

الباب التاسع

الفأثر

الباب التاسع
الفلزات

طاقة الترابط والتركيب :

(1)

(2)

(3)

(4)

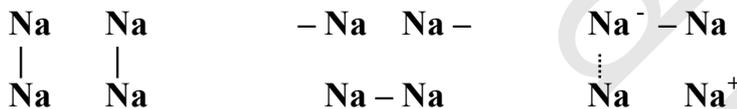
(III I)

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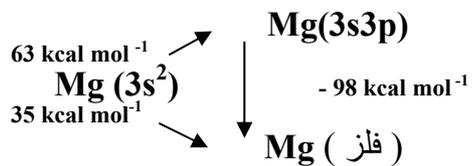
| | | | | | | | | | | | | |
|---------------------|---------------------|---------------------|----------------------|--------------------|--------------------|--------------------|---------------------|----------------------|----------------------|---------------------|----------------------|--|
| Li 38.6 180° | Be 77.5 1283° | | | | | | | | | | | |
| Na 25.9 97.5° | Mg 35 650° | Al 78 660° | | | | | | | | | | |
| K 21.5 63.4° | Ca 42.5 850° | Sc 90 1539° | Ti 112 1725° | V 123 1730° | Cr 95 1900° | Mn 68 1247° | Fe 99.3 1535° | Co 102.4 1493° | Ni 102.8 1455° | Cu 81.1 1083° | Zn 31.2 420° | |
| Rb 19.5 38.8° | Sr 39 770° | Y 101.5 1509° | Zr 145.5 1852° | Nb 172 2487° | Mo 157 2610° | Tc 158 | Ru 153 2400° | Rh 133 1960° | Pd 91 1550° | Ag 68 961° | Cd 26.7 321° | |
| Cs 18.7 28.7° | Ba 42.5 704° | La 103 920° | Hf 148 2300° | Ta 187 2997° | W 203 3380° | Re 187 3150° | Os 188 2700° | Ir 160 2454° | Pt 135 1769° | Au 88 1063° | Hg 15.3 -38.9° | |

. 5 4 3

S3

() $s^2 3$

3s p3



$p^2 3$

$s^2 3p^3$

3s

III

d

Sc

d

P S
P S

1.5

P S

I

(bcc)

2.1 1.7

P S

(hcp)

P S

II

3.2 2.5

III

(ccp)

I (bcc)

(hcp) II

()

| | | | | | | | | | | | | |
|---------|----------------------|----------------------|---------------|---------|---------|--------------------------|---------------------|-----------------|-----------|-----------|----------|--|
| Li I | Be II | | | | | | | | | | | |
| Na I | Mg II | Al III | | | | | | | | | | |
| K I | Ca I III | Sc I II | Ti I II | V I | Cr I | Mn I III β x | Fe I III I | Co III II | Ni III | Cu III | Zn II | |
| Rb I | Sr I II III | Y I II | Zr I II | Nb I | Mo I | Tc II | Ru II | Rh III | Pd III | Ag III | Cd II | |
| Cs I | Ba I | La I III II | Hf I II | Ta I | W I | Re II | Os II | Ir III | Pt III | Au III | | |

I

d

nsnp

(n-1) dns

III

La Y Sc

II I

I

(

Z) d^{z-1}s

W Mo Cr

P

d

d

Au Ag Cu

P, S

d^8Sp^2

III

d

Cd Zn

II

$d^{10}Sp$

d

d^5

(bcc)I

6.5

$d^5S^1 P^{0.5}$

bcc

Pt

Ir

Os

Re

6.5

Hf

Zr

Ii

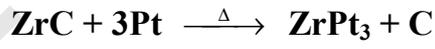
II d³s I
 d . d²sp
 . I d

II d
 . d

. hcp bcc

Hf Ta Nb Zr d
 Au Pt Ir Rh Ru d

ZrC Pt
 ZrPt₃



d - d

مركبات هيوم-روذيري :

P s

/p s
 Cu₃Al AgCd CuZn :

