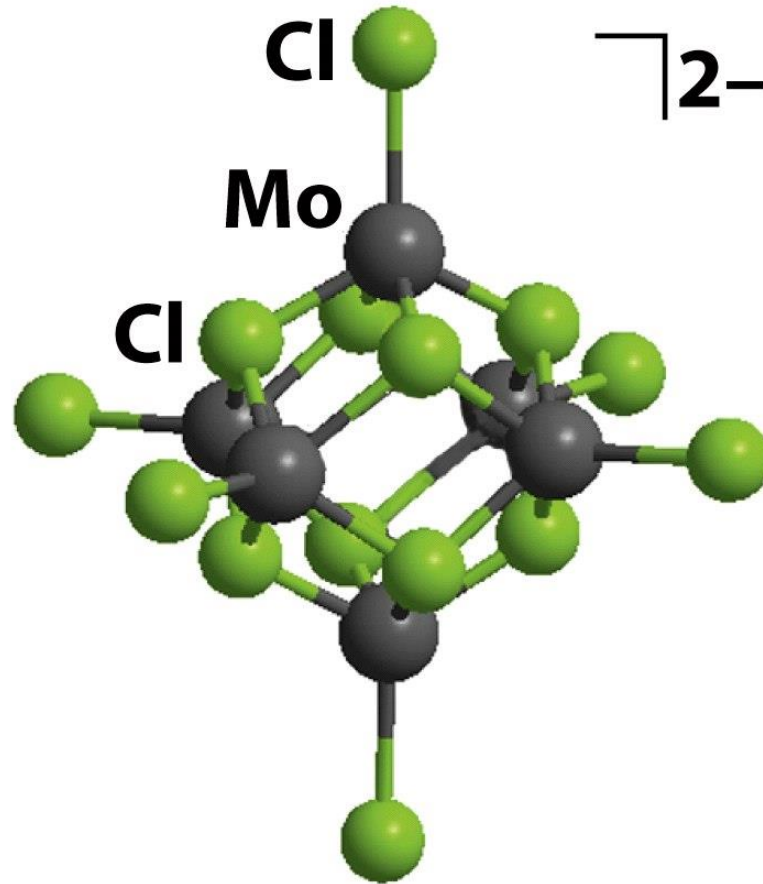
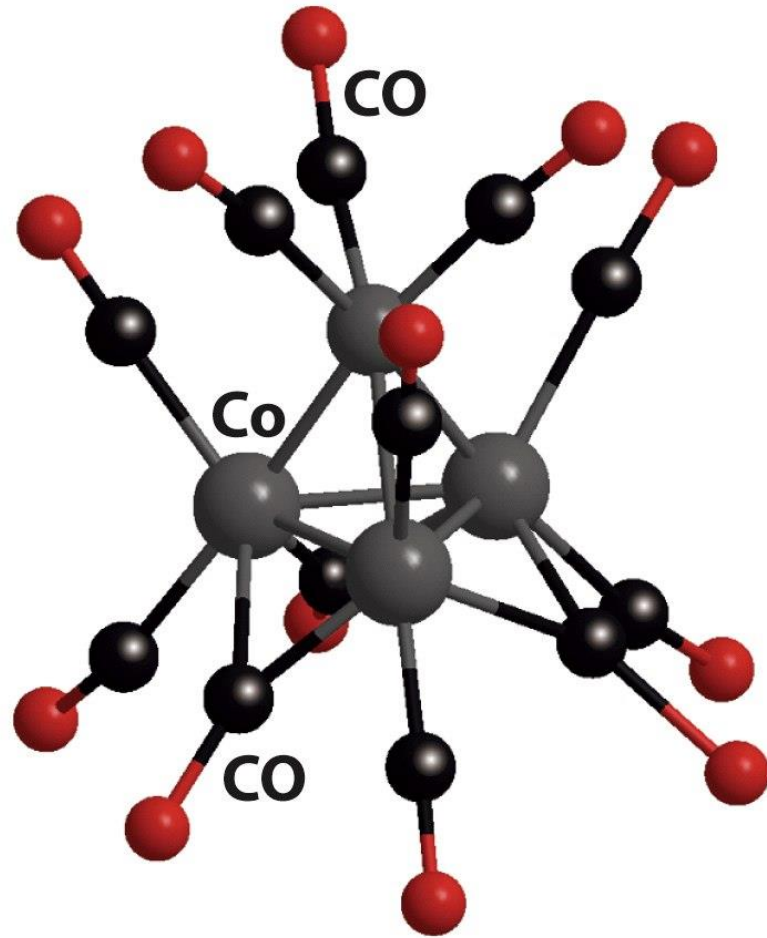


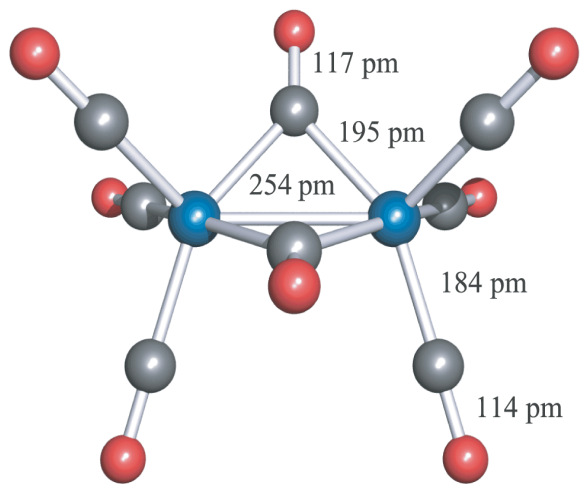
Cubane, C₈H₈

Composto a gabbia

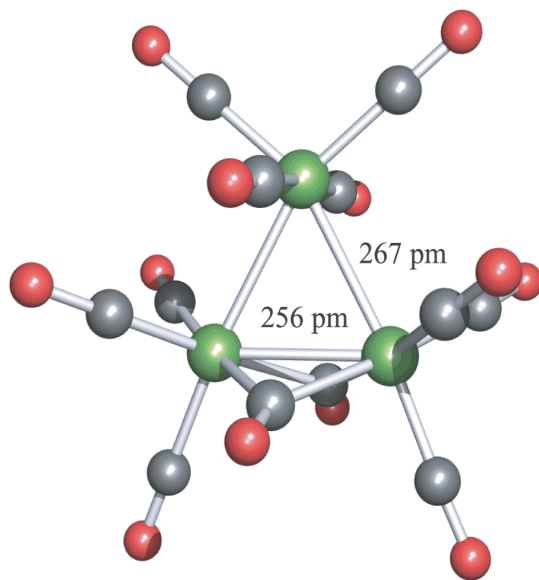
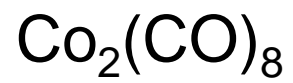


Cluster carbonilico

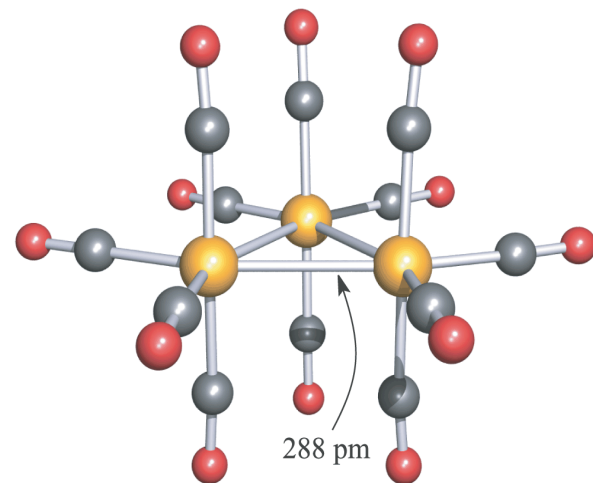




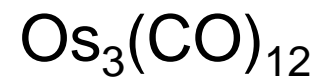
(d)

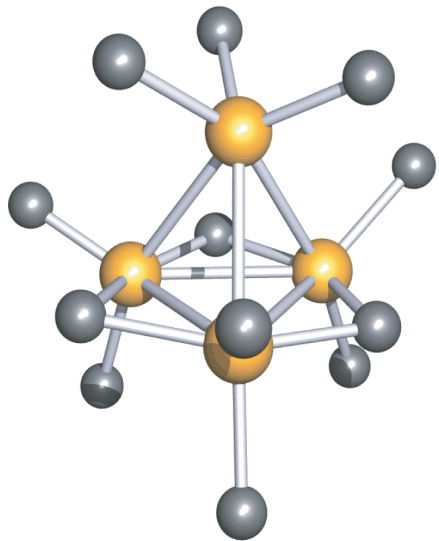


(e)

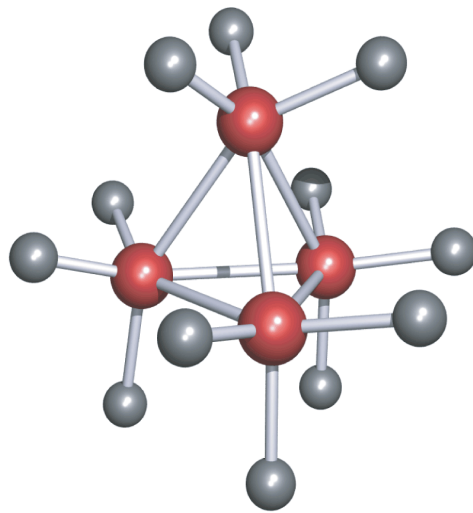
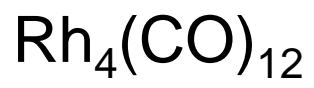


(f)

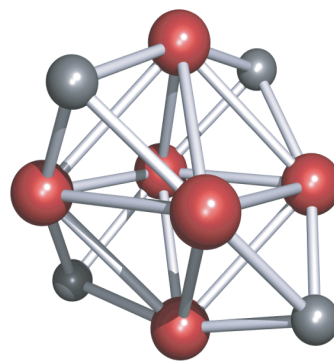




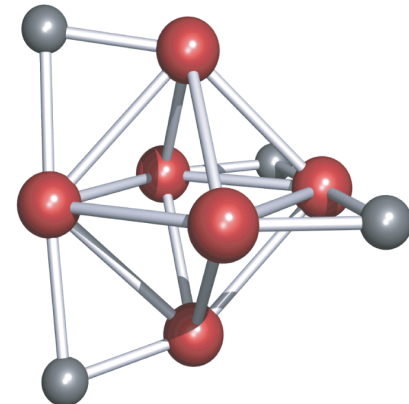
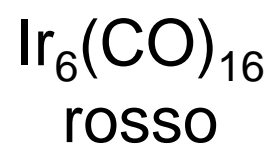
(a)



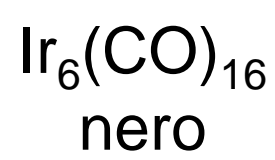
(b)

