

Teoria Hibridizării Orbitalilor Atomici

Hibridizare sp^2

Hibridizare sp

Hibridizare sp^3

Hibridizare d^3s

Hibridizare sp^3d

Hibridizare sp^3d^2

Hibridizare sp^3d^3

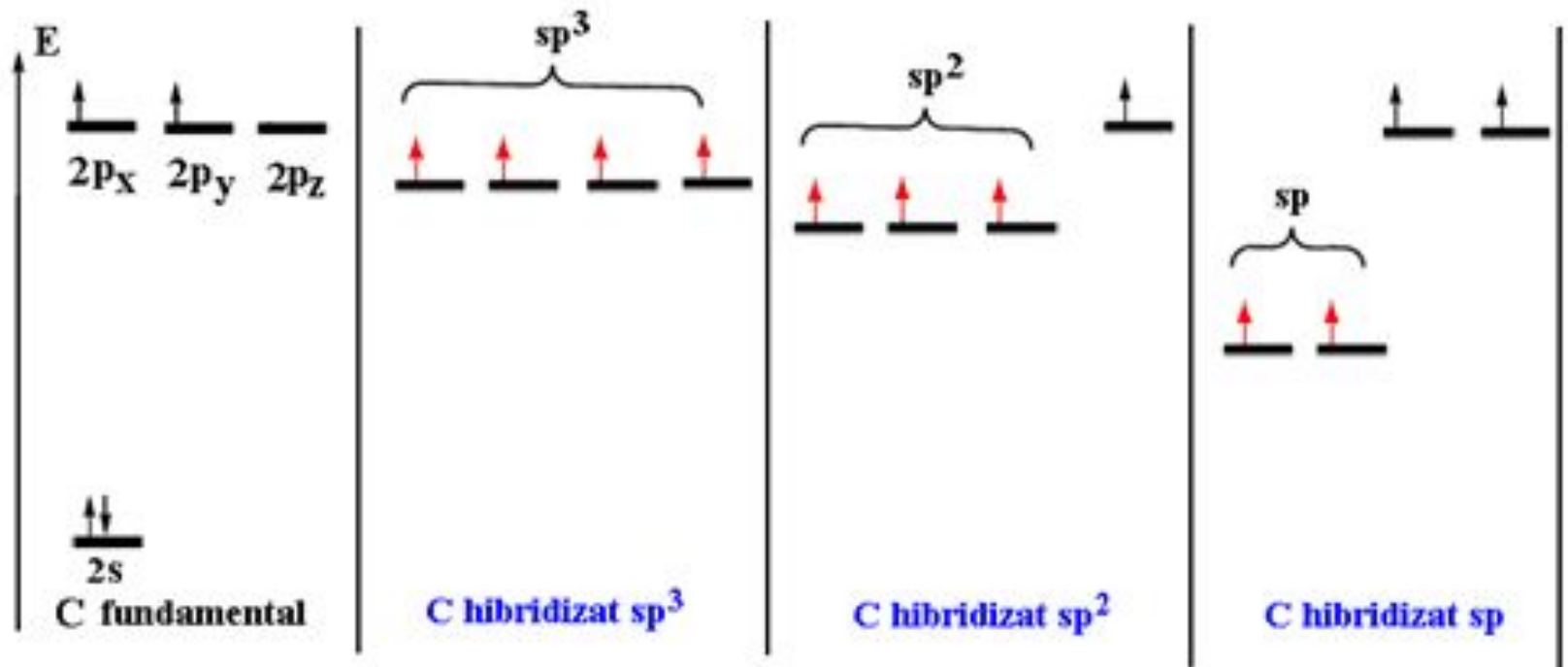

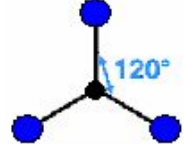
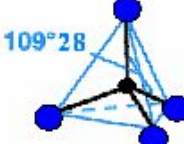
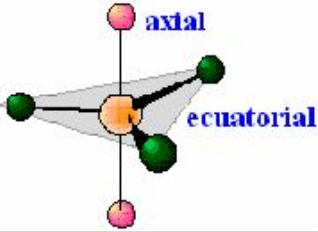
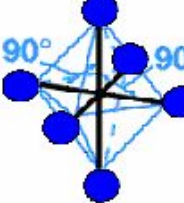
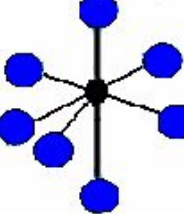


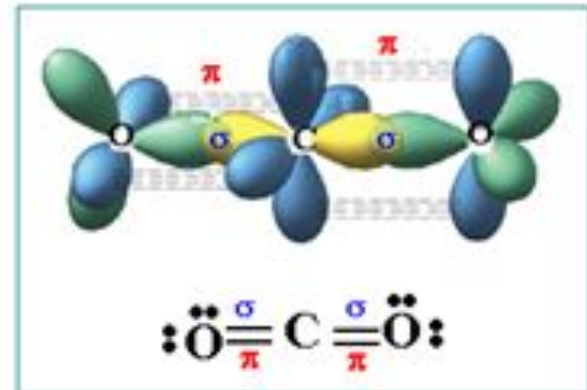
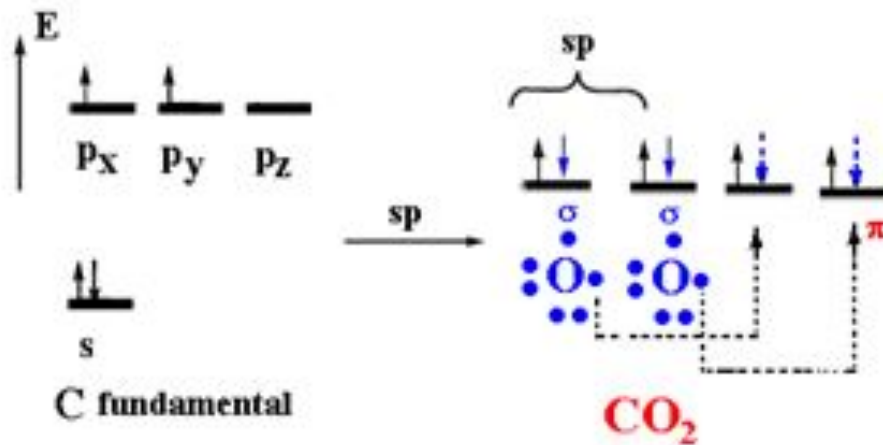
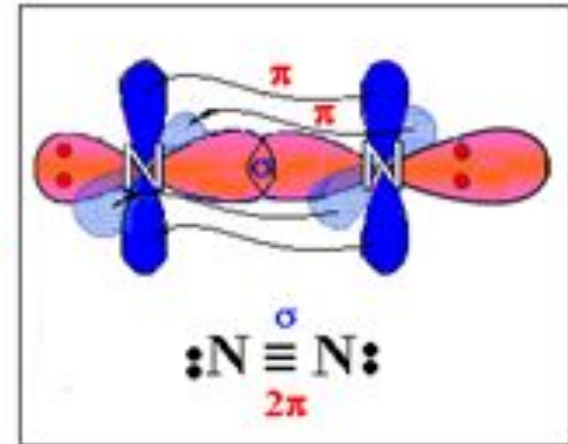
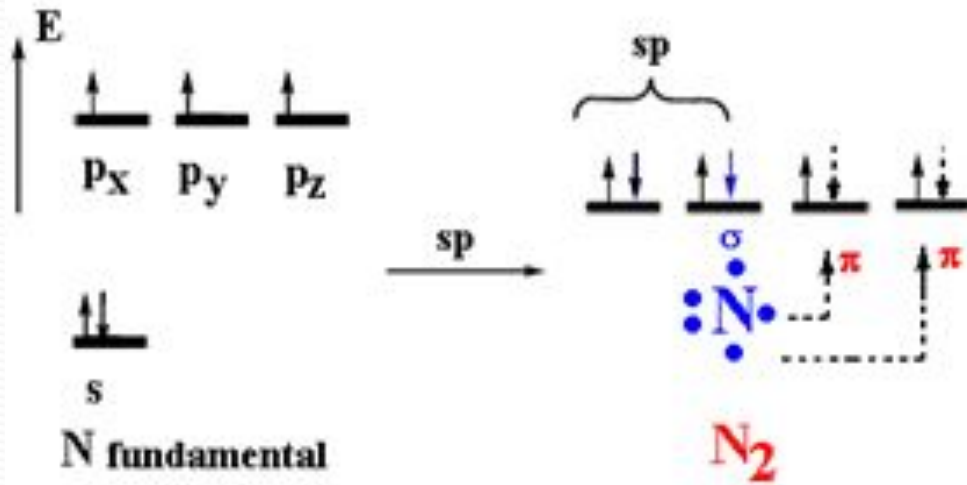
Fig. 3.16. Hibridizarea atomului de carbon.

