

İzomerlik

(formüller aynı, fiziksel veya kimyasal özellikler farklı)



Yapısal İzomerlik

basit formülleri aynı

bağlar farklı

İyonlaşma izomerliği

Hidrasyon izomerliği

Koordinasyon izomerliği

Bağlanma izomerliği

Polimerizasyon izomerliği

Stereoizomerlik

Bağlar aynı

atomların uzaydaki düzeni farklı

Geometrik izomerlik

cis/trans, mer/fac

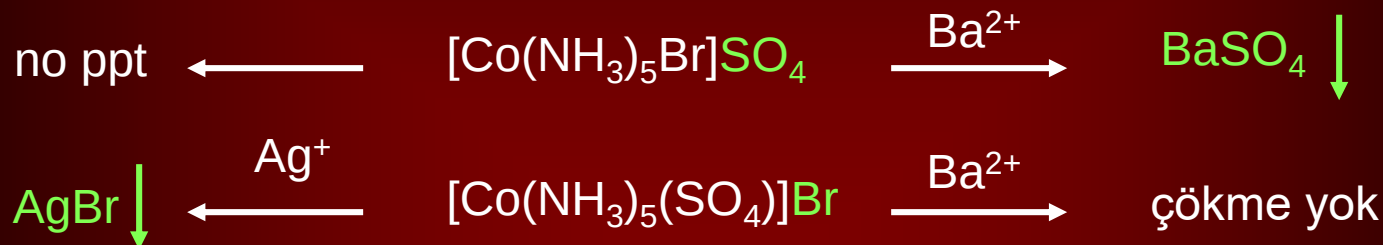
Optik izomerlik

Δ and Λ

Konformasyon izomerliği

İyonlaşma izomerirliği

Bağlı anyonun karışıt iyon ile yer deęiřtirmesi



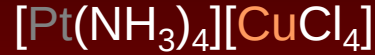
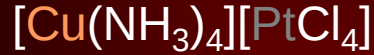
Solvat izomerlięi (ligant su ise hidrat izomerlięi)

Nötral ligandın anyonik ligant ile yer deęiřtirmesi



Koordinasyon izomerliği

İki merkez atomu arasında ligantlar farklı dağılmışlardır.



kare düzlem



sekizyüzlü

Polimerizasyon izomerliği

$[\text{ML}_m]_n$ basit formülündeki n değeri değişir

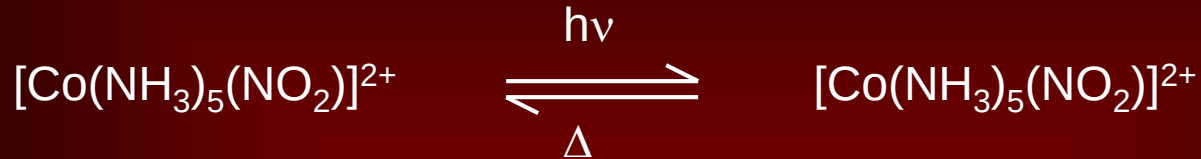


Her iki izomer aynı basit formüle sahiptir, $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]_n$

Bağlanma izomerliği

Ambidentat ligantlar, 1 den farklı verici atoma sahip ligantlardır.

“ merkez atomuna farklı donör atomları ile bağlanabilirler

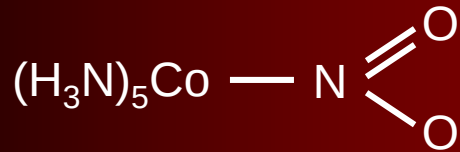


sarı

kırmızı

nitro-complex

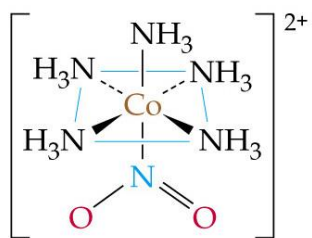
nitrito-complex



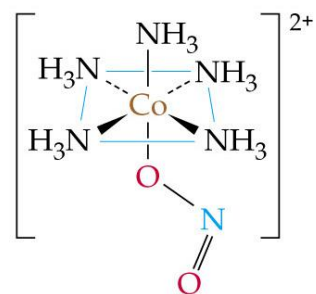
izotiyosiyanato



tiyosiyanato



(a)