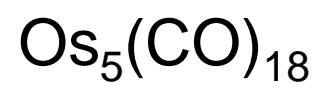
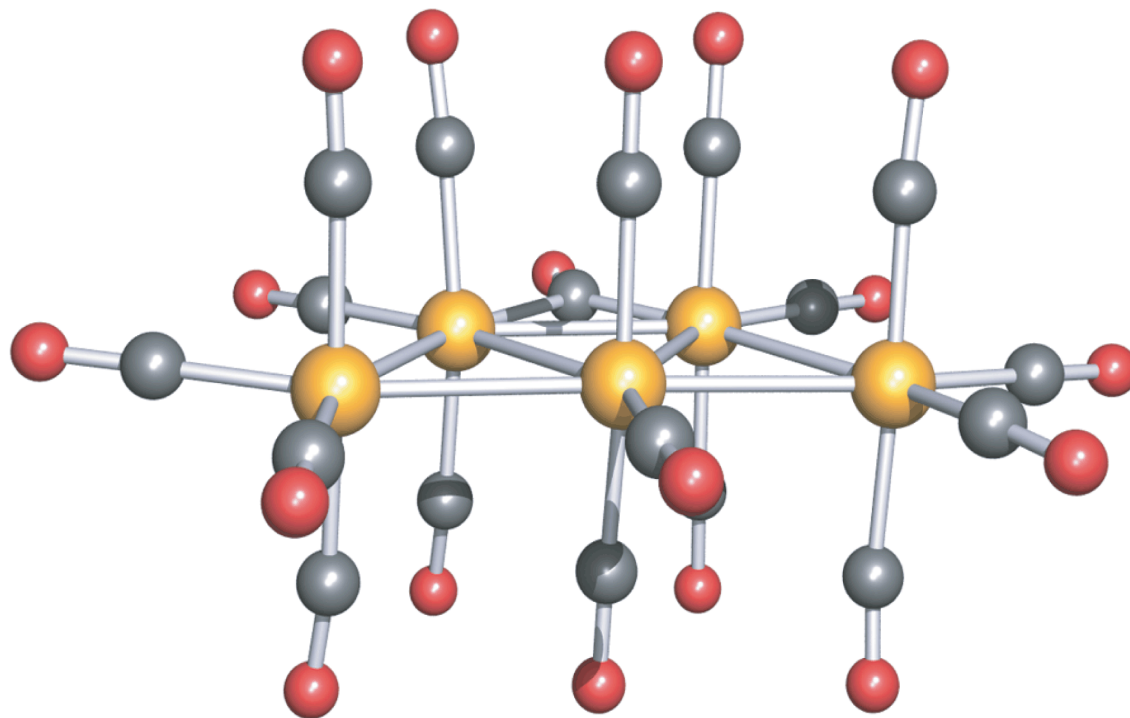


(c)



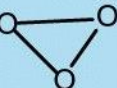

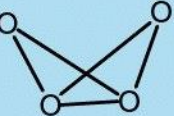
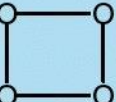


(d)






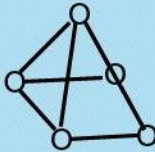


Elettroni di Valenza dei Cluster (CVE)

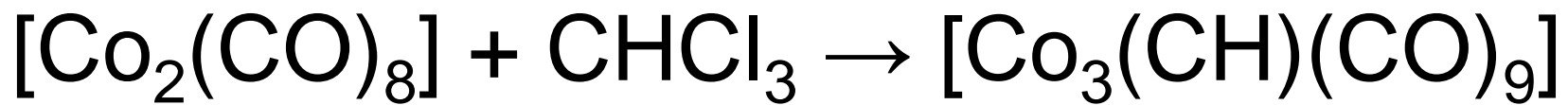
| Table 21.9 Correlation of cluster valence electron (CVE) count and structure | | | |
|--|---|-----------|--|
| Number of metal atoms | Structure of metal framework | CVE count | Example |
| 1 | Single metal  | 18 | Ni(CO) ₄ (2) |
| 2 | Linear  | 34 | Mn ₂ (CO) ₁₀ |
| 3 | Closed triangle  | 48 | [Co ₃ (CH)(CO) ₉] (78) |
| 4 | Tetrahedron  | 60 | Co ₄ (CO) ₁₂ (76) |
| | Butterfly  | 62 | [Fe ₄ (CO) ₁₂ C] ²⁻ |
| | Square  | 64 | Os ₄ (CO) ₁₆ |

Regole di Wade – Mingos – Lauher

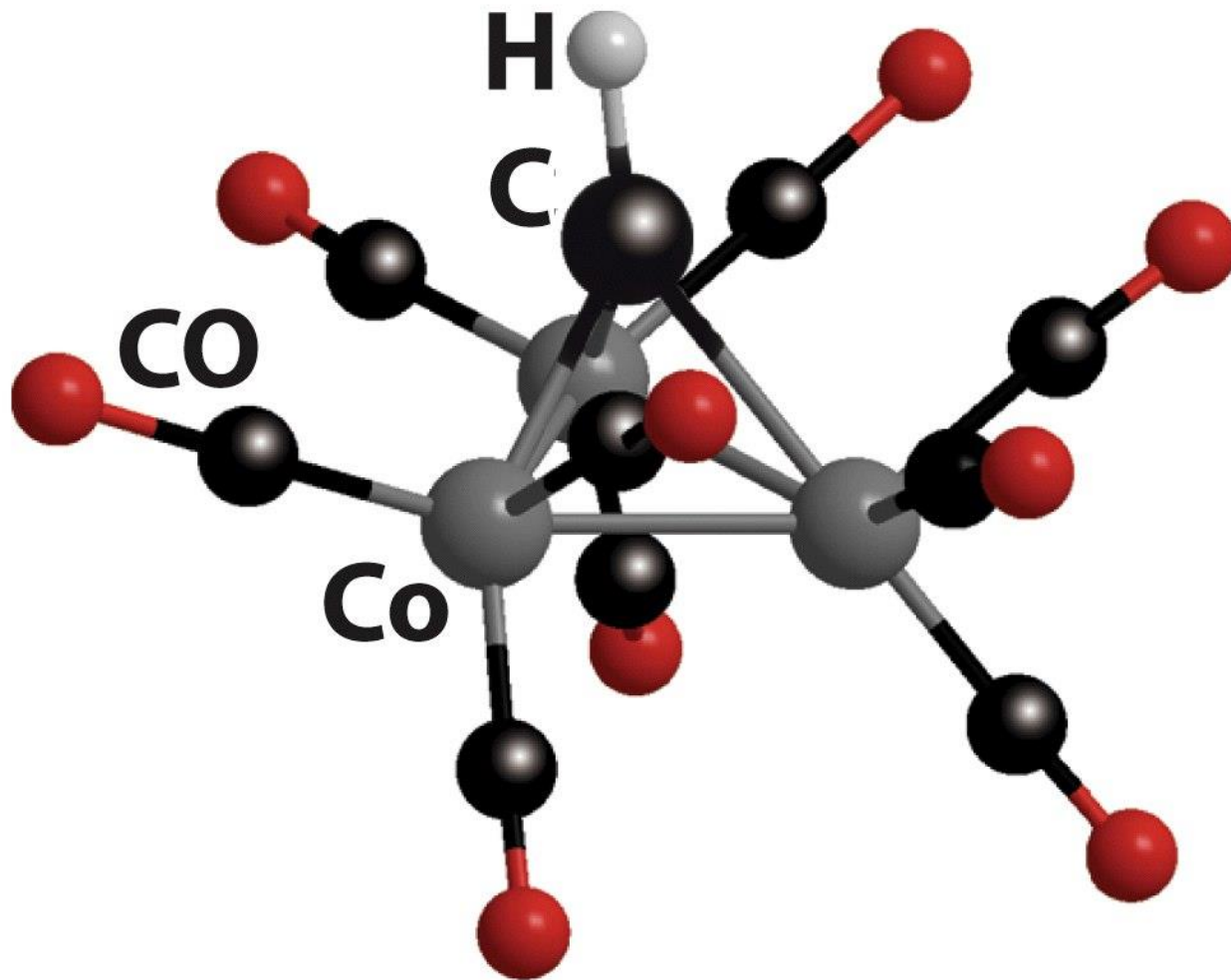
$$\text{CVE} = 18x - 2y$$

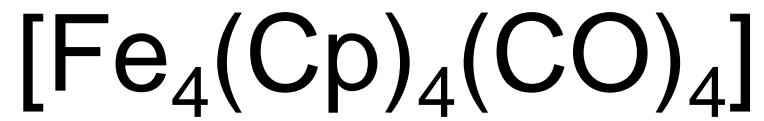
Table 21.9 Correlation of cluster valence electron (CVE) count and structure

| Number of metal atoms | Structure of metal framework | CVE count | Example |
|-----------------------|--|-----------|--|
| 5 | Trigonal bipyramid  | 72 | $\text{Os}_5(\text{CO})_{16}$ |
| | Square pyramid  | 74 | $\text{Fe}_5\text{C}(\text{CO})_{15}$ |
| 6 | Octahedron  | 86 | $\text{Ru}_6\text{C}(\text{CO})_{17}$ |
| | Trigonal prism  | 90 | $[\text{Rh}_6\text{C}(\text{CO})_{15}]^{2-}$ |