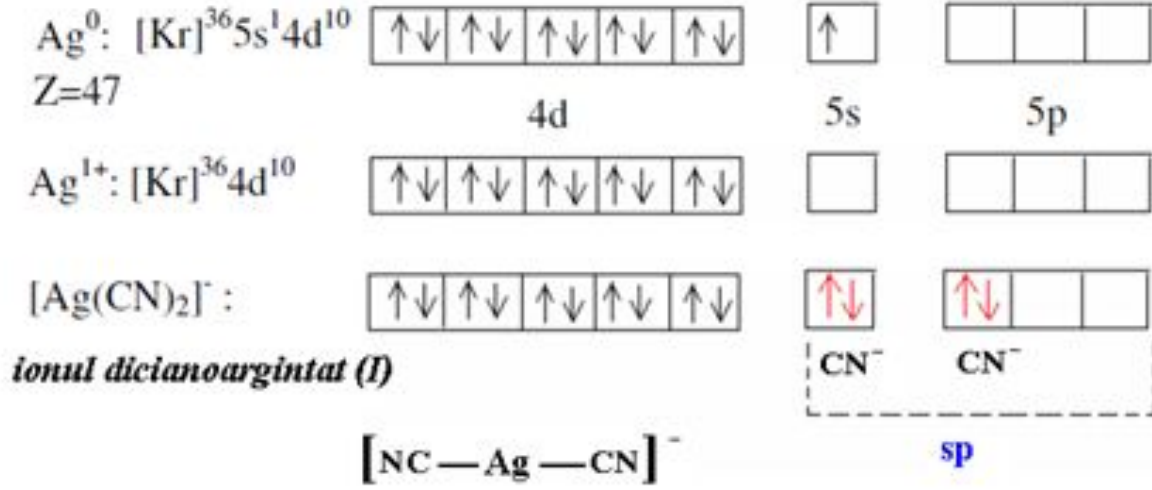
Număr de coordinare	Hibridizare	Geometrie
2	sp	Liniară
3	sp²	Trigonală
4	sp³	Tetraedrică
4	dsp²	Plan-pătratică
5	dsp³, d³sp	Bipiramidal-trigonală
5	d²sp², d⁴s	Piramidă pătratică
6	d²sp³, sp³d²	Octaedrică
7	d³sp³, sp³d³	Bipiramidal-pentagonală

Tabel 3.2. Principalele tipuri de hibridizare și geometriile corespunzătoare.

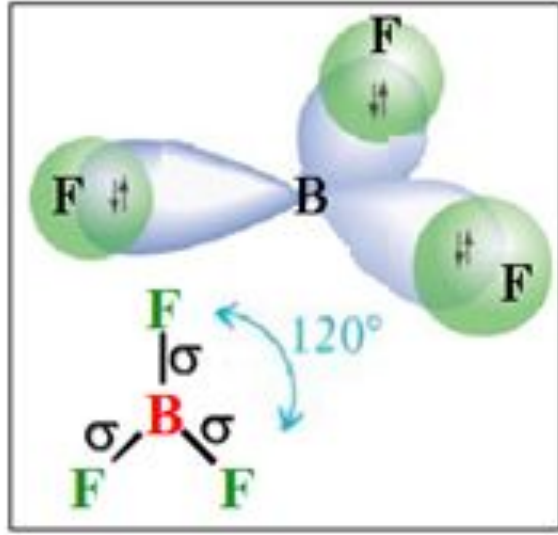
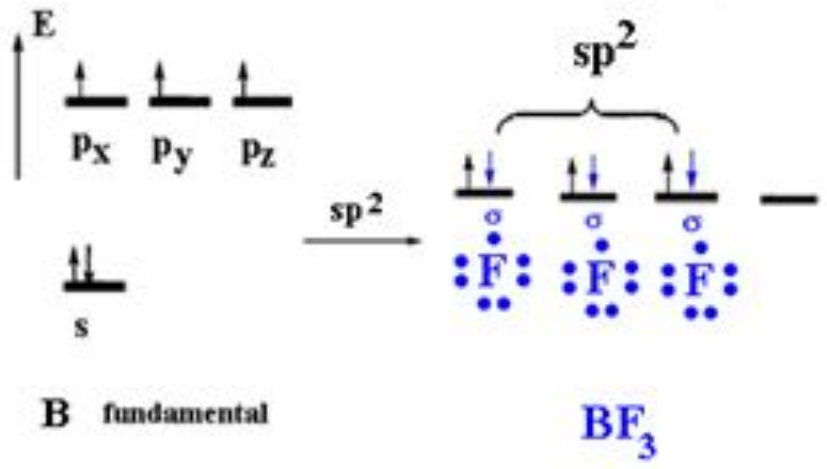
Hibridizare	Geometrie	Exemple
sp	<p>Linara (unghiulara)</p>  <p>180°</p>	<p>BeCl₂ CO₂ C₂H₂ HCN, O₂</p>
sp ²	<p>Triunghiulara</p>  <p>120°</p>	<p>BF₃, AlBr₃ BCl₃ NO₃⁻ CO₃⁻² SO₂ C₂H₄ O₃</p>
sp ³	<p>Tetraedrica</p>  <p>109°28'</p>	<p>CH₄, CCl₄, NH₄⁺ PO₄⁻³, SO₄⁻², ClO₄⁻¹ NH₃, H₃O⁺, PCl₃ H₂O, F₂O C₂H₆</p>
sp ³ d	<p>Bipiramida triunghiulara</p>  <p>axial ecuatorial</p>	<p>PCl₅ PF₅ Fe(CO)₅ SCl₄ SF₄ ICl₃ XeF₂ ClF₃</p>
sp ³ d ²	<p>Octaedrica</p>  <p>90°</p>	<p>SF₆ XeF₄ ICl₄⁻ XeOF₄ [AlF₆]⁻¹ [PF₆]⁻¹ ClF₅</p>
sp ³ d ³	<p>Bipiramida pentagonala</p> 	<p>IF₇ XeF₆</p>