(b)

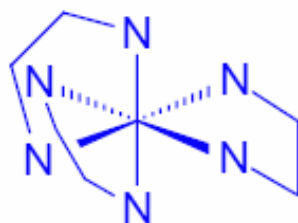
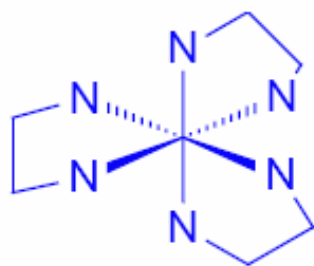
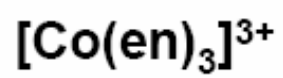
Stereoizomerler



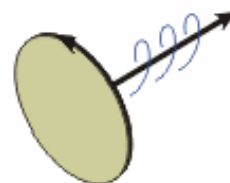
Polarize ışık düzlemini

- sağa çeviren, *dekstro*, *d*, (+), Δ (delta)
- sola çeviren, *levo*, *l*, (-), Λ (lambda)

Rasemik karışım = kiral olmayan, Δ ve Λ izomerlerini eşit miktarda içeren karışım



Δ



Λ



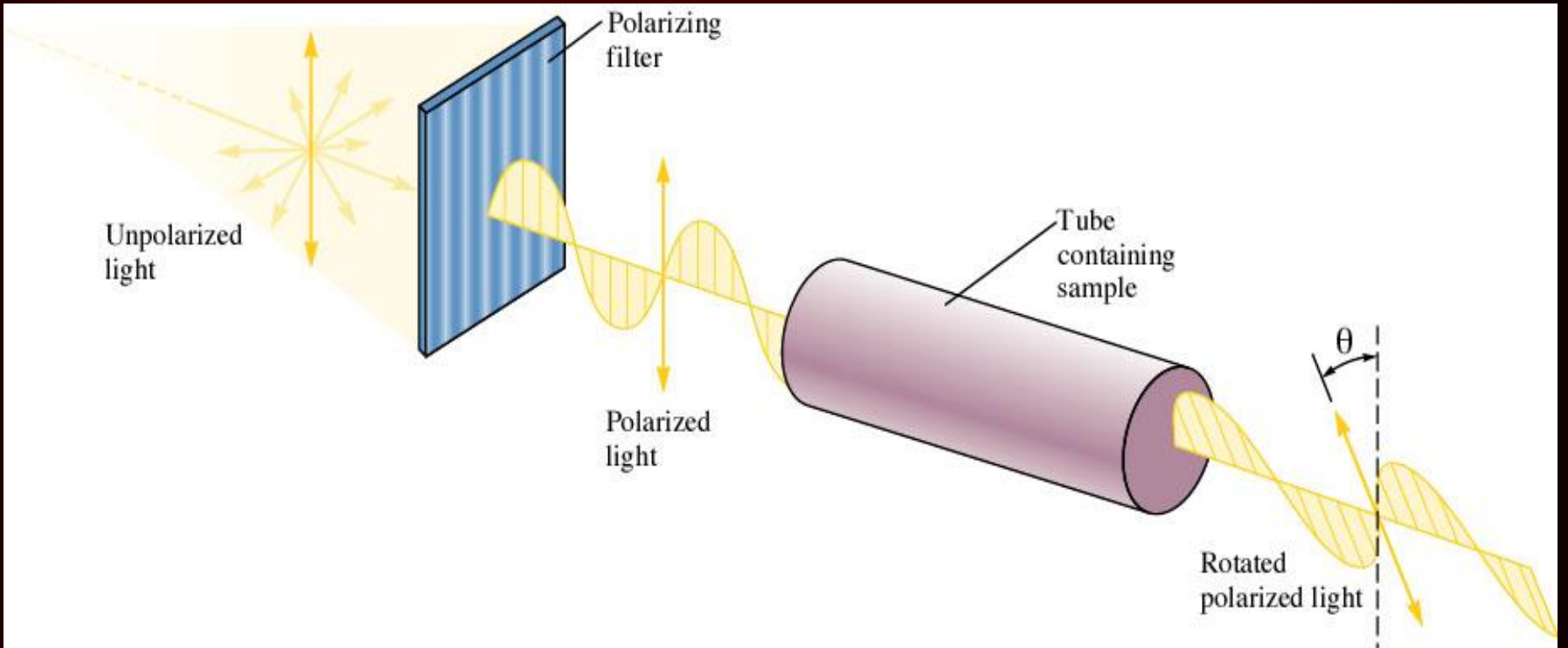
Δ - $[\text{Co}(\text{en})_3]^{3+}$



Λ - $[\text{Co}(\text{en})_3]^{3+}$

(kiralite) optik izomerlik

Polarize ışık düzlemini çeviren maddelere **kiral** madde adı verilir



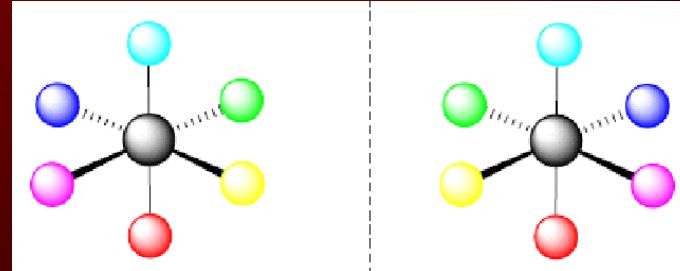
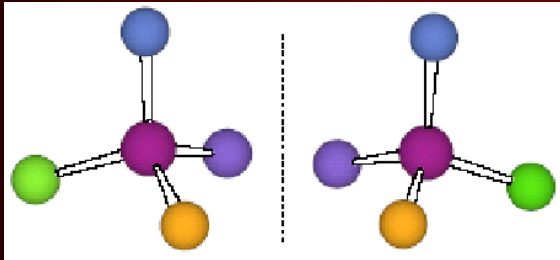
Optikçe aktif madde tarafından polarize ısık düzleminin çevrilmesi

optik izomerler

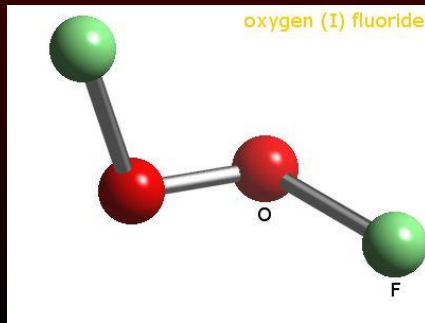
Optik izomerler birbirinin ayna görüntüsüdür ve üst üste çakışmazlar

Kiral yapılar

- asimetric yapılar (C_1)

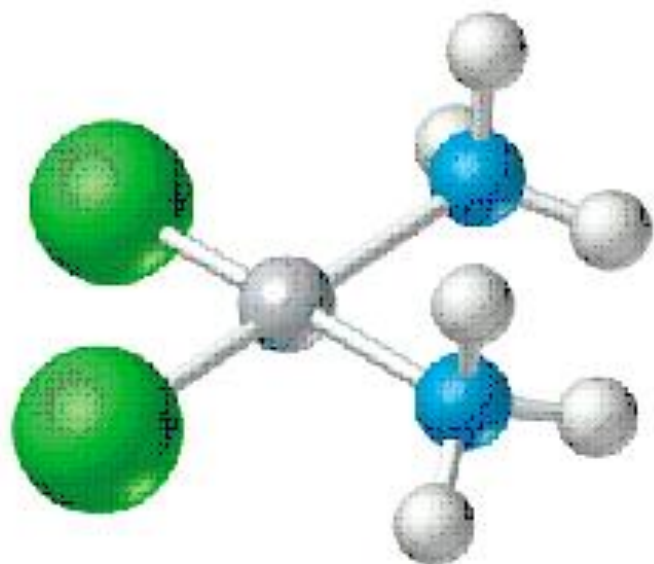


- dissimetrik yapılar (C_n ve D_n)