(bcc)I

B
 . 2/3
 . NiAl Cu₅Sn

Ag Cu
 d^{10} Ni $d^{10}S$
 / p s y
 . 13/21

.Ni₅Zn₂₁ Cu₃₁Sn₈ Ag₅Hg₈ Cu₅Zn₈
 II] ε
 . 7/4 / p s [(hcp)
 . Cu₃ Sn Ag Cd₃ Cu Zn₃ :

d^5sp^2 β
 p s -

P S

Au , Ag , Cu
 . Fe Co Pt Ni

d^8sp^2 d^7sp^2 d^6sp^2 :

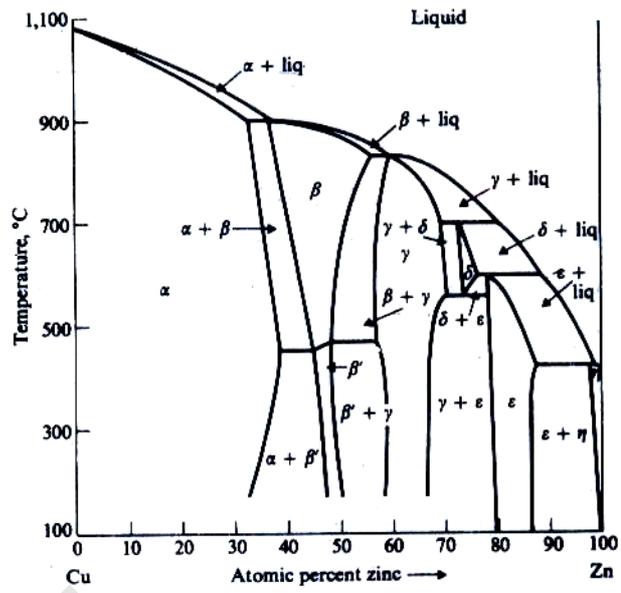
$d^{10}sp$

. III
 Zn

d

. $d^{10}s$, d^{10} , d^9 , d^8

: Cu - Zn



نظرية الحزمة :

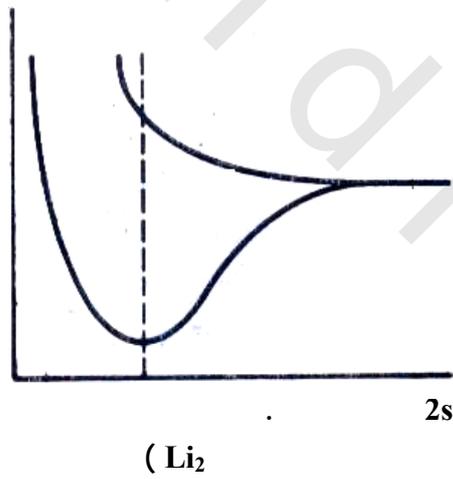
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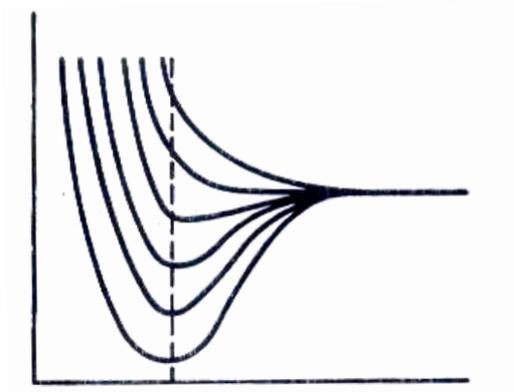
s 62

s1

*s 62

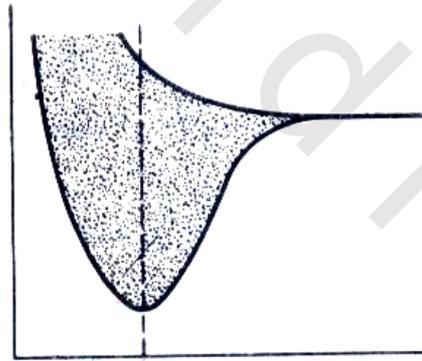
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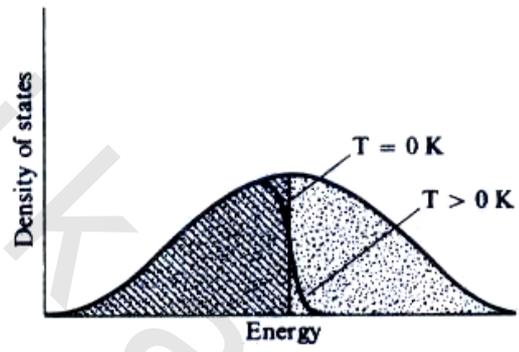