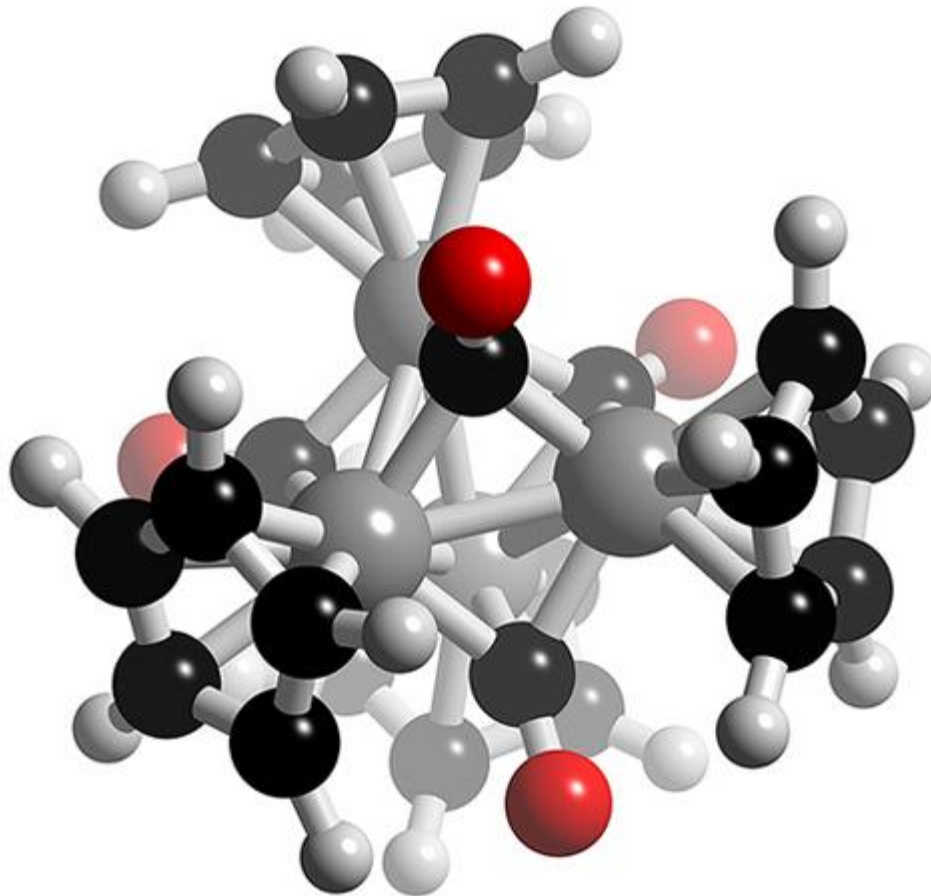
CVE = 48



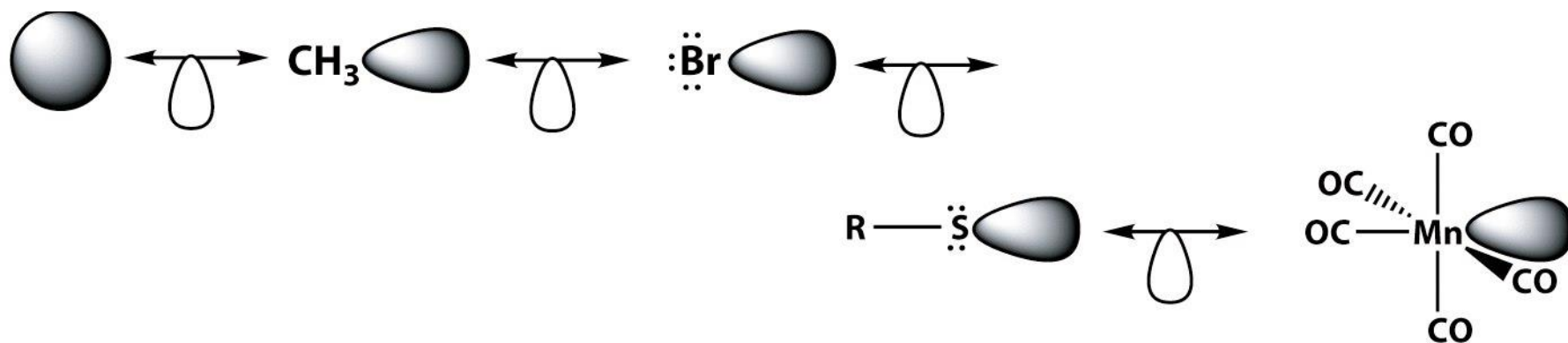


CVE = 60

ν_{CO} 1640 cm^{-1}



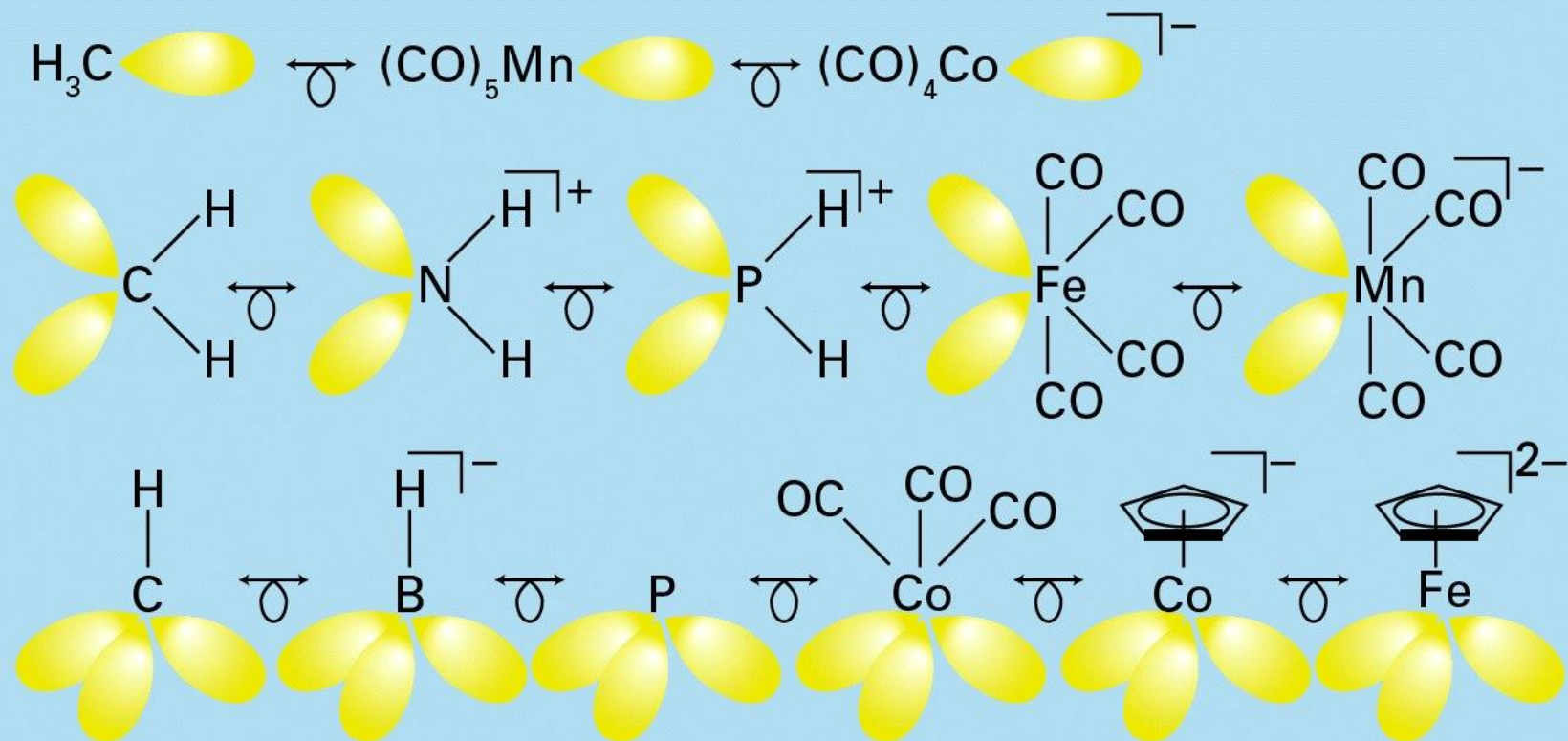
Serie di frammenti isolobali



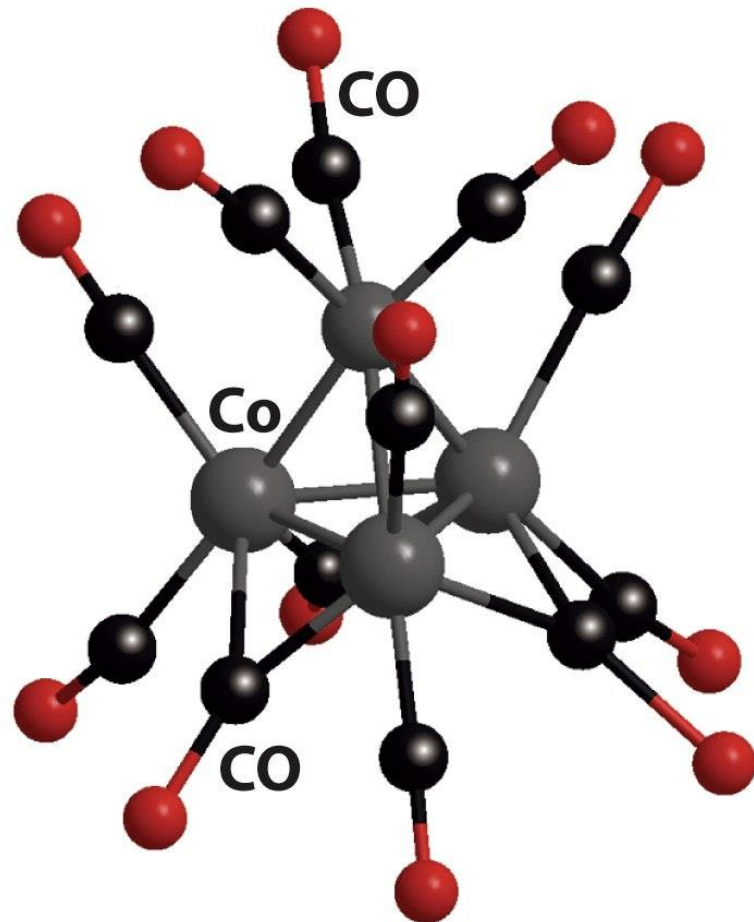
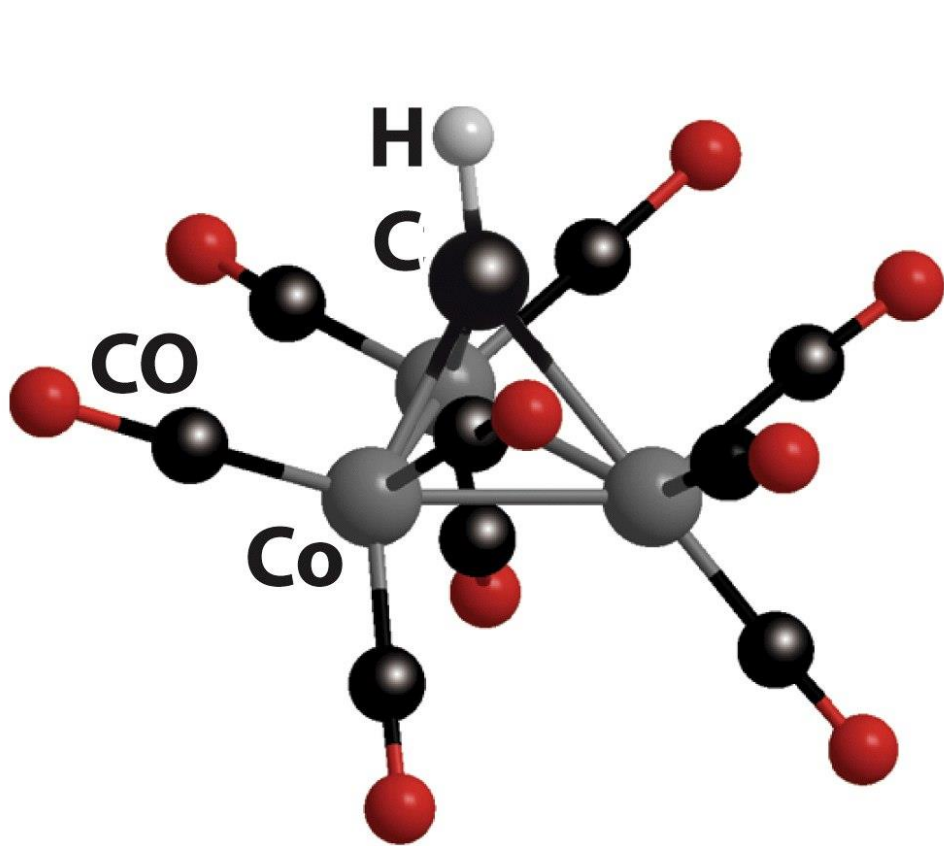
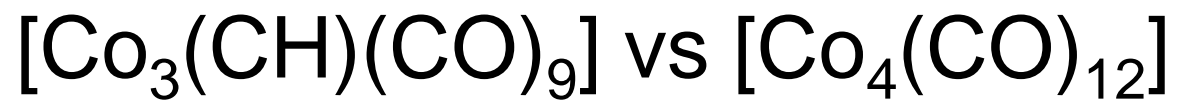
Gli **orbitali di frontiera** dei frammenti isolobali hanno:

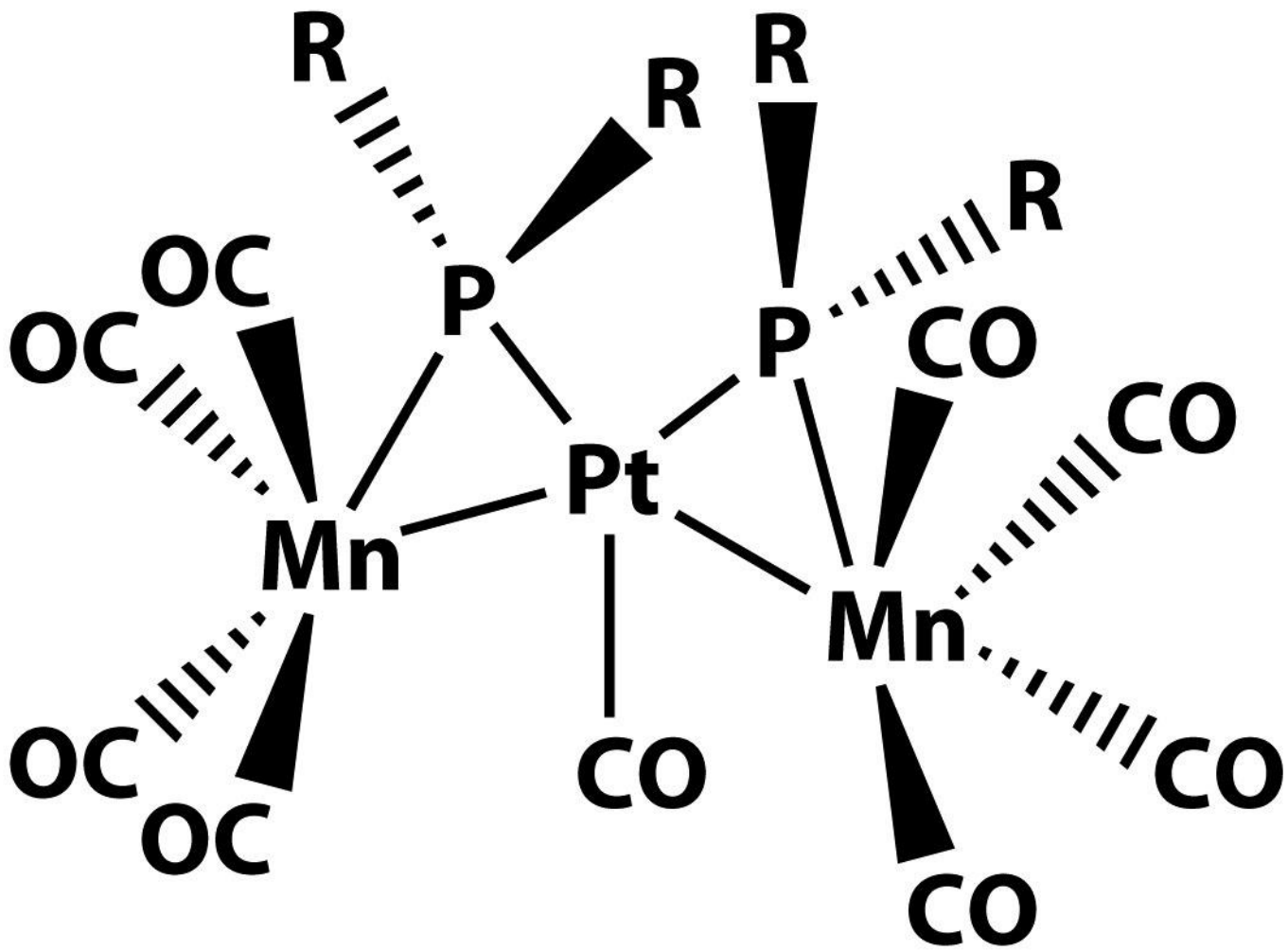
- stessa simmetria
- energie simili
- stessa occupazione elettronica

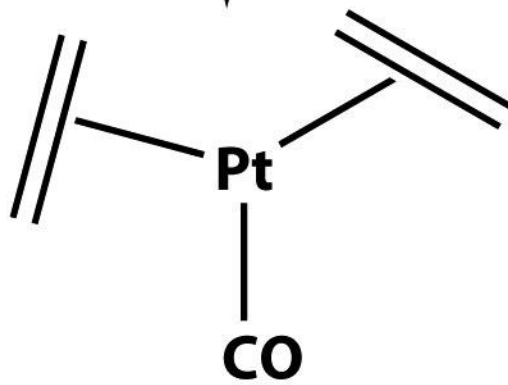
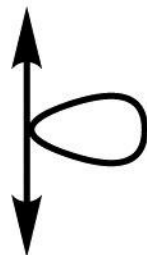
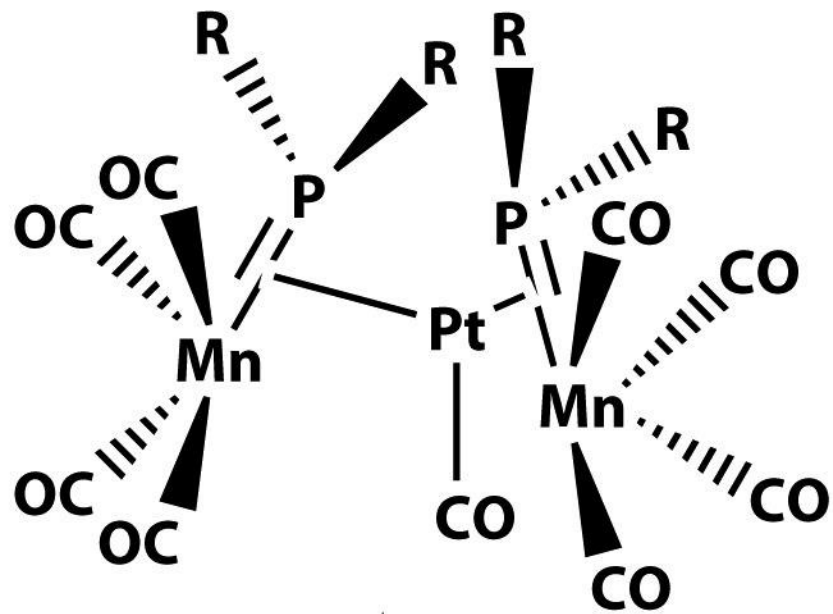
Table 21.10 Selected isolobal fragments

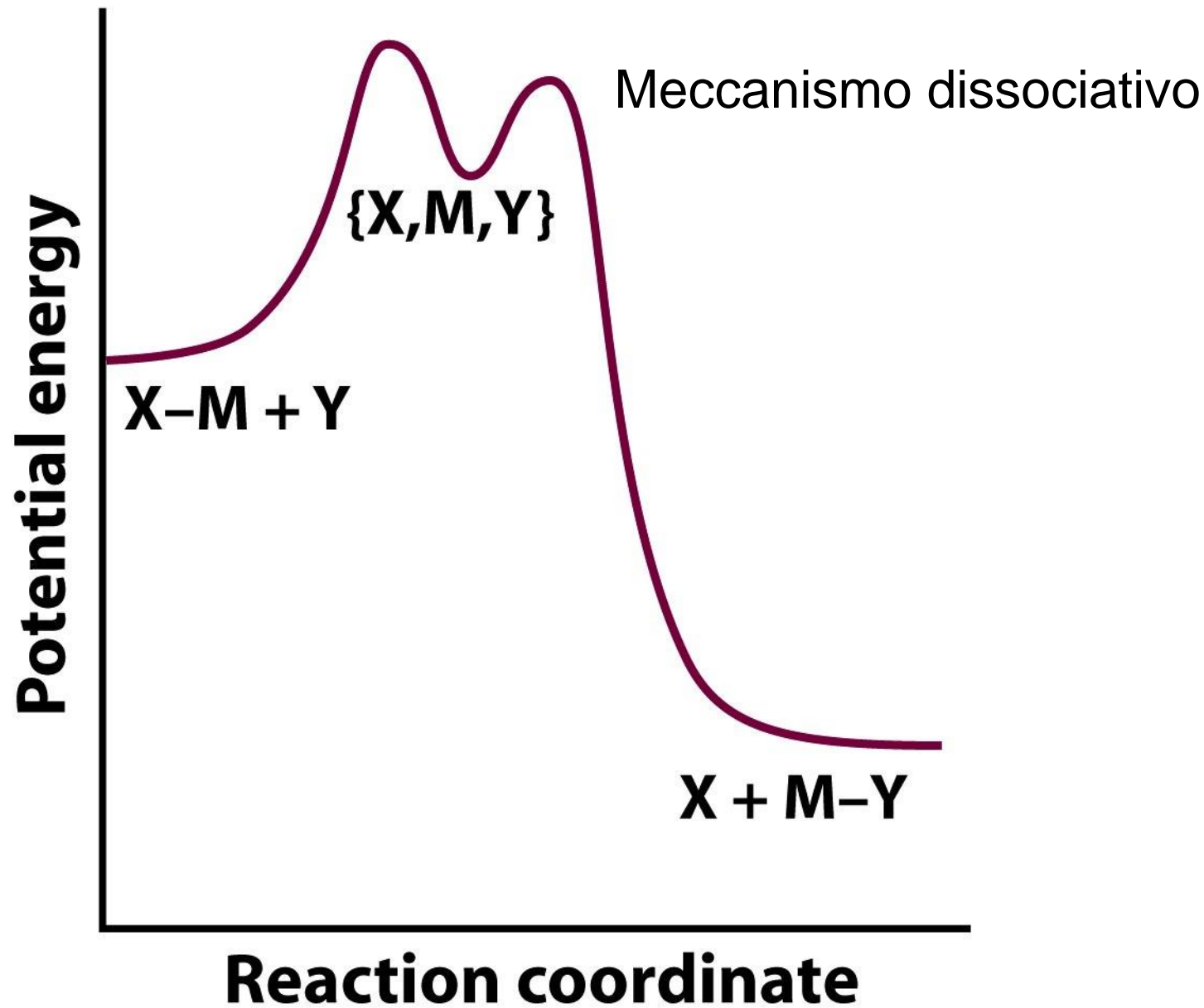


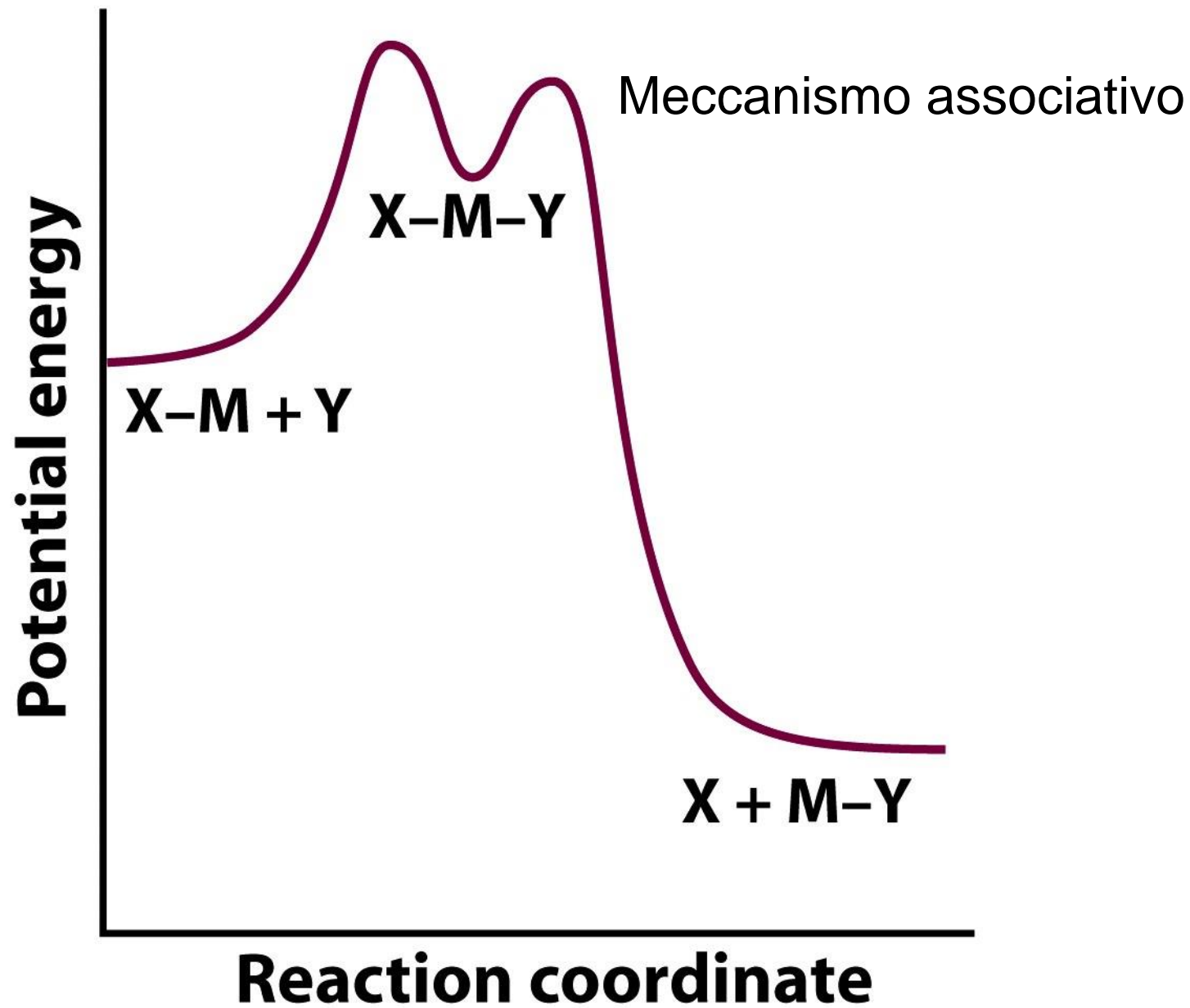
Note that electrons can be added to or subtracted from each member of the isolobal group and still maintain isolobality. For example, $\text{CH}_3^+ \longleftrightarrow \text{Mn}(\text{CO})_5^+ \longleftrightarrow \text{Co}(\text{CO})_4$.