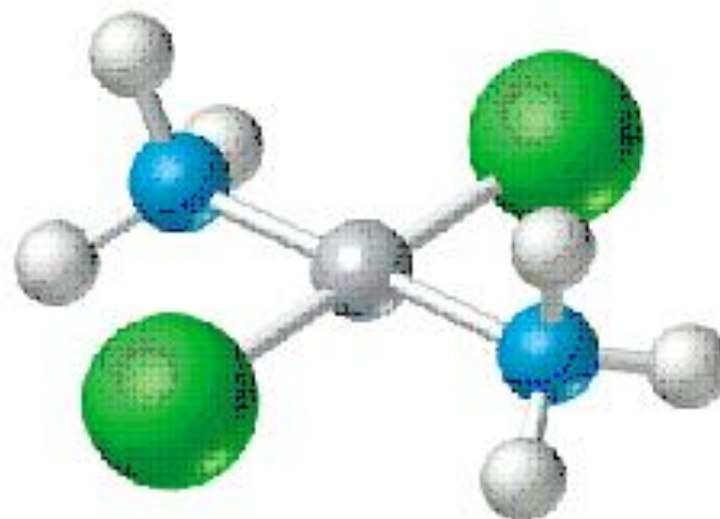


C_2

geometrik izomerlik (cis-trans)