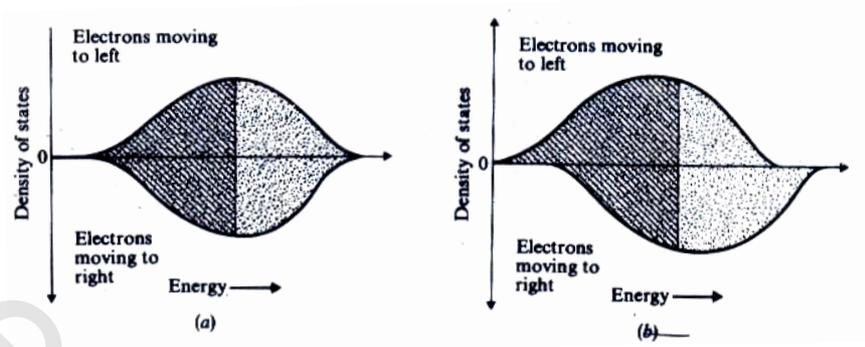
2s

bcc





: ()



()

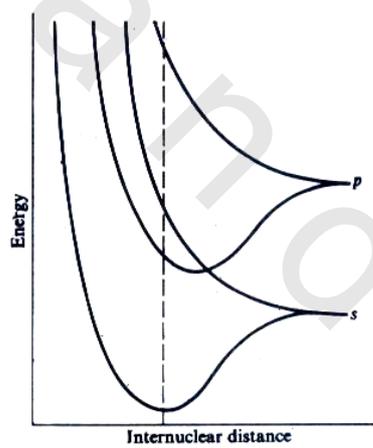
() . ()

(+)

()

(-)

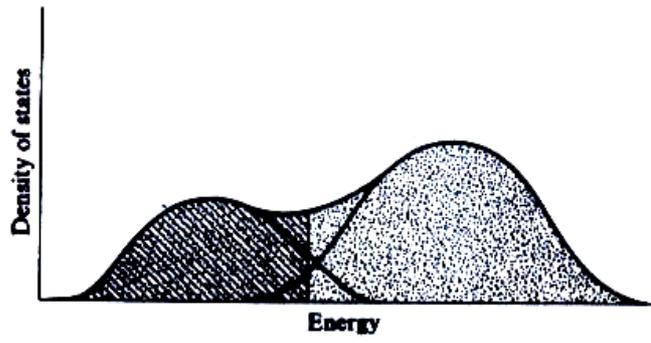
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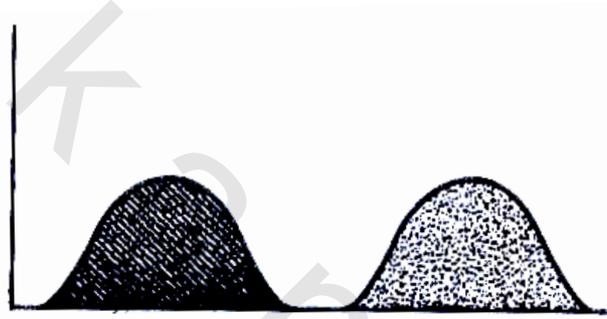
s

P s

(:)

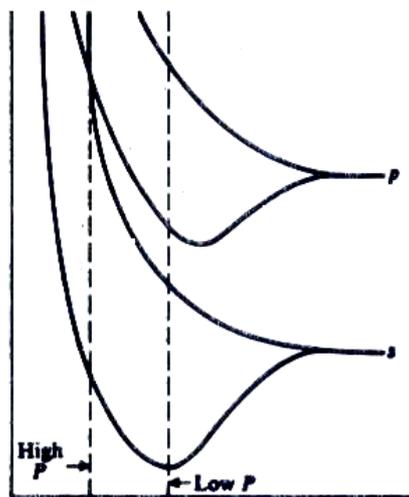


(:)



()

. K bars 100



)

(

d

. Zn Cu Ca K :

