

fcc, hcp. Tætteste kuglepakning. Hvert metalatom har 12 nærmeste naboer.

bcc har mindre effektiv pakning. Hvert metalatom har 8 nærmeste naboer.

simpel kubisk har endnu mindre effektiv pakning. Hvert metalatom har 6 nærmeste naboer.

Når der skal beregnes med gittersystemer:

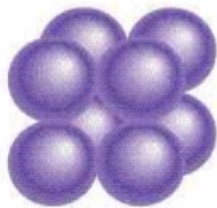
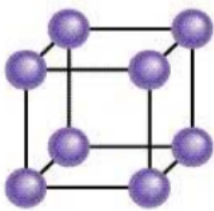
1. Find en figur af det rigtige system (evt bogmærker i bogen) noter hvor mange atomer, der er i enhedscellen.
2. Find ud af på hvilken led atomerne rører ved hinanden.
Husk: Sidelængde 1 giver en fladediagonal på $\sqrt{2}$ og en rumdiagonal på $\sqrt{3}$.
3. Opstil ligningen og isoler den ukendte. Overvej om resultatet er rimeligt!

Avogadros konstant (Avogadros tal)

Avogadrostal:

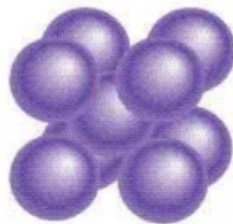
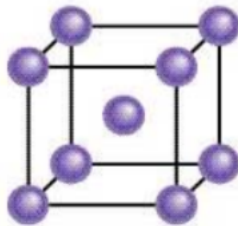
$$\left[> N_A := 6.02214129 \cdot 10^{23} \text{ mol}^{-1} : \right.$$

Gitter-typer



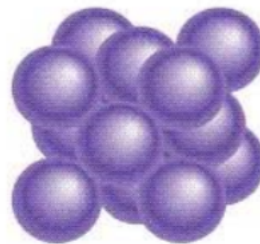
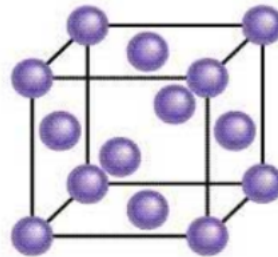
Simple cubic

$1/8 \times 8$
= 1 atom
i enhedscellen



Rumcentreret kubisk enhedscelle
Body-centered cubic

bcc
 $1/8 \times 8 + 1$
= 2 atomer
i enhedscellen



Fladecentreret kubisk enhedscelle
Face-centered cubic

fcc
 $1/8 \times 8 + 6 \times 1/2$
= 4 atomer
i enhedscellen

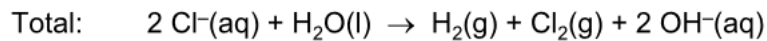
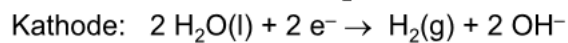
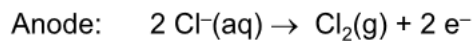
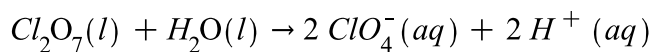
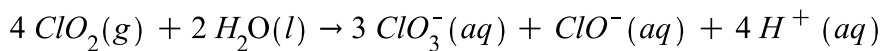
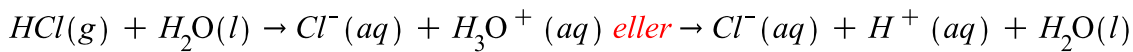
Matematik hjælp: Pythagoras giver os at (r atomradius):

bcc: Rumdiagonalen, d, for en kube med sidelængde, a, er givet til $d = a\sqrt{3}$ dvs: $4r = a\sqrt{3}$

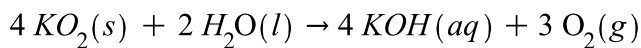
fcc: fladediagonalen, f, for en kube med sidelængde, a, er givet ved $f = a\sqrt{2}$ dvs $4r = a\sqrt{2}$

Opgave-type: Beregn densiteten!