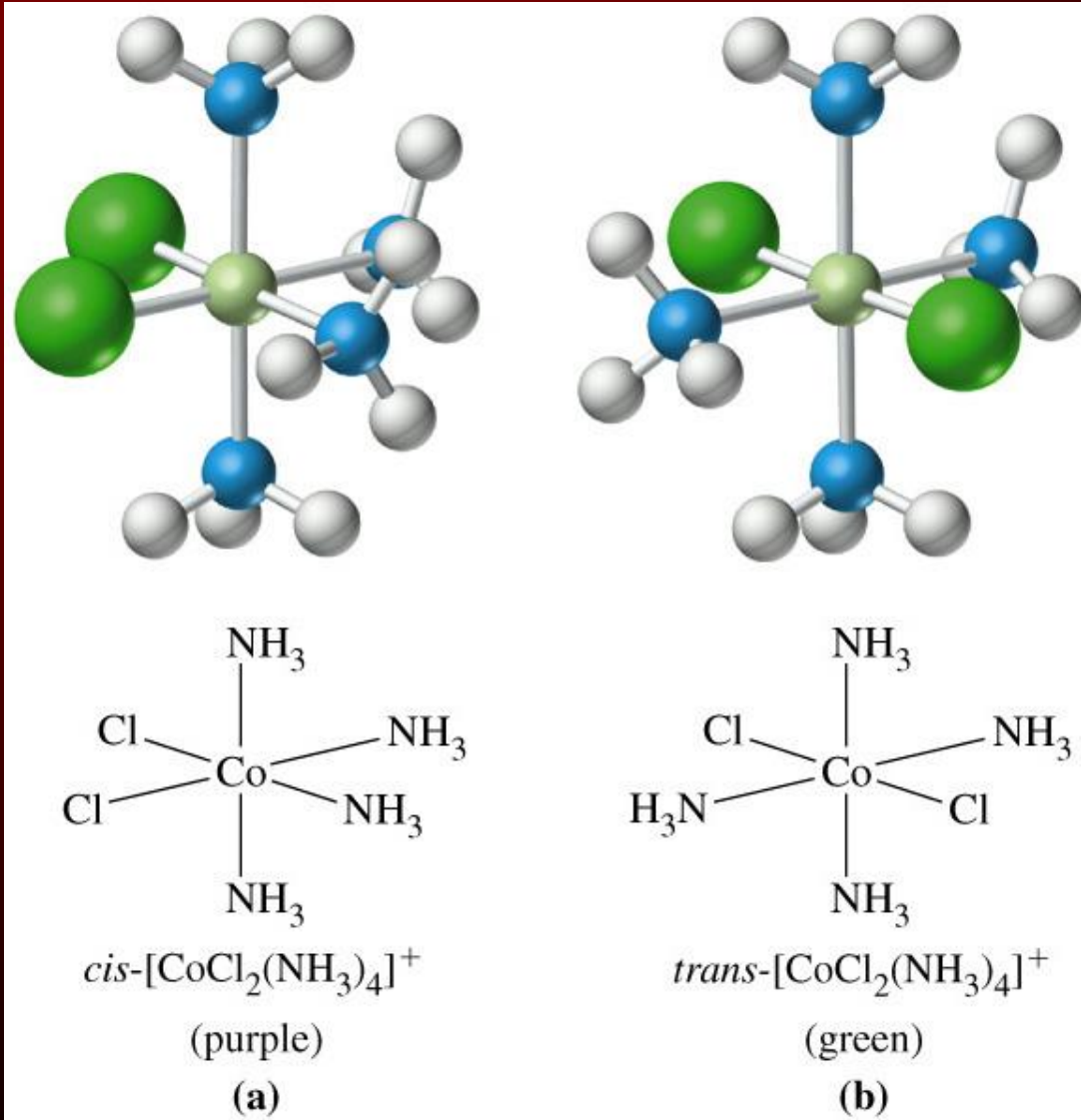


cis-[PtCl₂(NH₃)₂]