Hibridizare sp

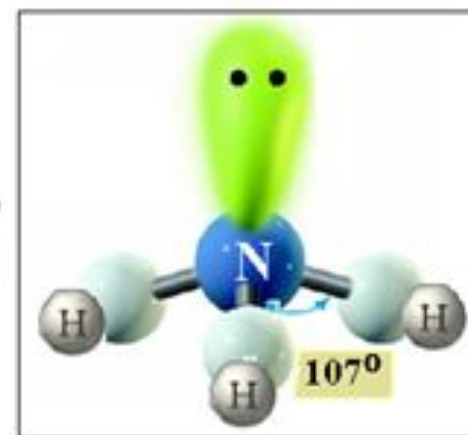
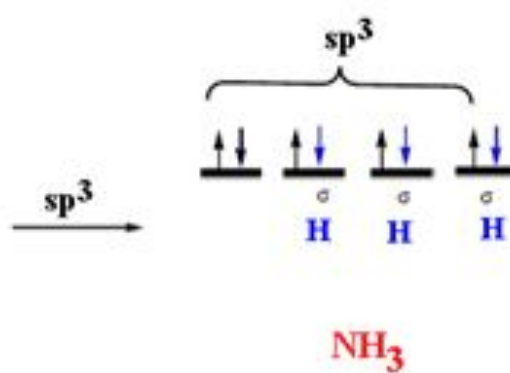
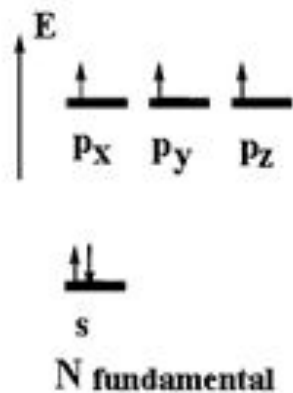
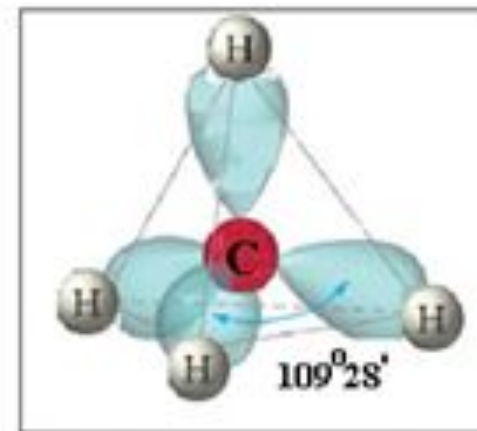
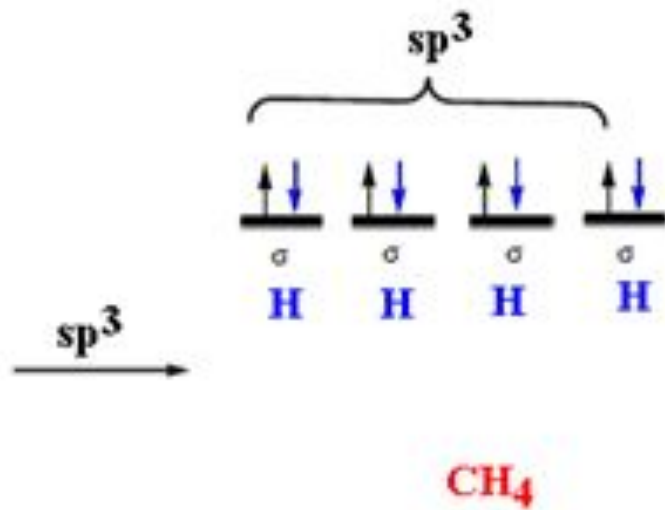
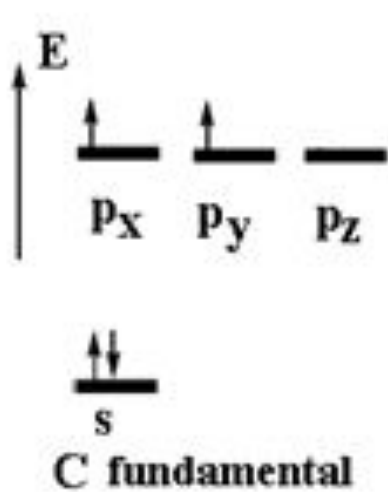


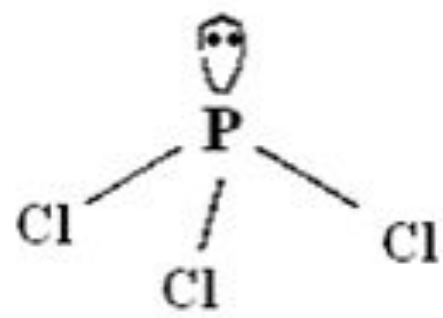
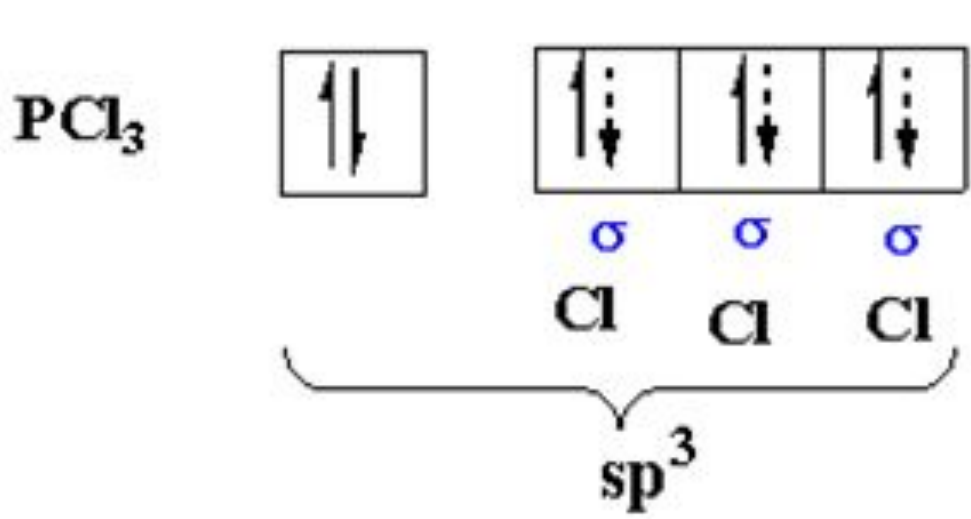
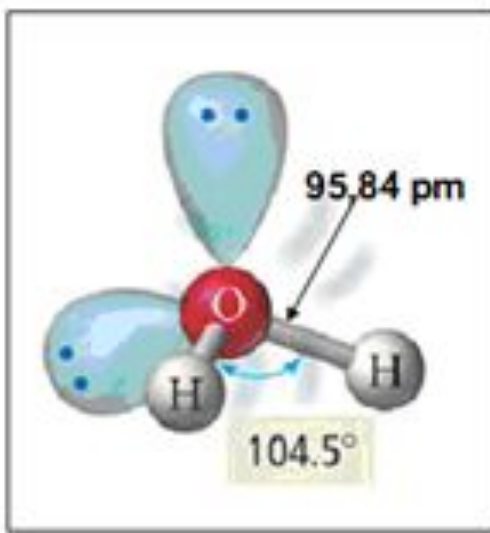
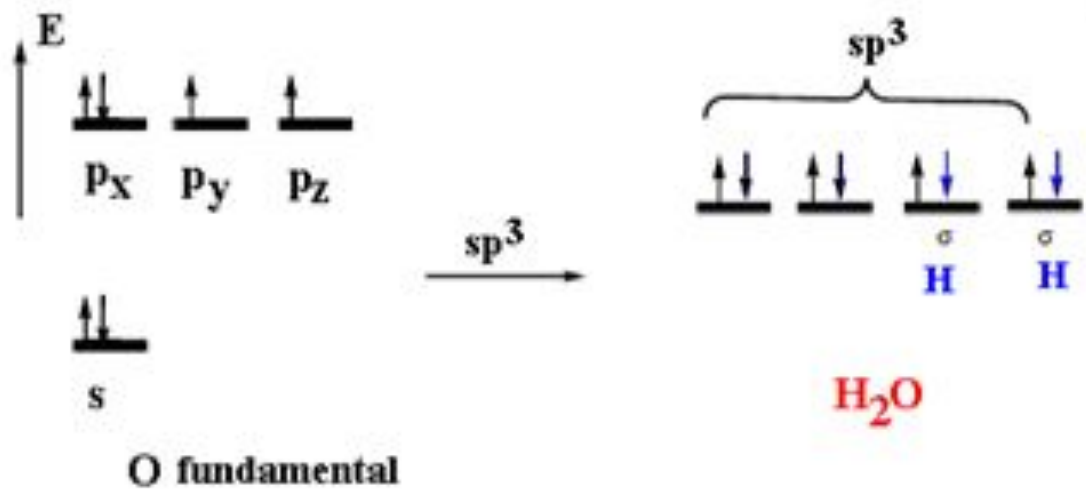