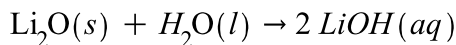
1. Densiteten er givet som:



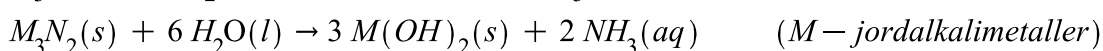
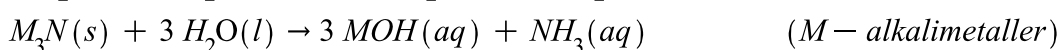
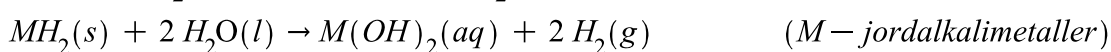
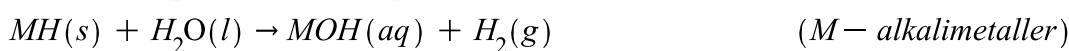
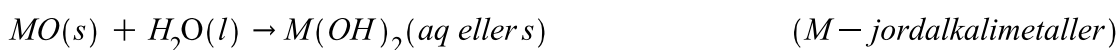
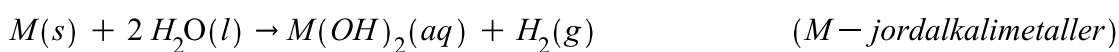
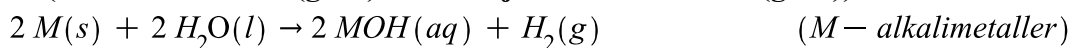
K



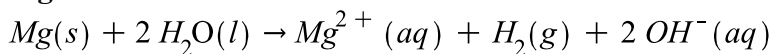
Li



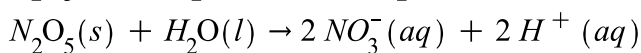
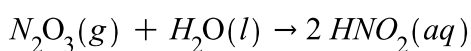
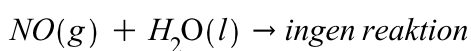
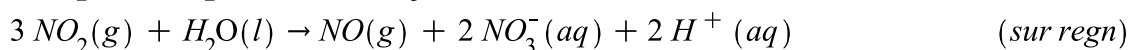
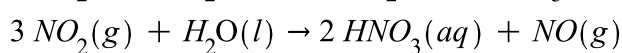
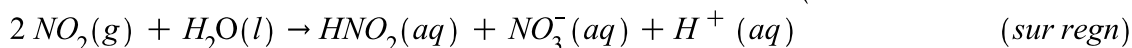
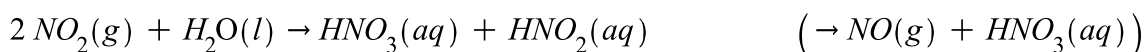
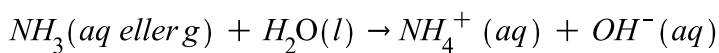
M (M=alkalimetaller (gr. 1) eller M=jordalkalimetaller (gr. 2))



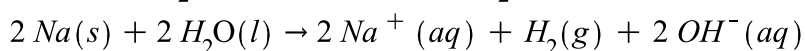
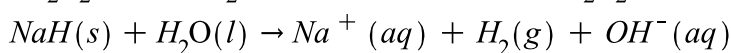
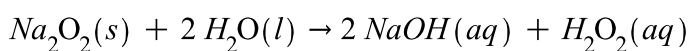
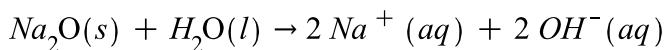
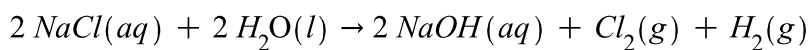
Mg

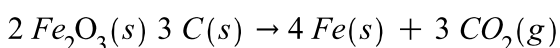
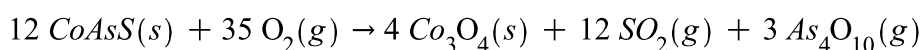
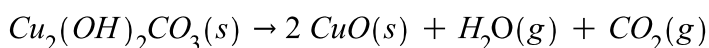
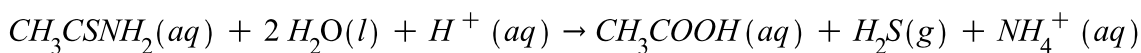