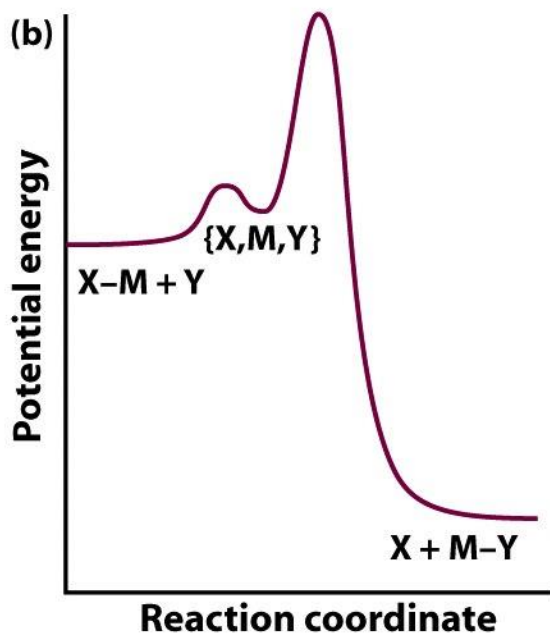
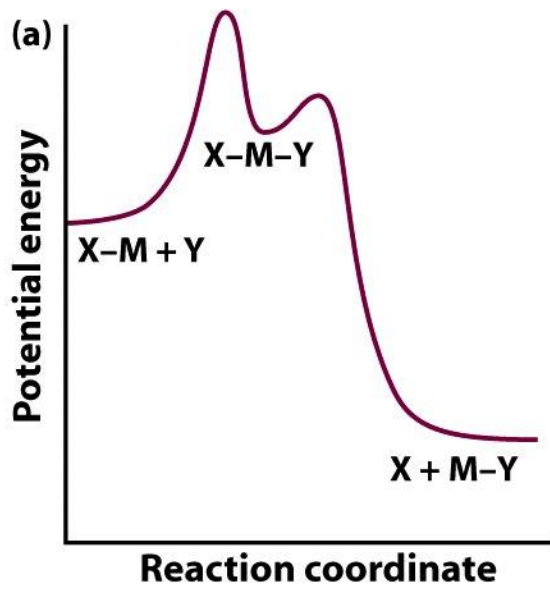




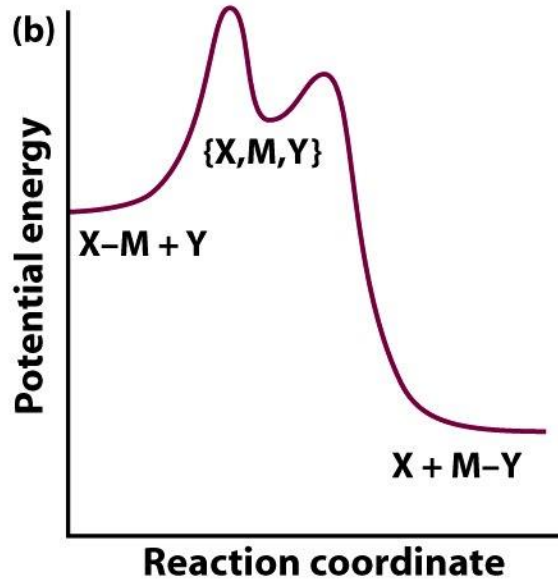
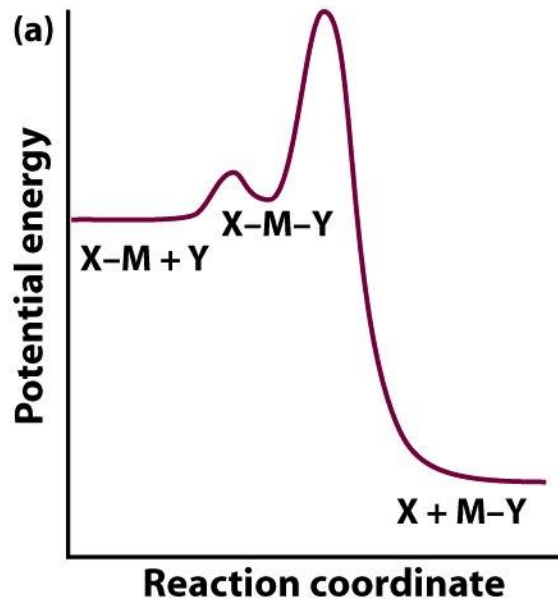




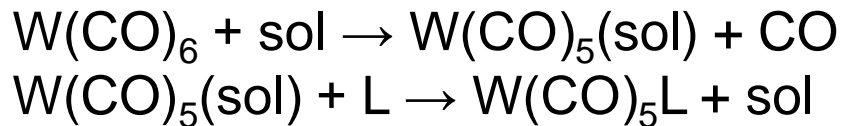
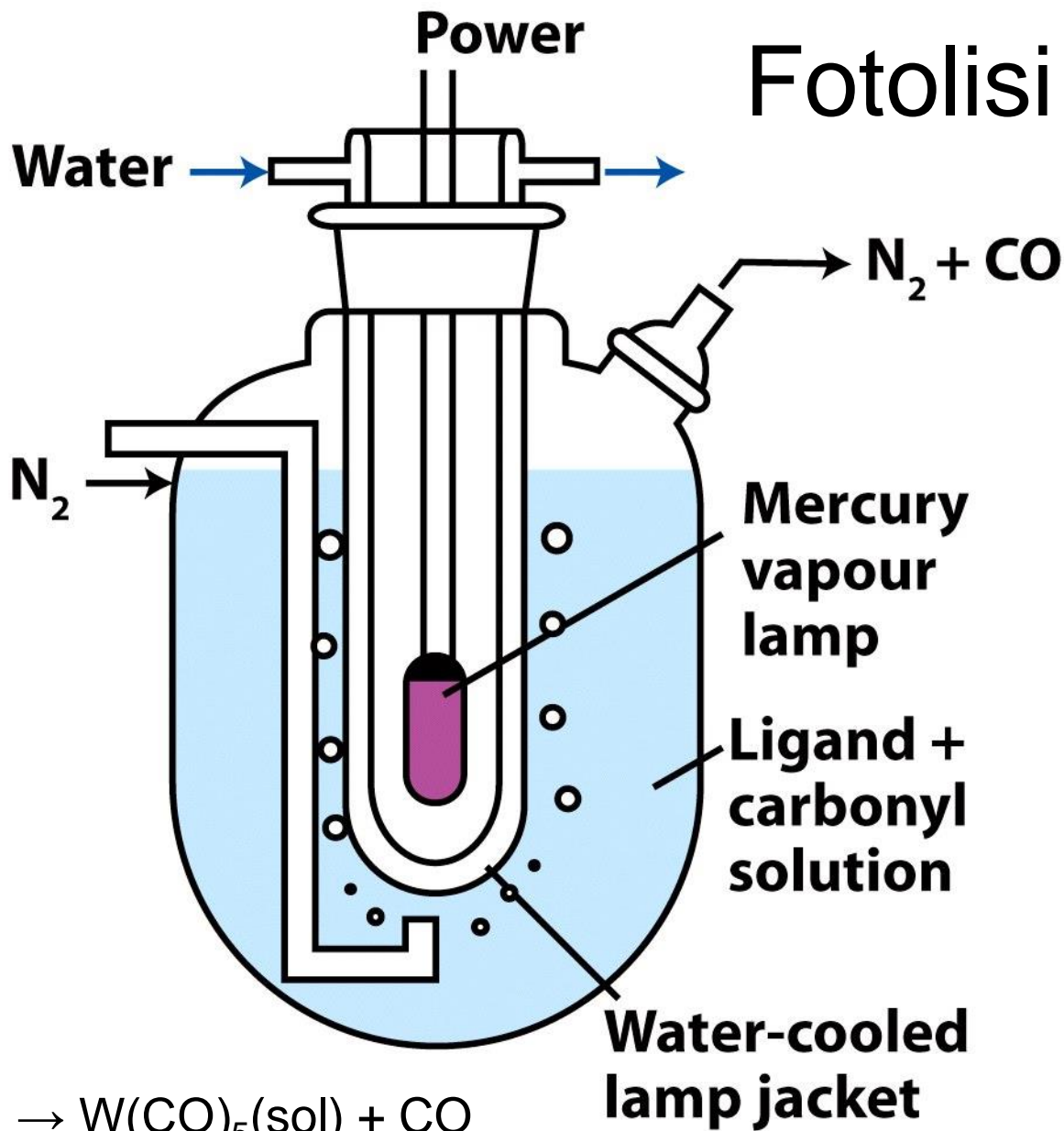