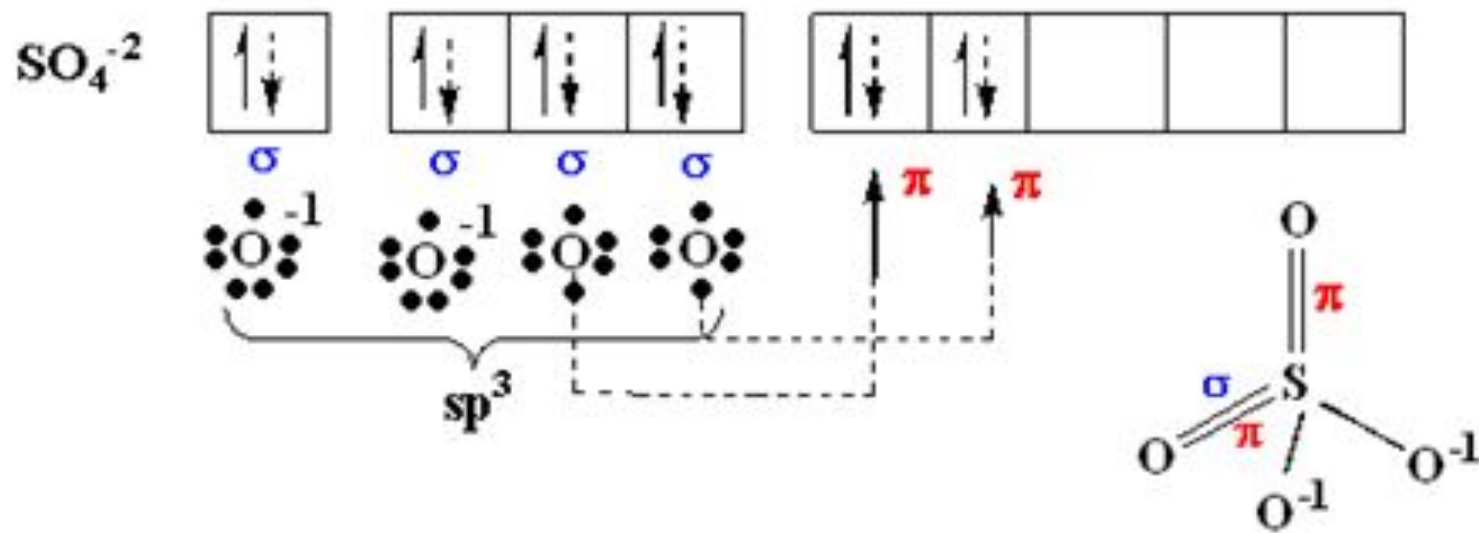
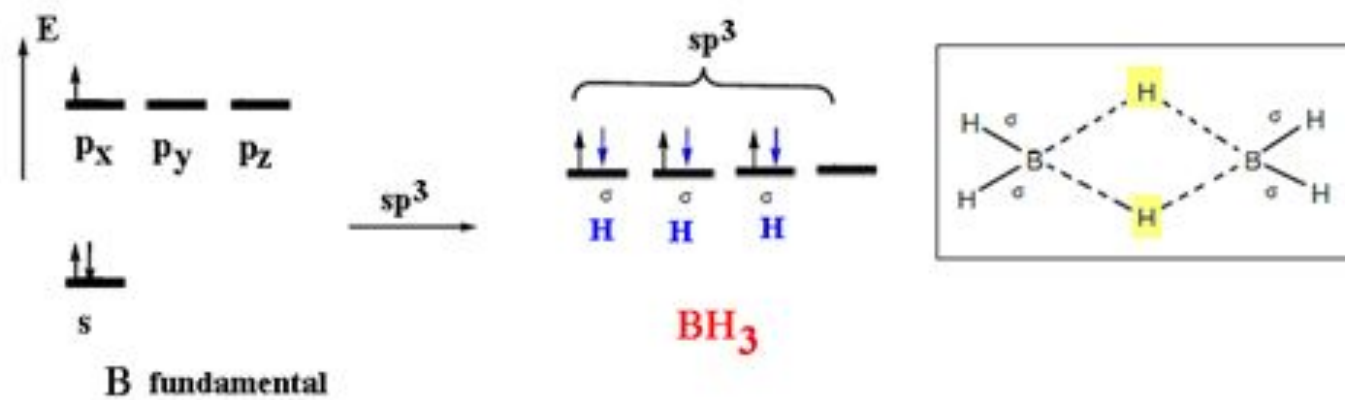
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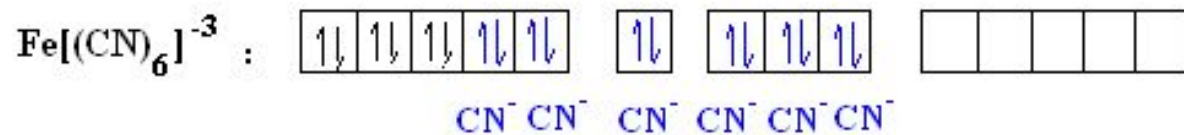
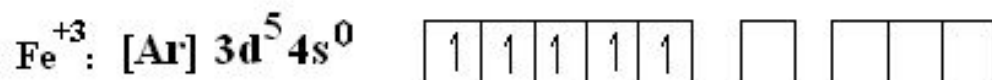
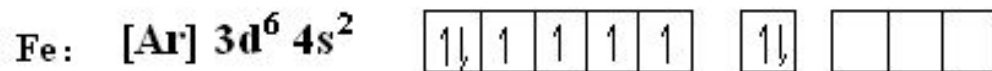
3. Hibridizare sp^3