N

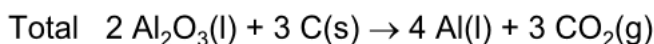
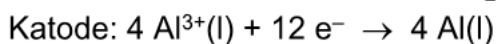
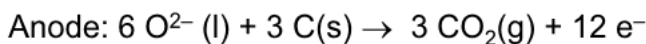


Na

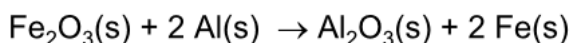




Al produktion (Hall – Héroult processen)

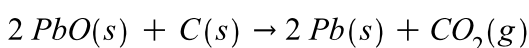
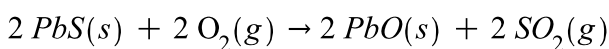


Termitreaktion

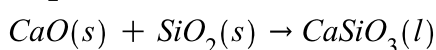
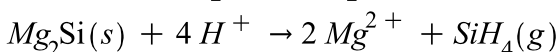
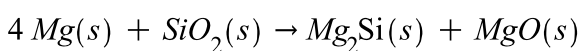
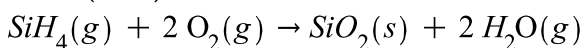
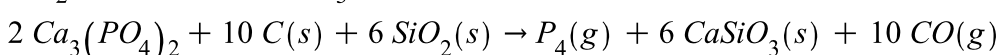
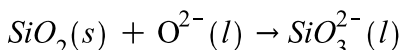
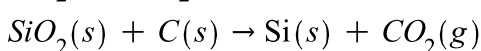
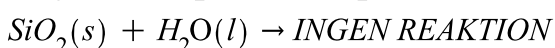
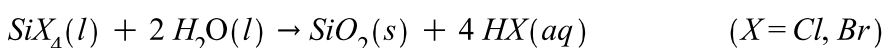
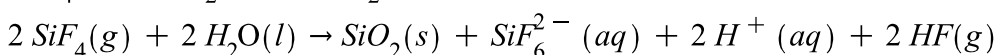
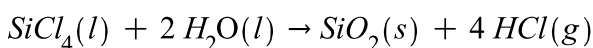


Kan også være andre metaller

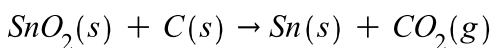
Pb



Si



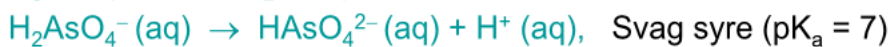
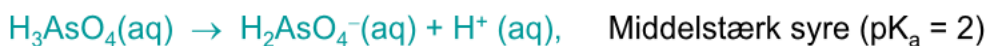
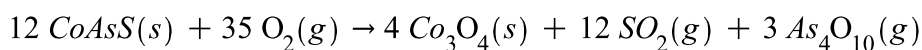
Sn

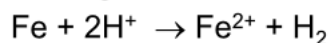
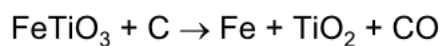


Gruppe 15, 16 og 17

Gruppe 15: N, P, As, Sb, Bi.

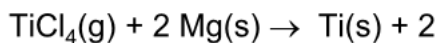
As



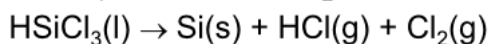
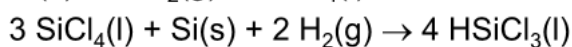
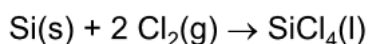


on af rutil til *fri Ti*:

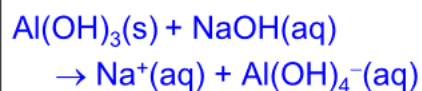
$\text{TiO}_2 + 2 \text{C} + 2 \text{Cl}_2 \rightarrow \text{TiCl}_4(\text{g}) + 2 \text{CO}$
nchlorid kan reduceres med Mg ved 800°C



Teknisk kvalitet:



HSiCl₃(l) kan destilleres og efterfølgende
dekomponeres til at producere ultra-rent Si.



Under varme + tryk.