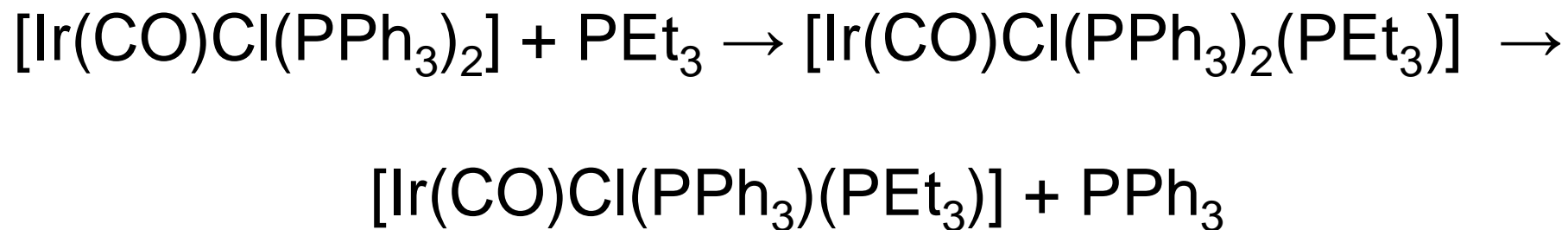
Attivazione di tipo associativo



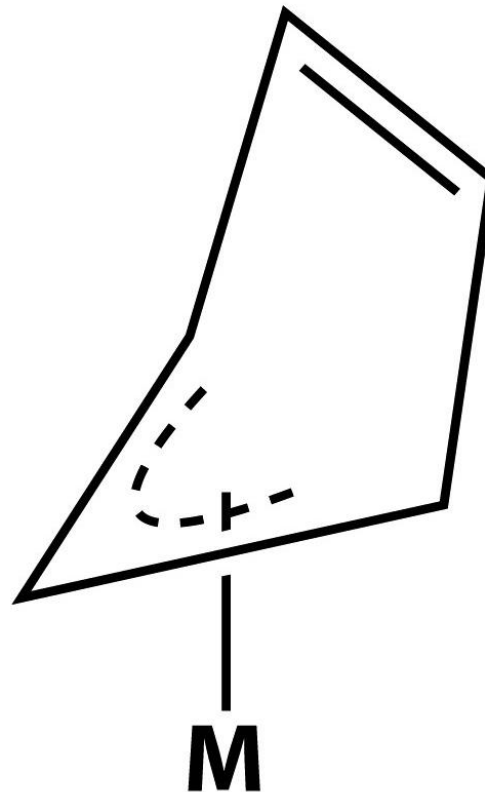
Attivazione di tipo dissociativo



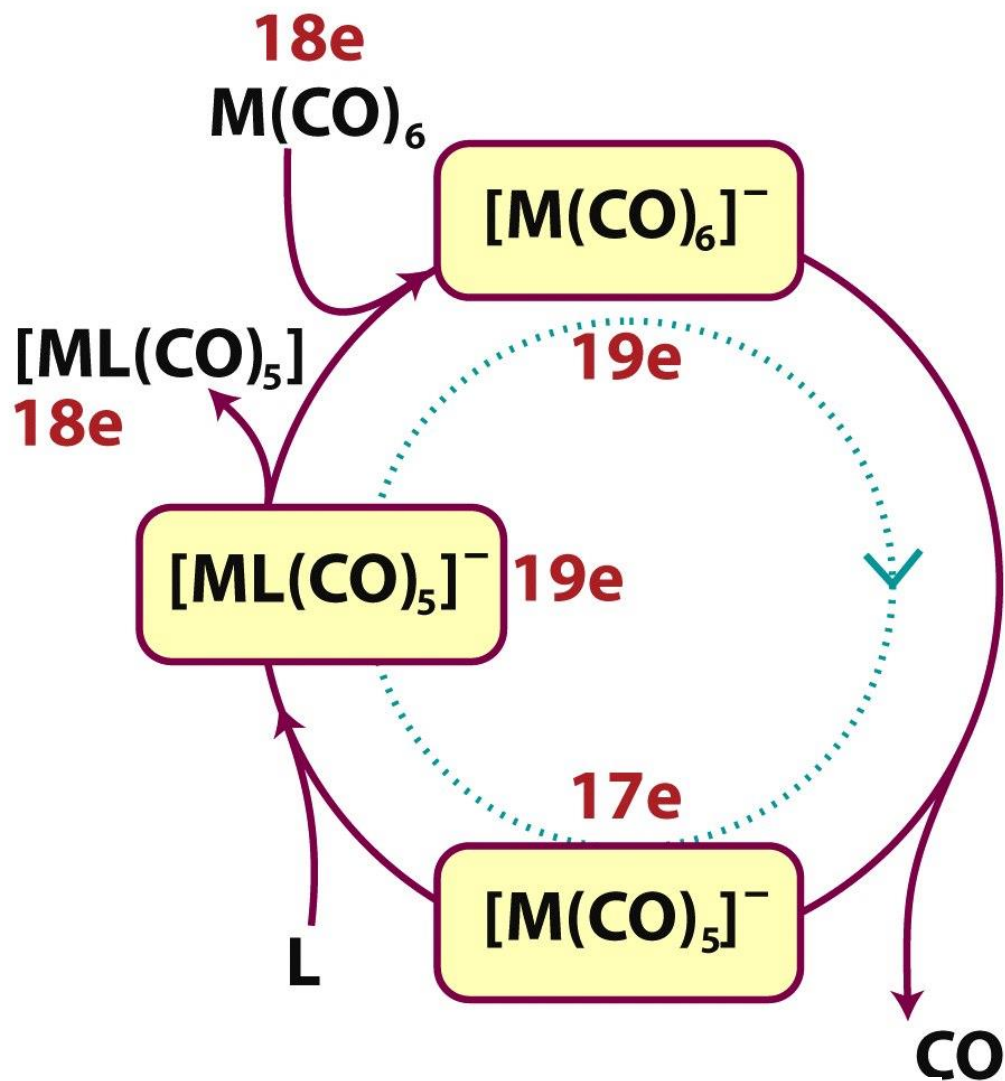
16e: meccanismo associativo



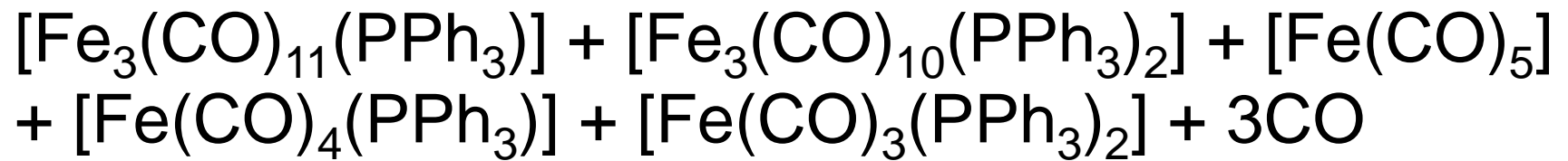
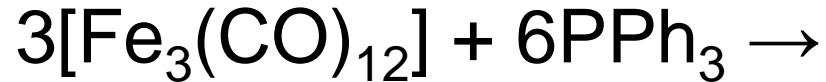
Sostituzioni con meccanismo associativo in complessi con 18 elettroni



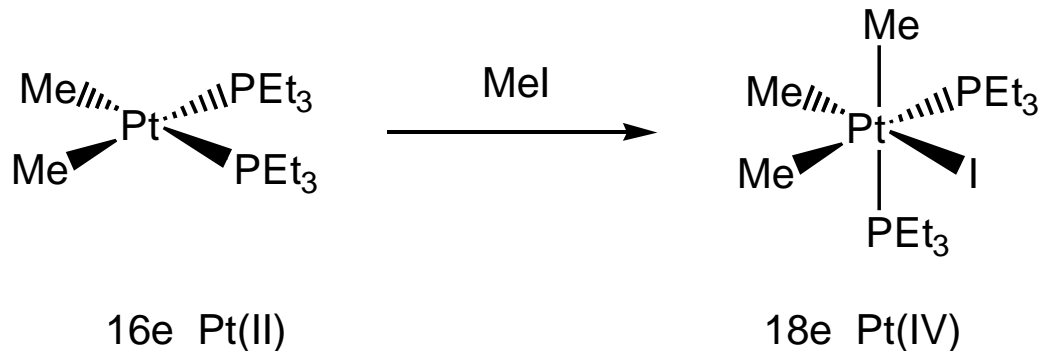
Sostituzione indotta da un processo redox