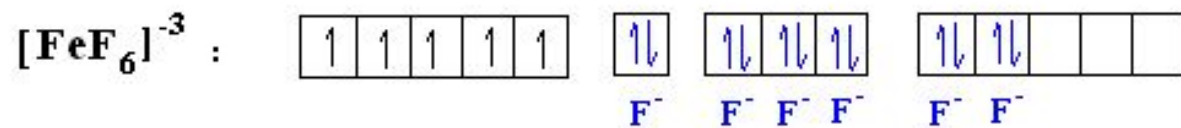




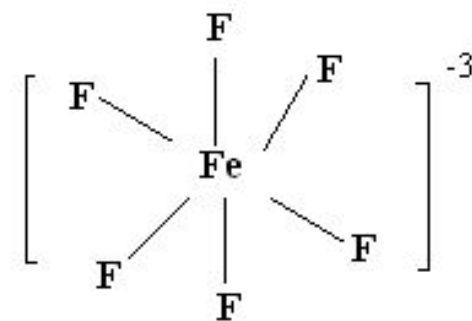
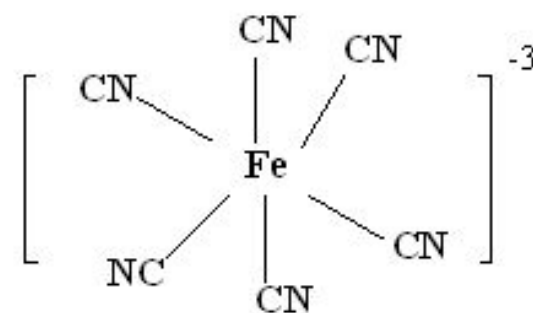
Aplicație: Determinați geometria și hibridizarea în: ClO_4^{-1} , PO_4^{-3} .

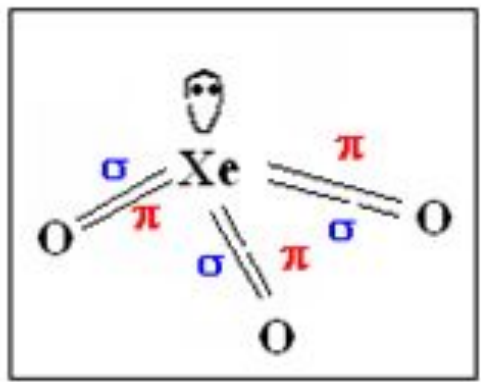
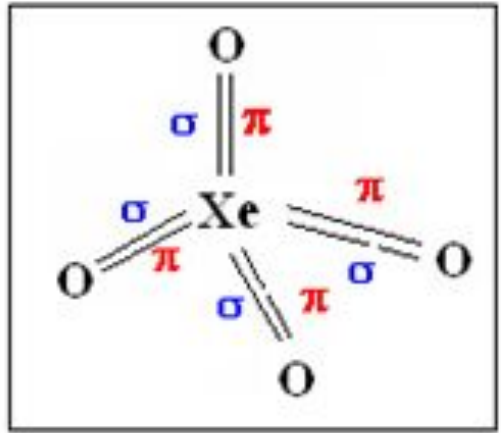
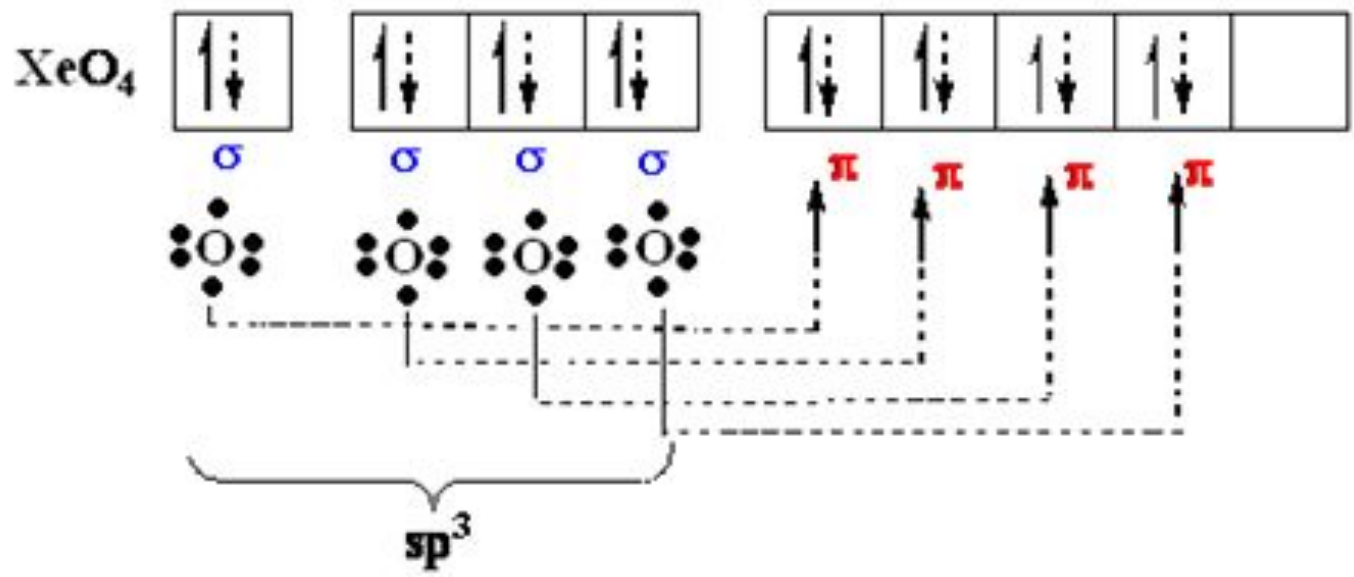


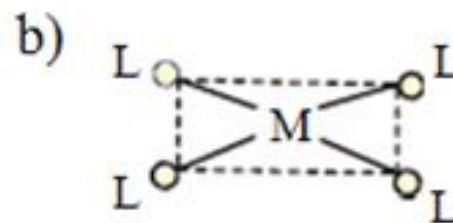
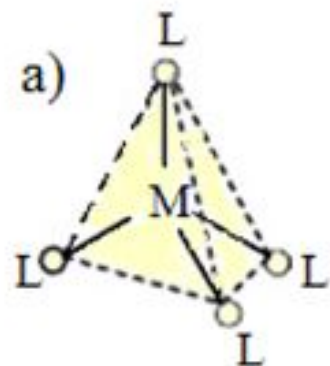
d²sp³



sp³d²

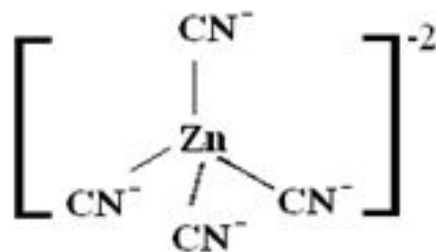
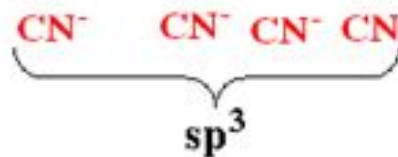
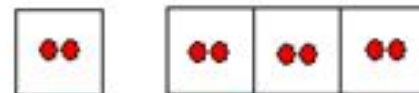
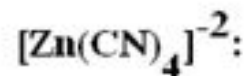
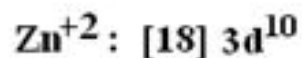
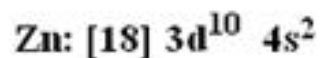