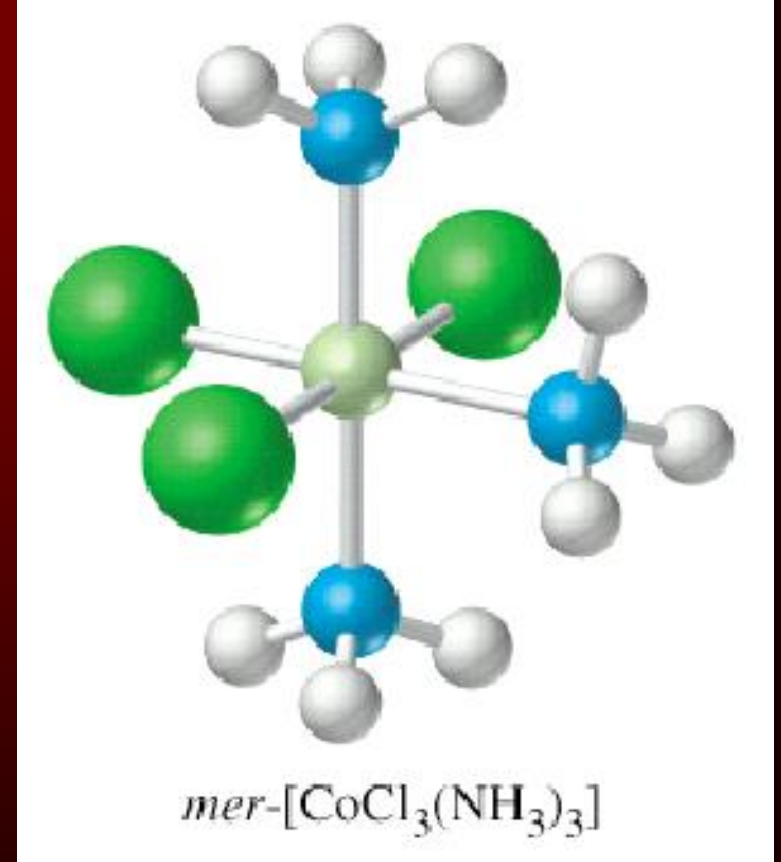
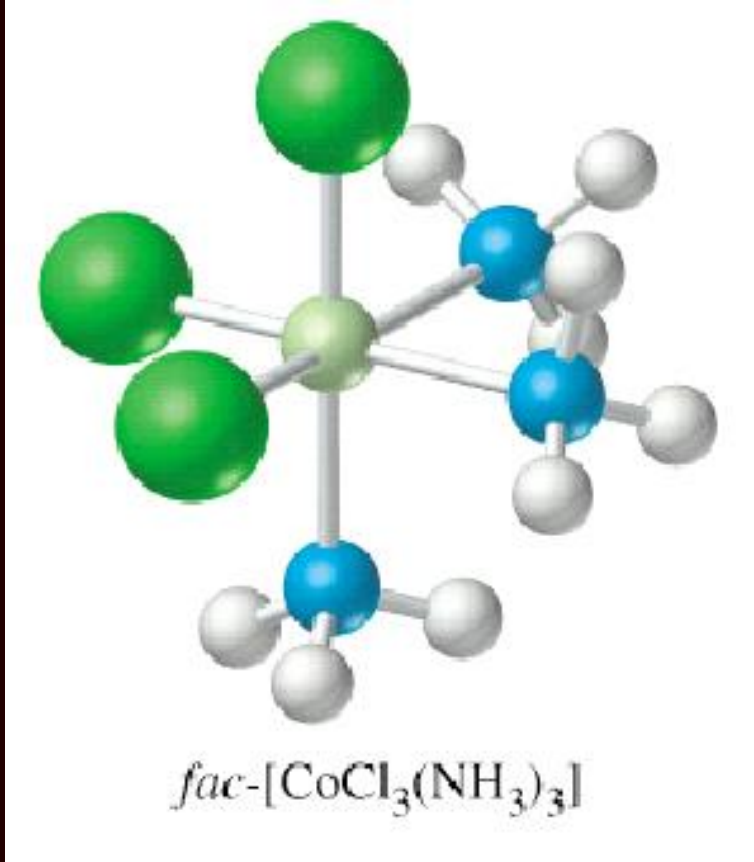