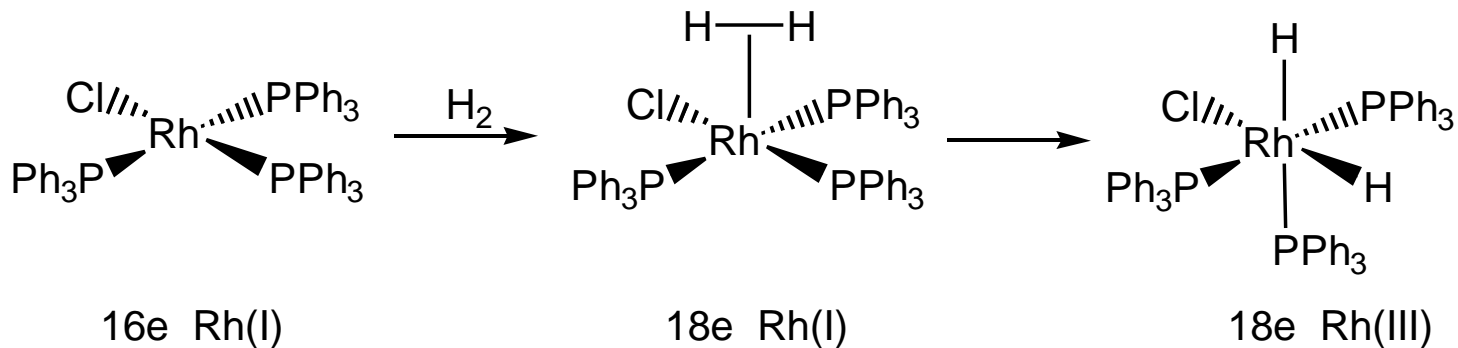
Sostituzione dei leganti in un cluster



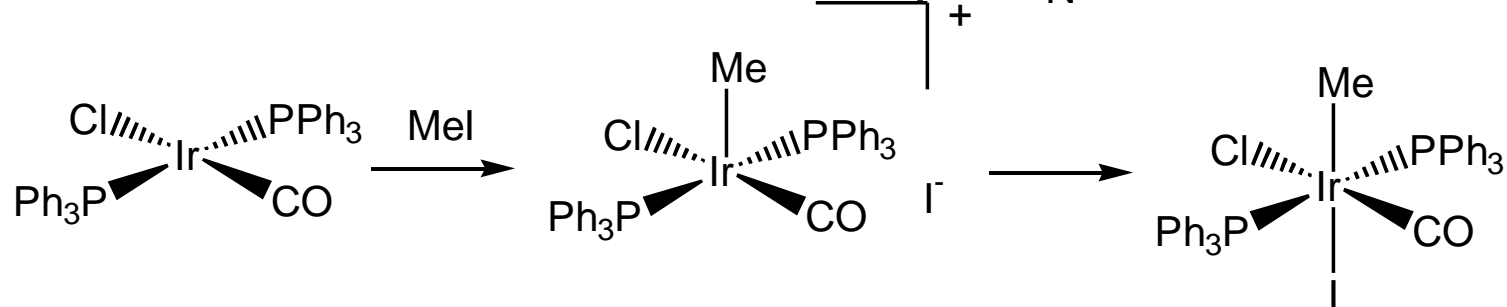
Addizione ossidativa



Meccanismo concertato

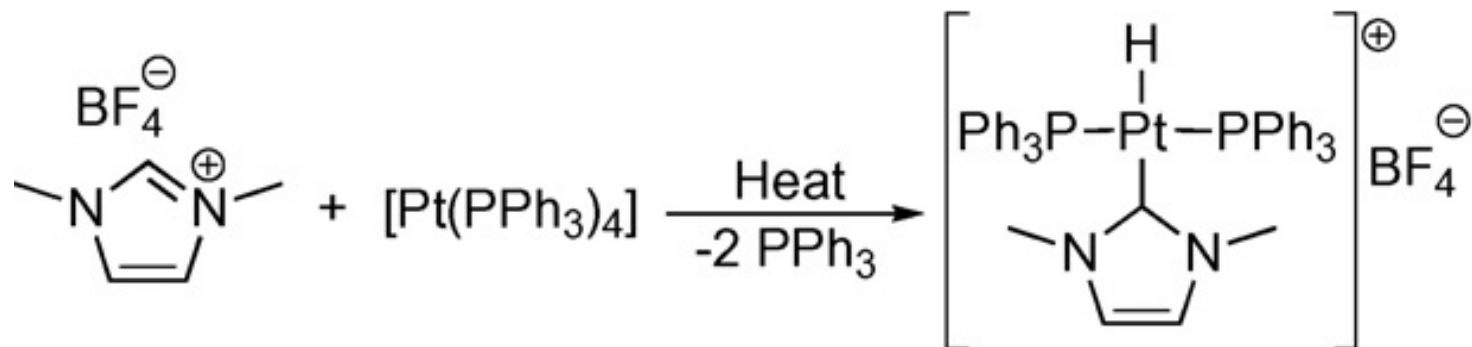


Meccanismo di tipo S_N2

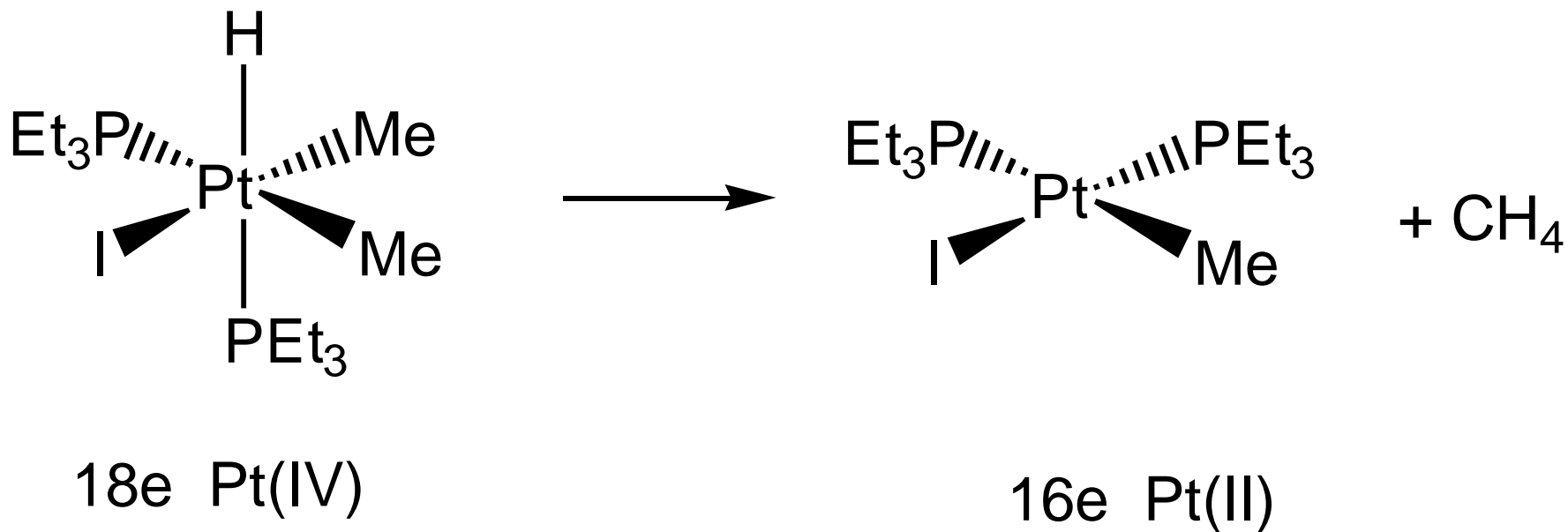


Caso anomalo di addizione ossidativa

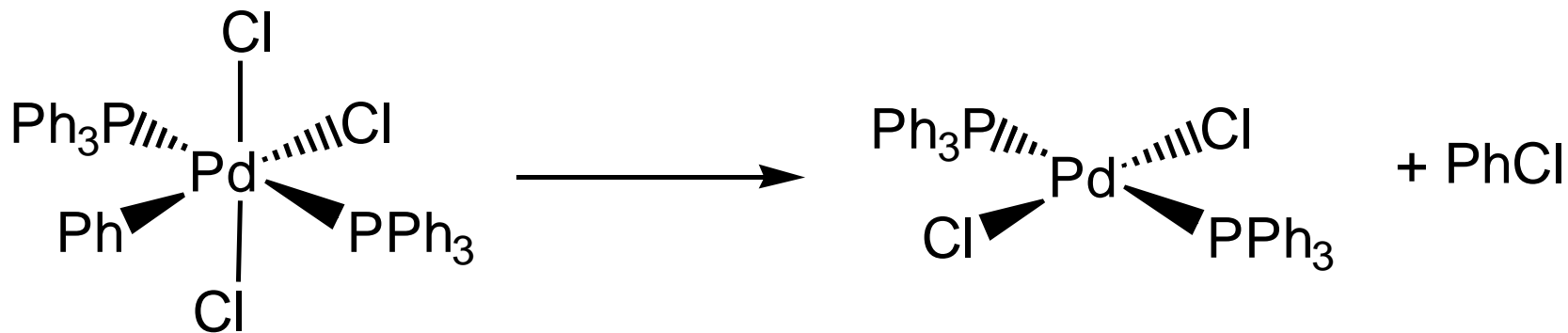
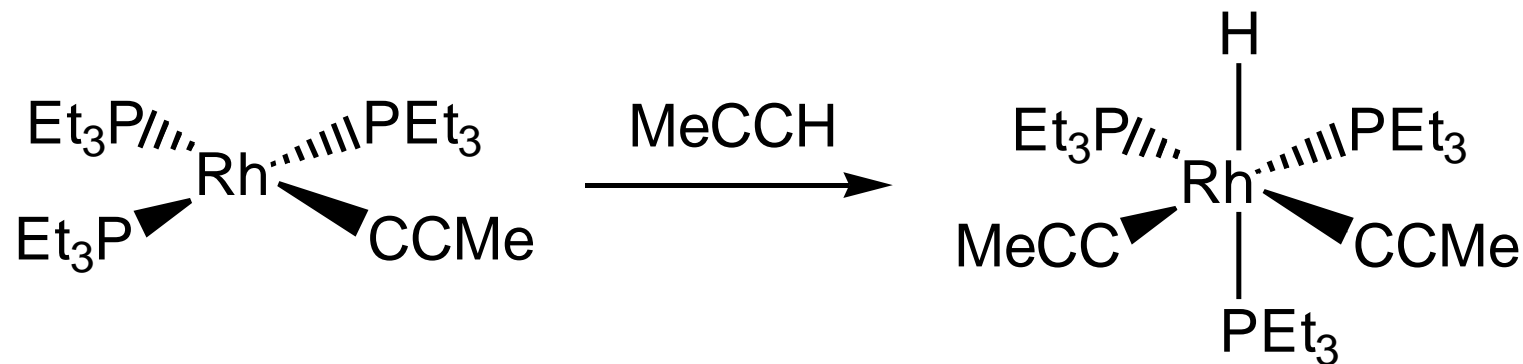
addizione ossidativa di sali di imidazolio su precursori zerovalenti



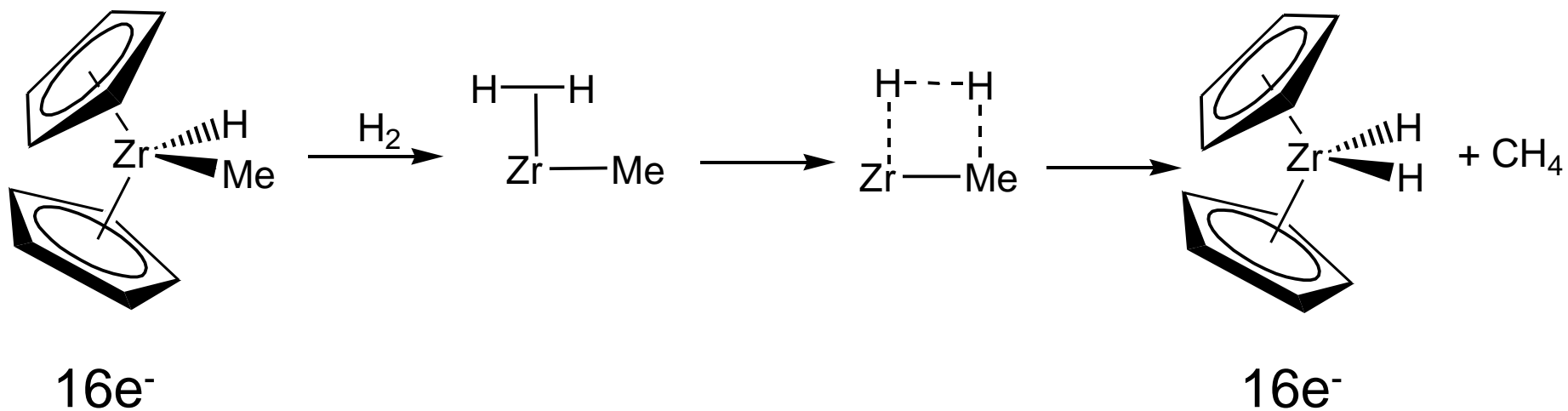
Eliminazione riduttiva



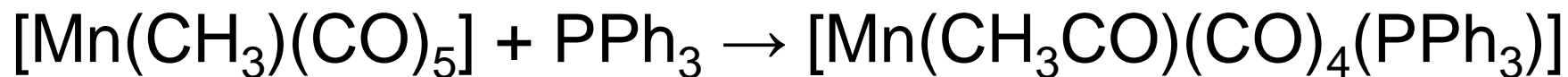
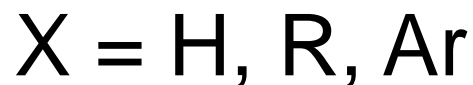
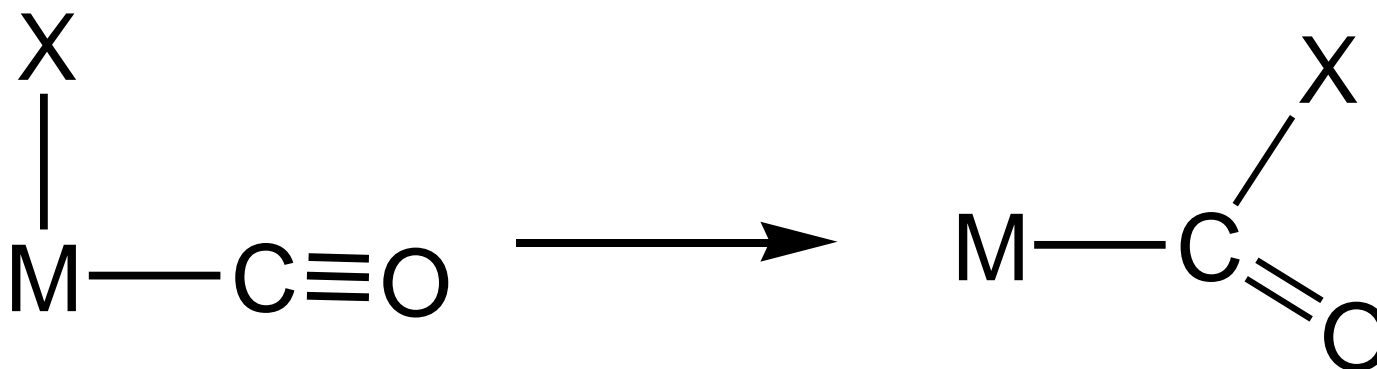
Esempi