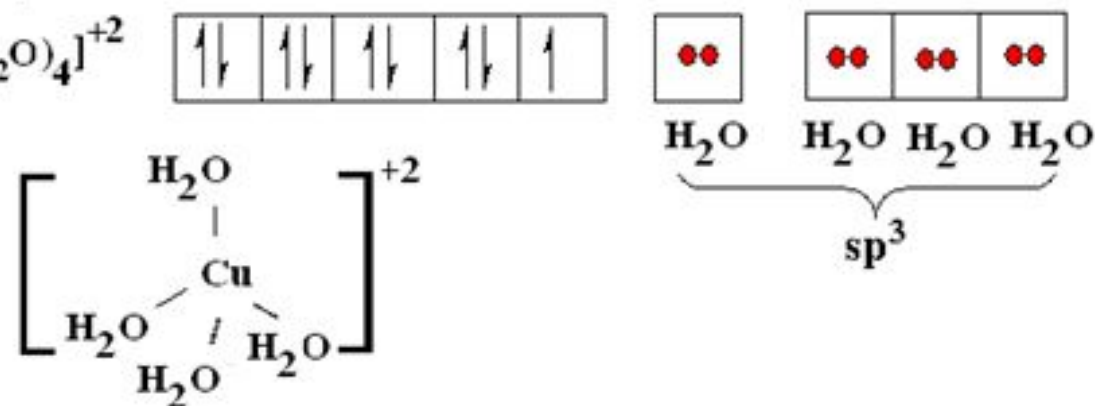
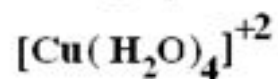
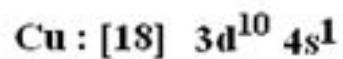
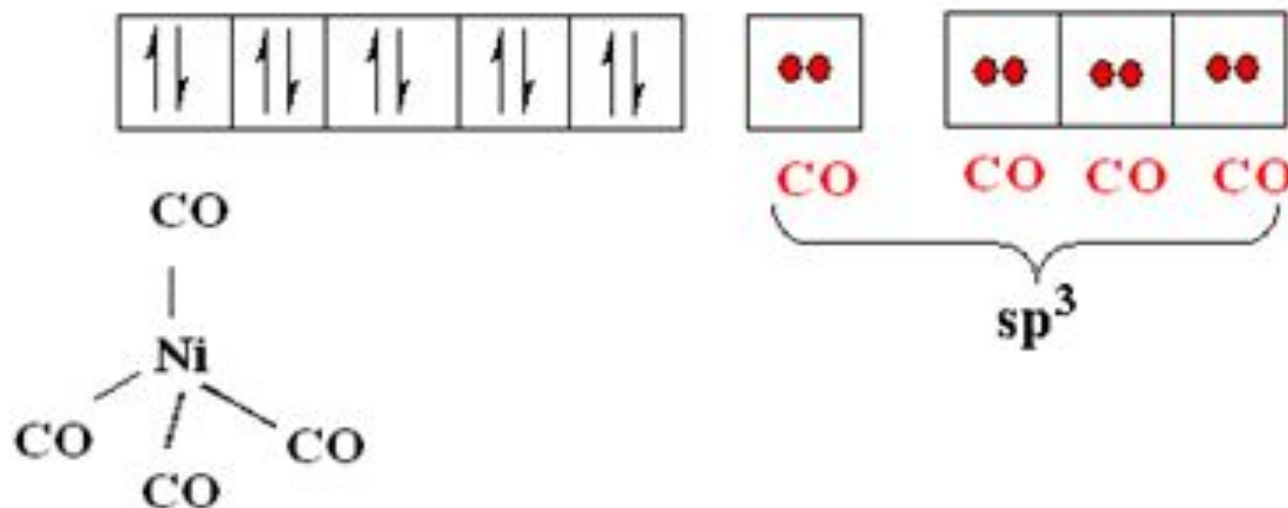
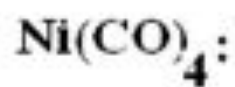
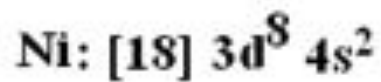




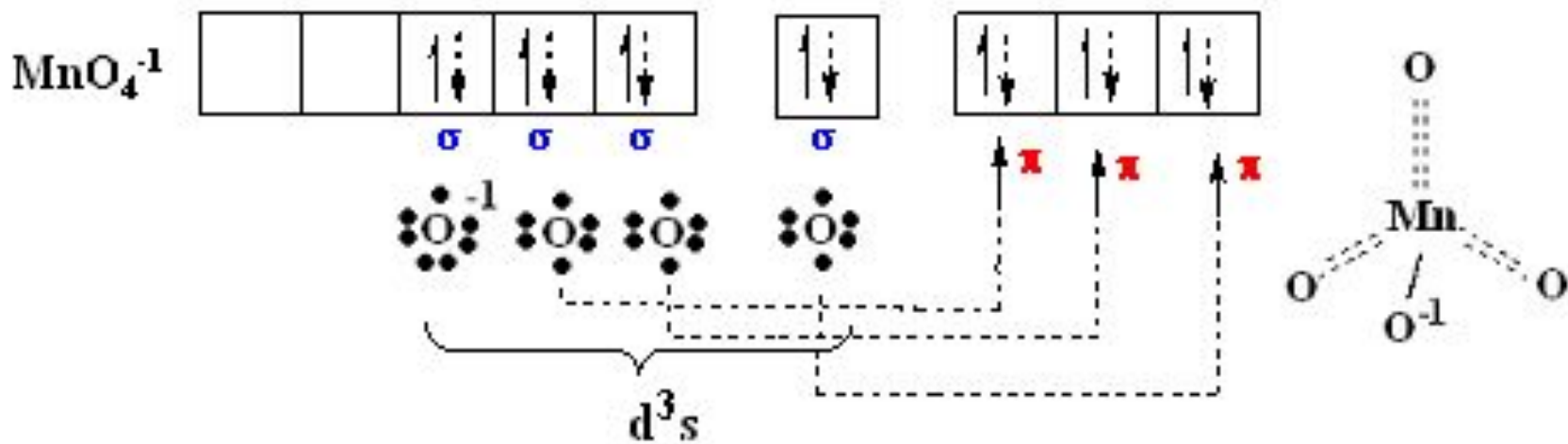
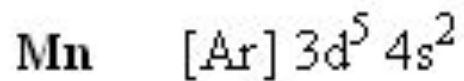
Geometrii caracteristice N.C.=4
a) tetraedru; b) geometrie plan-pătrată

