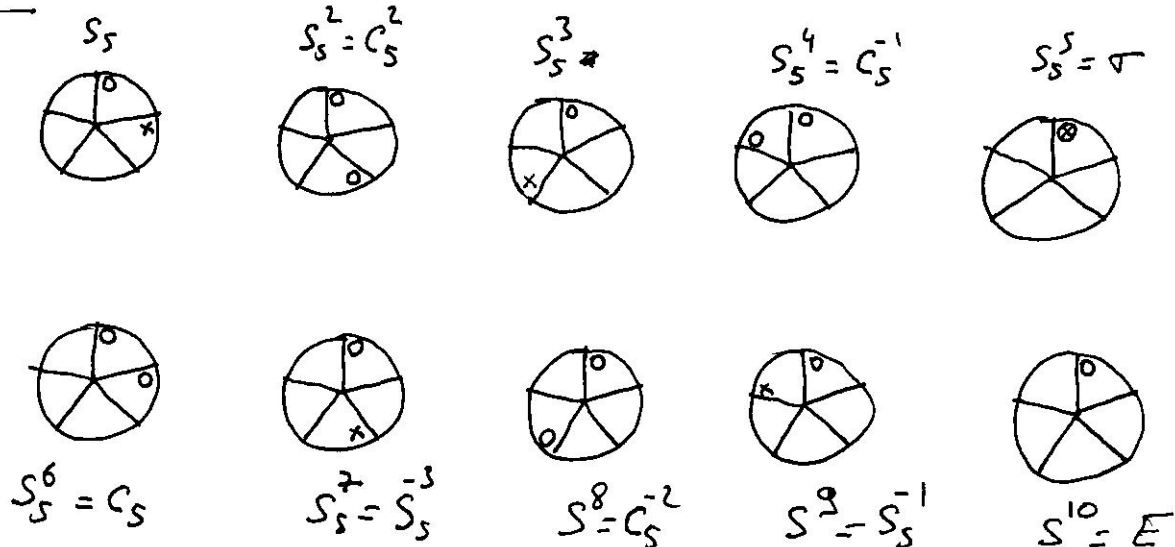


$$D_{5h} \quad \begin{array}{c|ccccccc} & E & 2C_5 & 2C_5^2 & 5C_2 & \sigma_h & 2S_{10} & 2S_5^3 & 5\sigma_v \\ \Gamma_{oop} & 5 & 0 & 0 & -1 & -5 & 0 & 0 & 1 \end{array}$$

$$\Gamma_{oop} = A_2'' \oplus E_1'' \oplus E_2'' \Rightarrow \text{une bande IR}$$

IR R rien

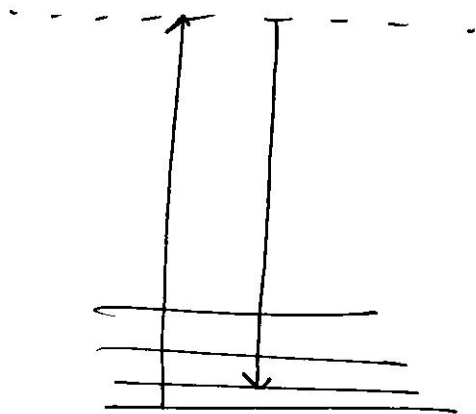
c) S5



① methode spectroscopique :

(3)

→ Raman.



voir cours...