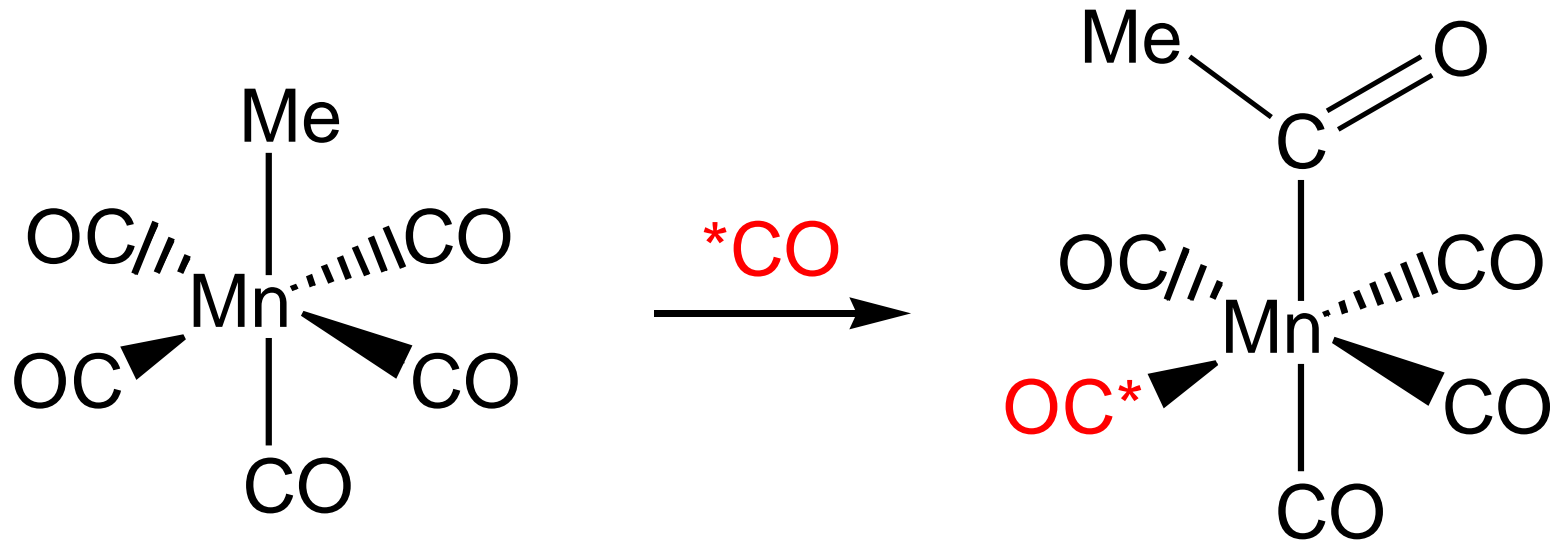
Metatesi di legame σ



Inserzione migratoria 1,1

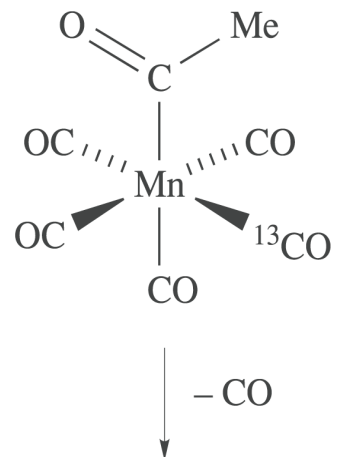


Meccanismo dell'inserzione migratoria 1,1



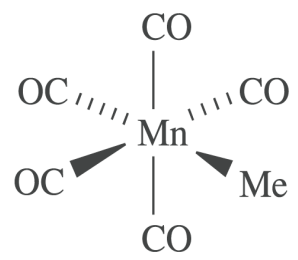
Reazione inversa





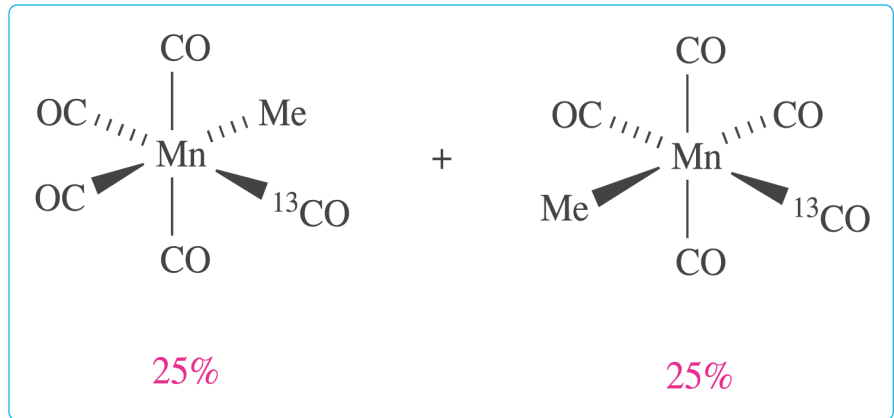
Migrazione Me

- CO



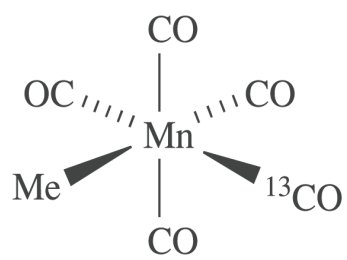
25%

+



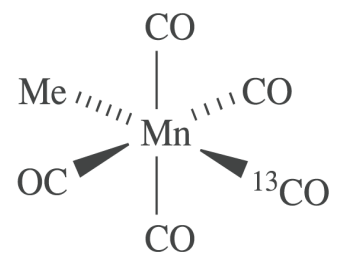
25%

+



25%

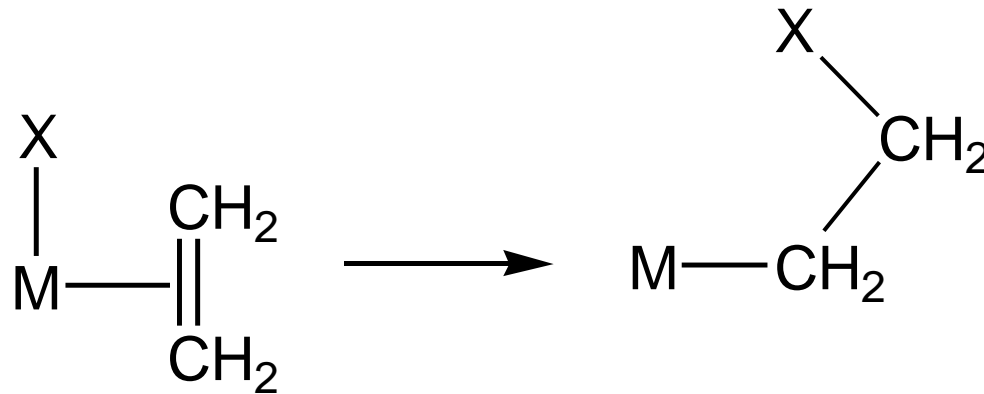
+



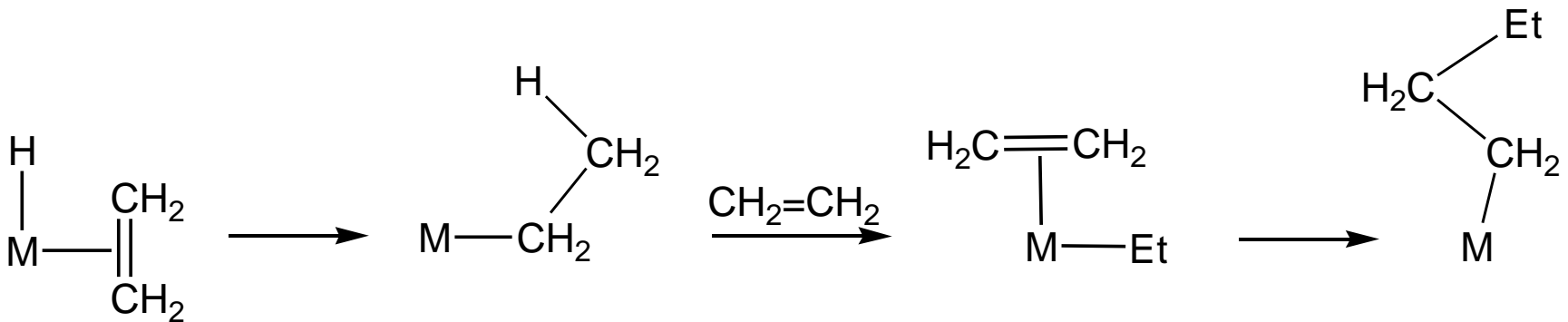
25%

Equivalent products

Inserzione 1,2 *con leganti coordinati η^2*

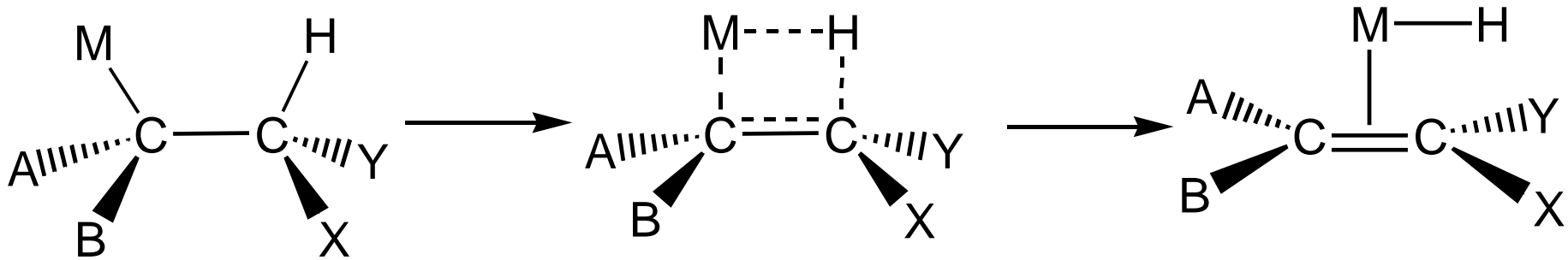
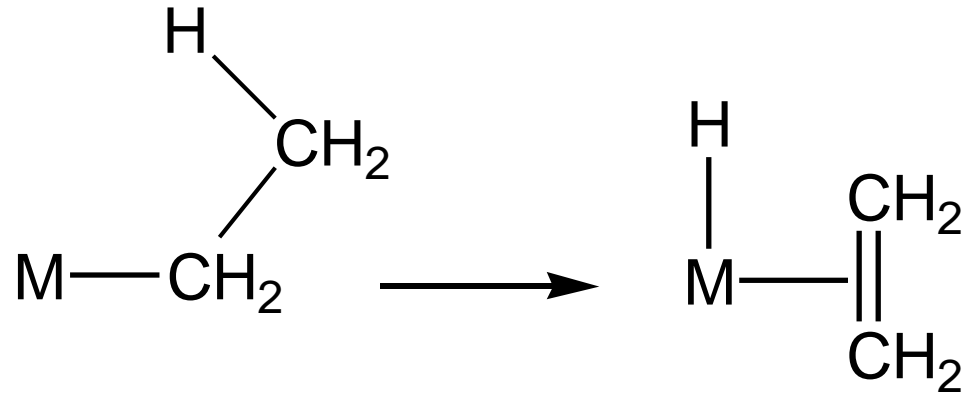


$X = \text{H}, \text{R}, \text{Ar}$



Formazione di polietilene

β -eliminazione di idruro



Intermedio *syn*

Isomerizzazione di alcheni