|



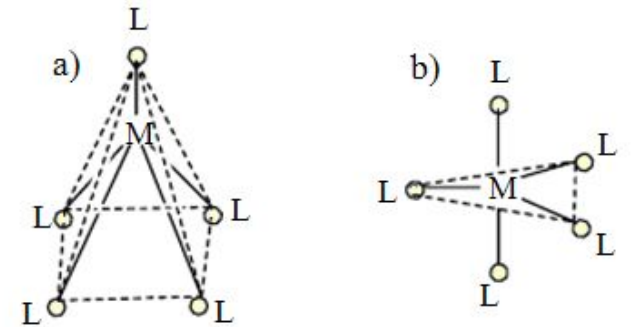
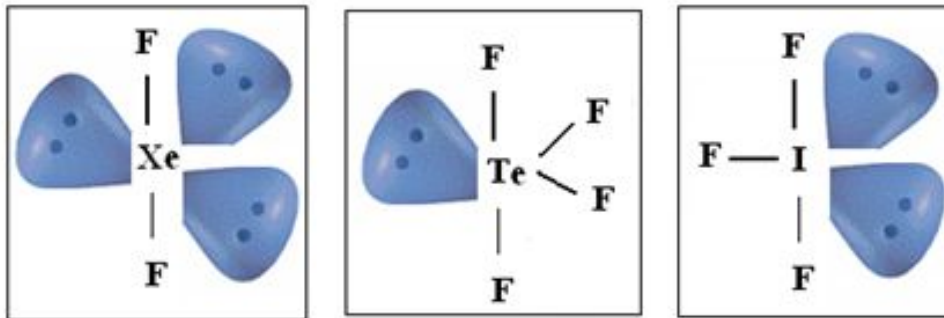
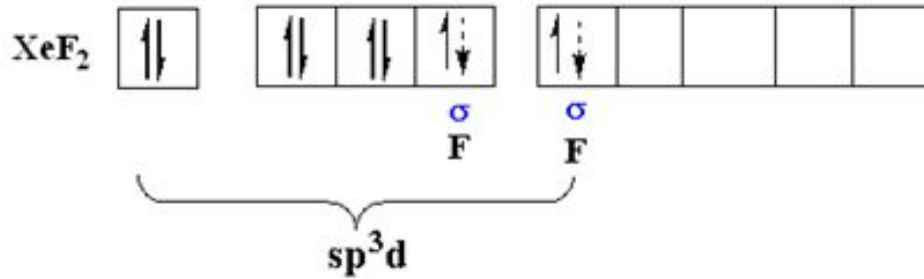
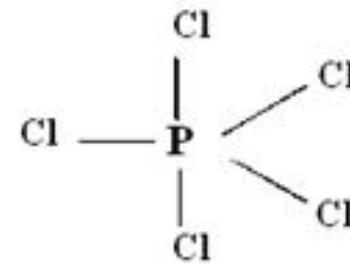
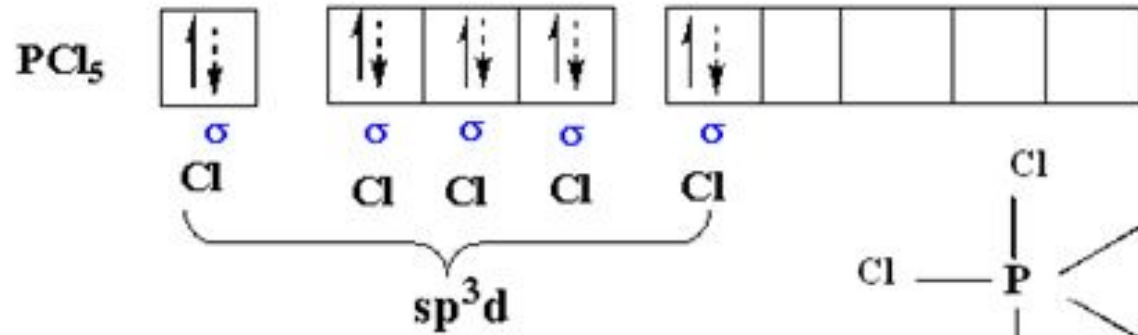


Hibridizare d^3s



Aplicație: Determinați geometria și hibridizarea în: CrO_4^{-2} , VO_4^{-3} .

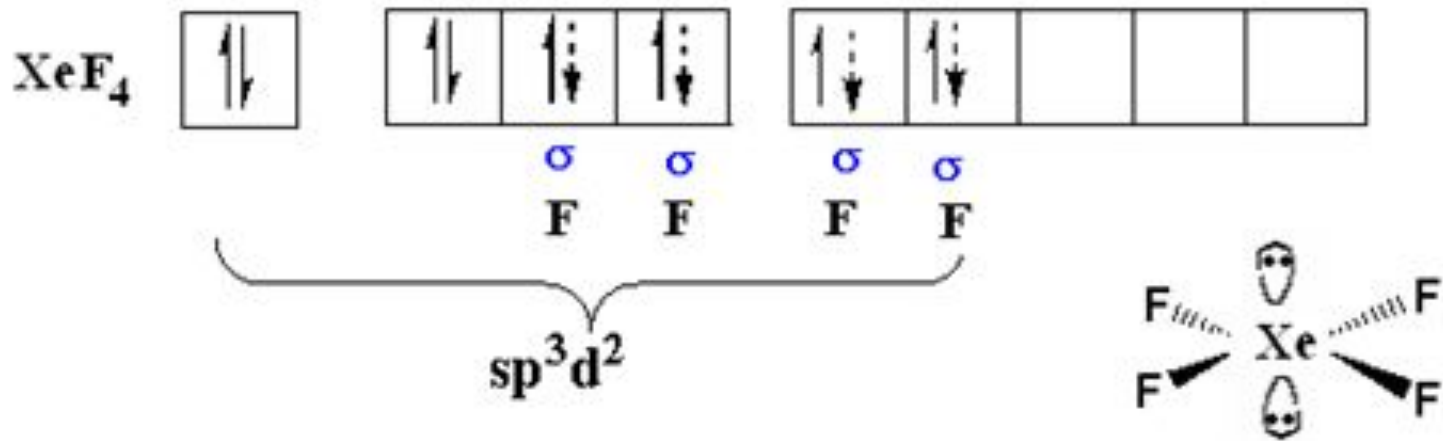
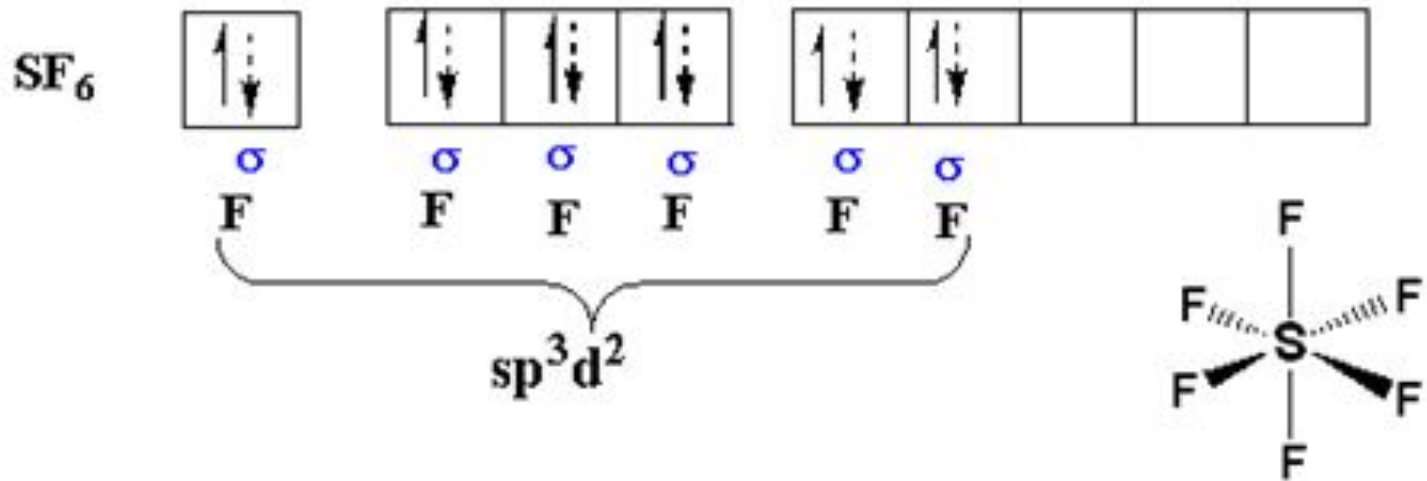
Hibridizare sp^3d