() d

.p s

()

P S

Se Ge

As

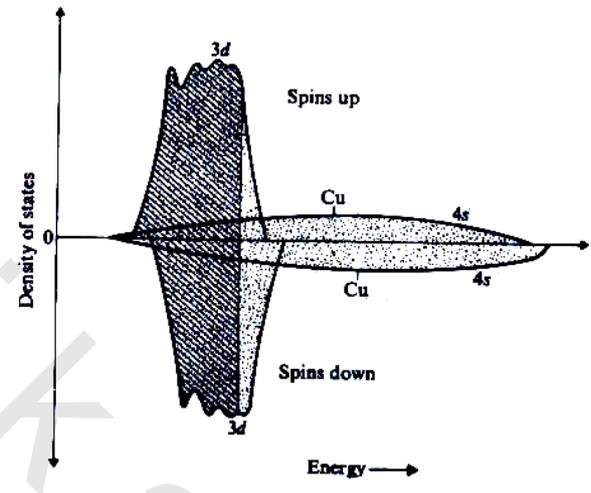
الفيرومغناطيسية :

Ni Co Fe :

S4 d3

:

Ni Co Fe



)

Cu

(

(:)

Ni Co Fe

631 1404 1043

d3

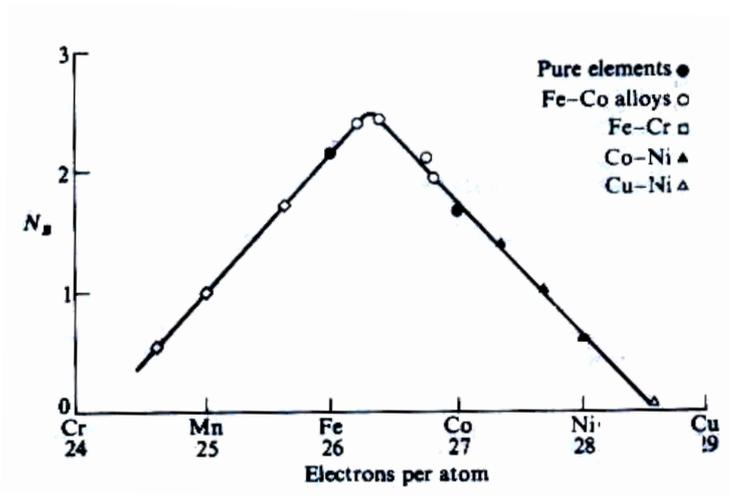
Ni Co Fe

d3

Ni Co Fe
N_B

Fe-Co

2.4



المركبات الفلزية :

1.00 0.9 0.8 0.5 0.4 : N/Nb
 ZrC TaC 1/4
 4215
 10.1 NbC
 MxWO₃

M

$0 < X < 1$

$(\text{Na}_x\text{WO}_3) (0.32 < x < 0.93)$

Na_2WO_4

WO_3

. Na

d5

$\text{WO}_{3-x}\text{F}_x$

WO_3

* * *

"الأسئلة"

| | | | | | | | | | |
|------|--------------------|---------------------------------|-------|--------------------|--------|------|------|------|----|
| d | | | | | | | | | -1 |
| | .p s | | | d | | | | | |
| | | II | I | | | | | II | I |
| | bcc | | | | | | | hcp | |
| | | | | | | | | | -2 |
| | | | | | | | | | -3 |
| | | | | Au | Cu | | | | |
| | (| | | ccp | hcp | bcc) | | | |
| FeAl | Cu ₃ Ge | Ag ₅ In ₃ | AgMg | Ag ₅ Cd | CuBe : | | | | -4 |
| | | | | | | | | InSb | |
| | | (| | |) | | | | -5 |
| | | | Ag-Al | | | | | | |
| Al | W | (|) | C | Na | Cs: | | | -6 |
| | | | | | | | | Mg | Fe |
| | | Pt | (|) | Re | (|) | Sr | (|
| | | | | | | | | | -7 |
| | | | | | | | | | -8 |
| 9.84 | La | 6.19gCu ⁻¹ | | | | | | | -9 |
| 5-24 | | | | Yb | Eu | | Lu | | |
| | | | | | | | 6.98 | | |

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