trans-[PtCl₂(NH₃)₂]

sekizyüzlü komplekslerde geometrik izomerlik (cis-trans)



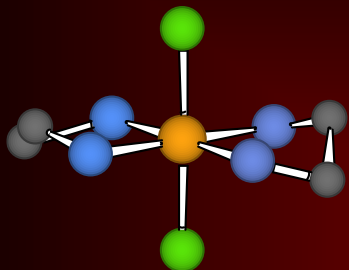
Sekizyüzlü komplekslerde geometrik izomerlik (fac-mer)



fac (facial) => üç aynı ligant bir üçgenin köşelerinde yer alır

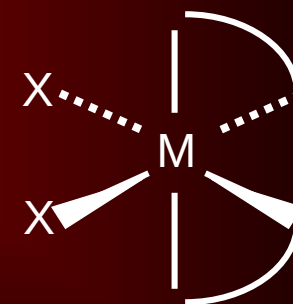
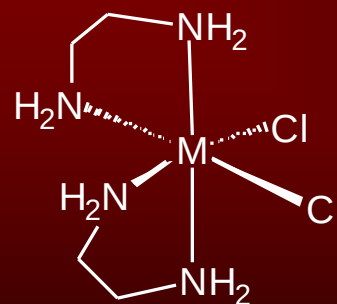
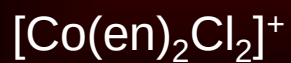
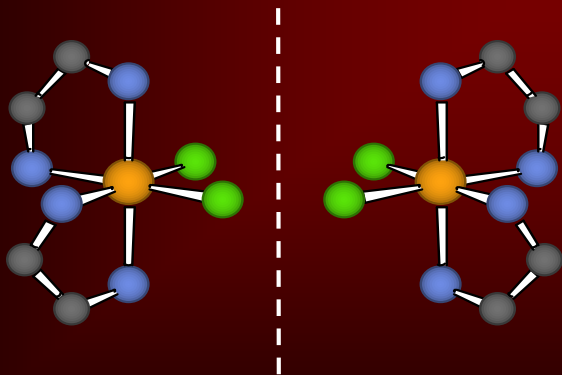
mer (meridional) => üç aynı ligant kardüzlemin üç köşesinde yer alır

$[\text{Co}(\text{en})_2\text{Cl}_2]^+$ kompleksinin izomerleri

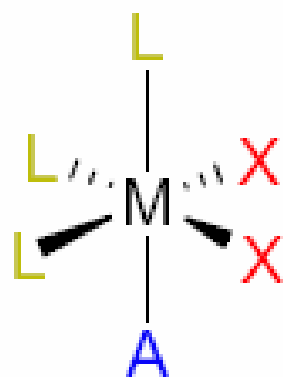


trans geometrik izomer

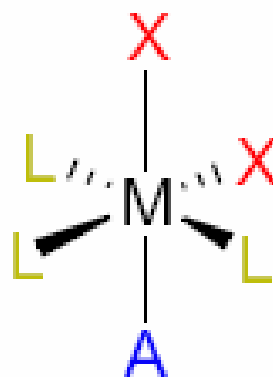
cis optik izomer



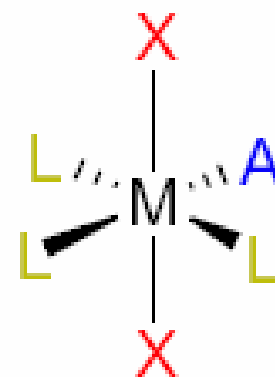
Other less common geometrical isomers: Octahedral ML_3X_2A and trigonal bipyramidal ML_2X_3 :



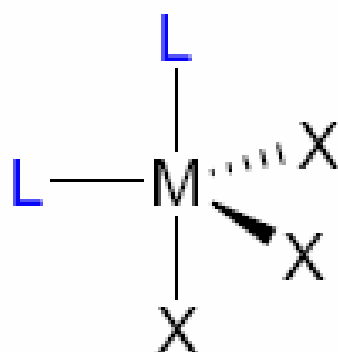
fac-cis



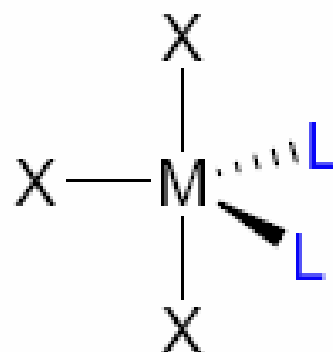
mer-cis



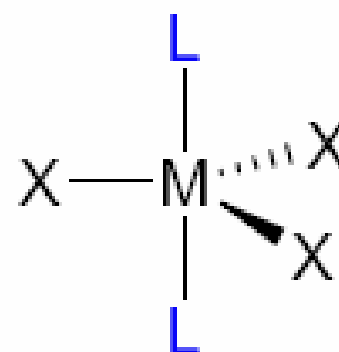
mer-trans



cis

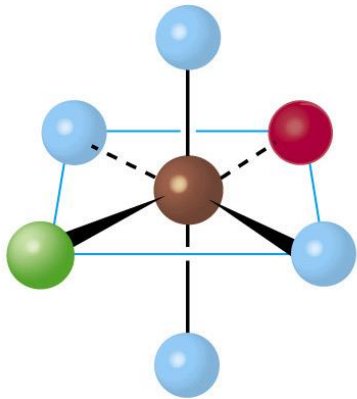


cis

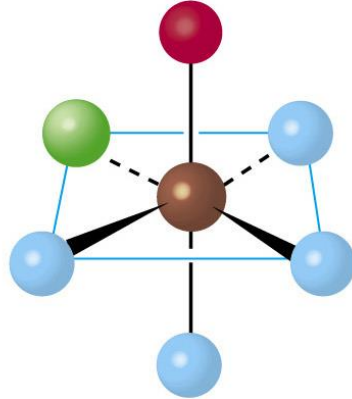


trans

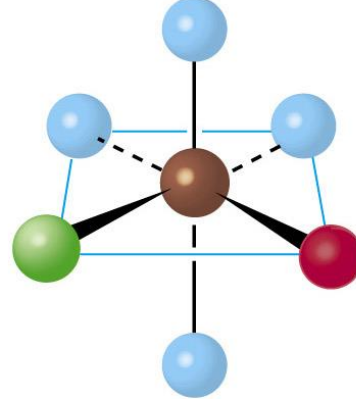
Soru : Aşağıdaki yapılarda kaç tane farklı izomer vardır?



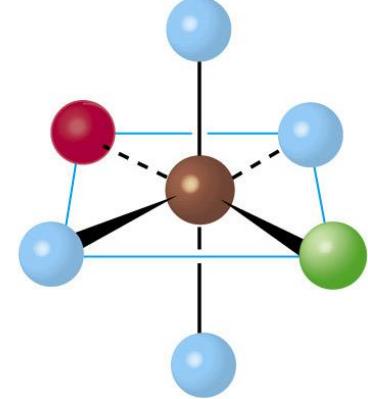
(1)



(2)



(3)



(4)

Konformasyon izomerliği

Birden çok stereokimyasal yapıda bulunma hali

Her iki yapının da mevcut olabilmesi için kararlılıklarının bulunması ve birbirine dönüşümünü engelleyen enerji bariyerinin olması gerekir

Örnekler

- $[\text{Ni}(\text{CN})_5]^{3-}$ üçgen ciftpiramit ve kare piramit yapılarında bulunur
- $[\text{NiCl}_2(\text{Ph}_2\text{PCH}_2\text{Ph})_2]$ dörtüzlü ve kare düzlem yapılarında bulunur