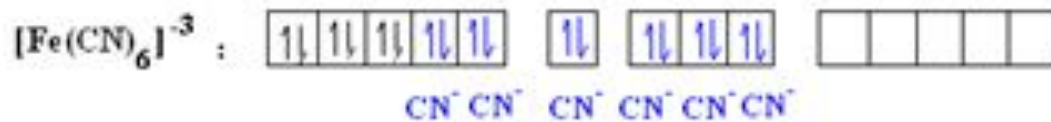
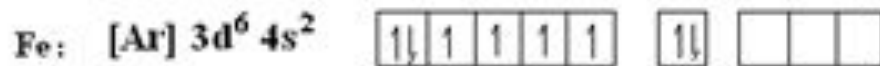


Geometrii caracteristice N.C.=5
a) piramidă tetragonală; b) bipiramidă trigonală

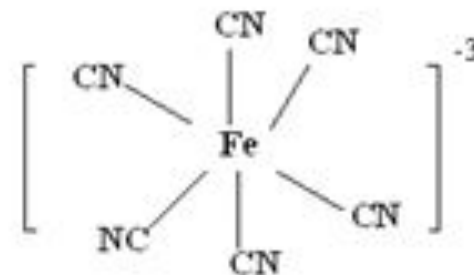
Aplicație: Determinați geometria și hibridizarea în: XeF₂, TeF₄, IF₃.

Hibridizare sp^3d^2 și d^2sp^3

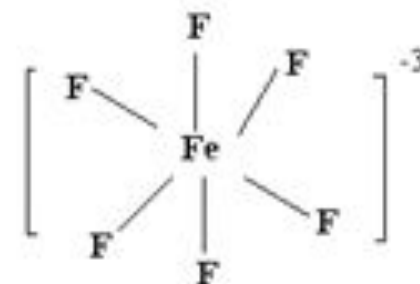




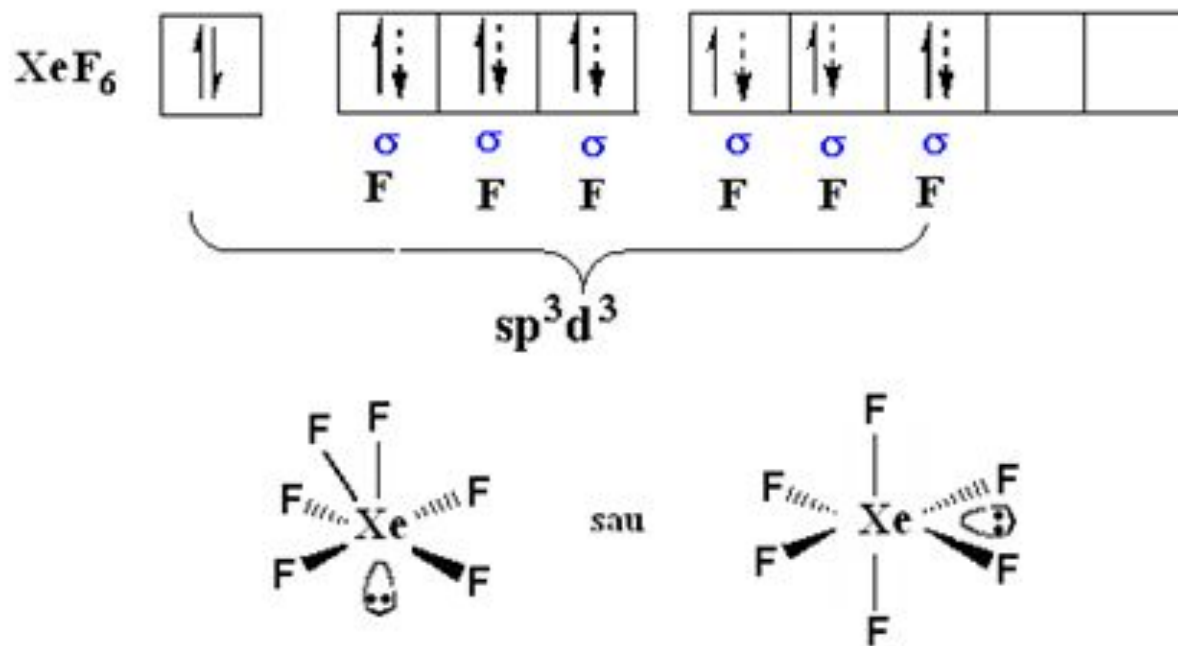
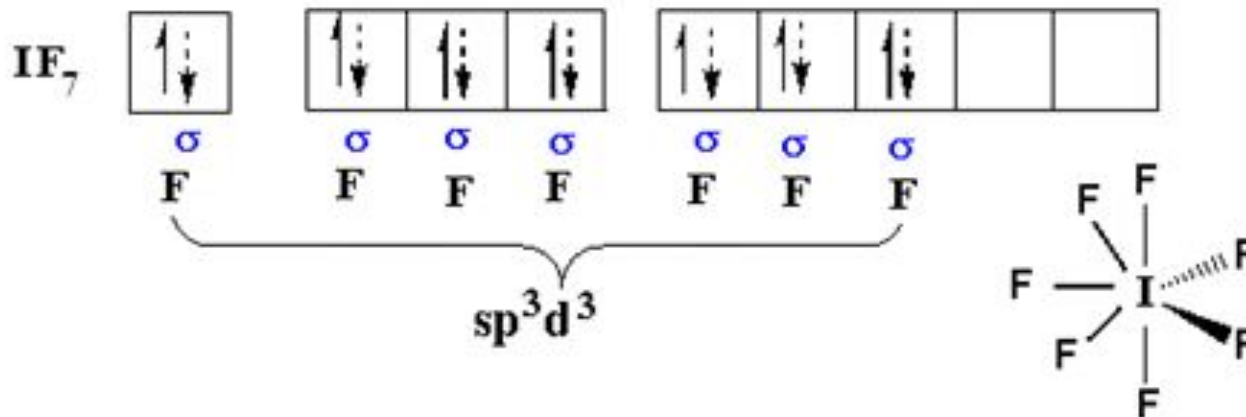
- complex de sferă interioară
- proprietăți diamagnetice



- complex de sferă exterioară
- proprietăți paramagnetice

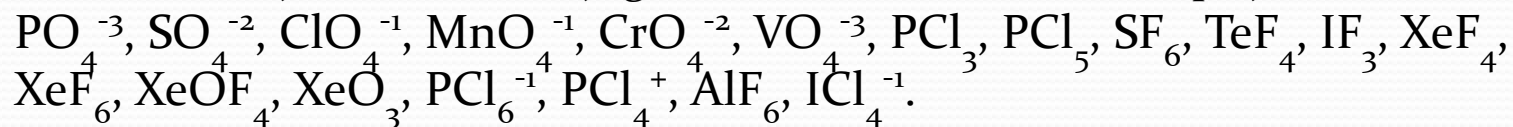


Hibridizare sp^3d^3



Aplicații:

1. Determinați hibridizarea și geometria în următorii compuși:



2. Modelați formarea legăturilor ionice din următorii compuși:



3. Modelați formarea legăturilor covalente în următoarele molecule:



4. Determinați hibridizarea și geometria în următorii compuși:

