

Chemie Wichtiges

Zustandsgleichungen ideales Gas:

$$p \cdot V = n \cdot R \cdot T$$

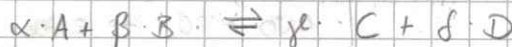
- Boyle-Mariotte: $\bar{T} : p \cdot V = \text{const.}$
- Gay-Lussac: $\bar{P} : \frac{V_1}{T_1} = \frac{V_2}{T_2}$
- Amontons: $\bar{V} : \frac{p_1}{T_1} = \frac{p_2}{T_2}$
- Avogadro: $\bar{T, P} : R = \frac{p \cdot V}{n \cdot T}$

Zustandsdiagramm Wasser:

! negativ geneigte Schmelzkurve:

- Kritisches Punkt: 220,5 bar // 374 °C
- Tripelpunkt: 0,00611 bar // 0,01 bar
- Schmelzpunkt: 1,013 bar // 0 °C
- Siedepunkt: 1,013 bar // 100 °C

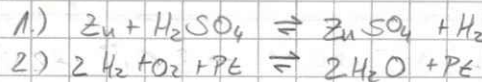
UWG:



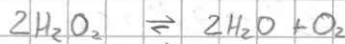
$$K = \frac{c_C^\gamma \cdot c_D^\delta}{c_A^\alpha \cdot c_B^\beta}$$

- >> 1 Schmelze ($H_2O \rightarrow H_2O$)
- << 1 Prochmelze ($N_2 + O_2 \rightleftharpoons 2NO$)
- ~ 1 Gleichgewicht

Zinkessigsäure:



Wasserstoffperoxid:

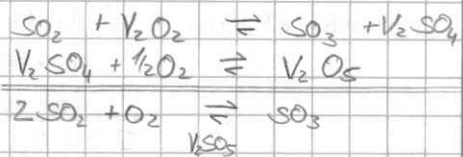


Halbbar: Inhibitorisch
Lebensschutz

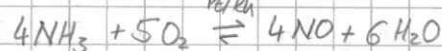
320 °C oder
MnO₂ (Braunstein als Kat)

Katalyse:

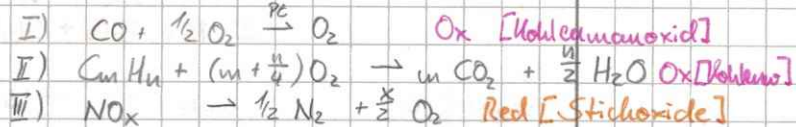
1.) Schwefeltrioxid in H₂SO₄:



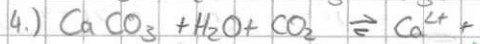
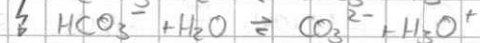
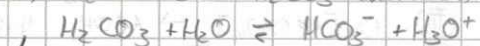
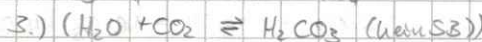
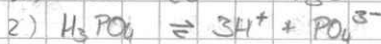
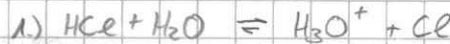
2.) NO in Salpetersäure:



3.) S Wege Kat:

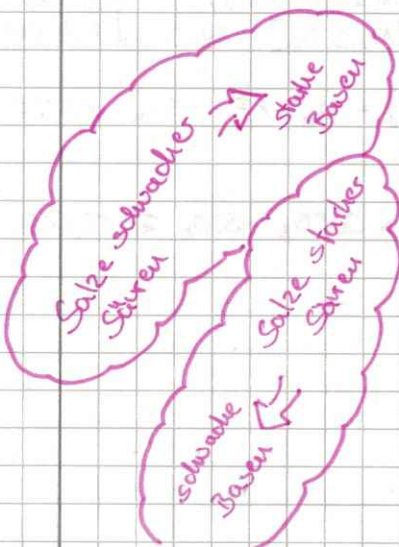
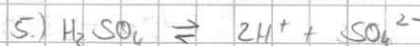


Säure/Base / Protolyse:

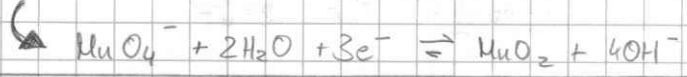
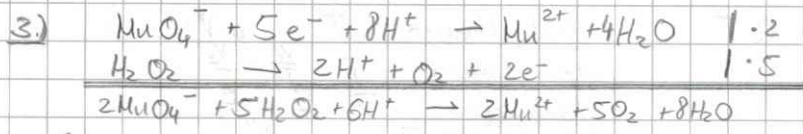
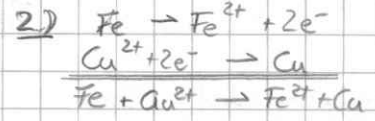
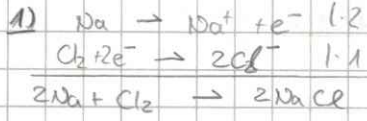


Salzsäure
Phosphorsäure

II: $3H_2O + CO_2 \rightleftharpoons CO_3^{2-} + 2H_3O^+$
Kohlensäure
Kartendübel
 $2HCO_3^-$ (gut löslicher Ampholyt)



Redox:



REDUKTIVEN:

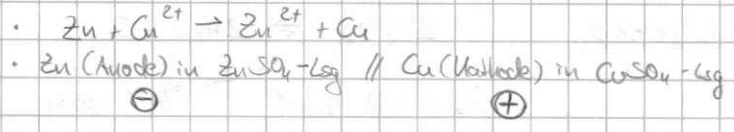
- Pflanzenwachstum: $6CO_2 + 6H_2O \xrightleftharpoons{\text{Licht}} C_6H_{12}O_6 + 6O_2$
- Elemente im Hochofen: $3CO + Fe_2O_3 \rightleftharpoons 2Fe + 3CO_2$
- Haber-Bosch: $N_2 + 3H_2 \xrightleftharpoons{P,T} 2NH_3$

OXIDATION:

- Kohlenwasserstoffverbrennung: $CH_4 + 2O_2 \rightarrow CO_2 + H_2O$
- Zuckerverbau (Körper): $C_6H_{12}O_6 + 12O_2 \rightarrow 12CO_2 + 11H_2O$
- Salpetersäure: $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$
 $4NO + 2O_2 \rightarrow 2NO_2$
 $4NO_2 + 2H_2O + O_2 \rightarrow 4HNO_3$
- Schwefelsäure: $4S + 3O_2 \rightarrow 2SO_2$
 $SO_2 + \frac{1}{2}O_2 \xrightarrow{V_2O_5} SO_3$
 $SO_3 + H_2SO_4 \rightarrow H_2S_2O_7$
 $H_2S_2O_7 + H_2O \rightarrow 2H_2SO_4$

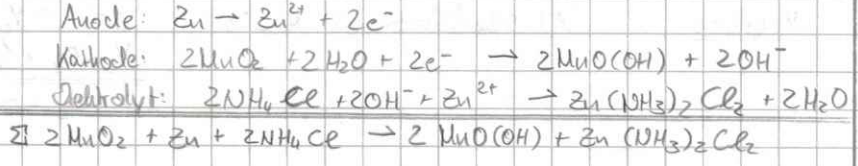


• Daniell-Element:

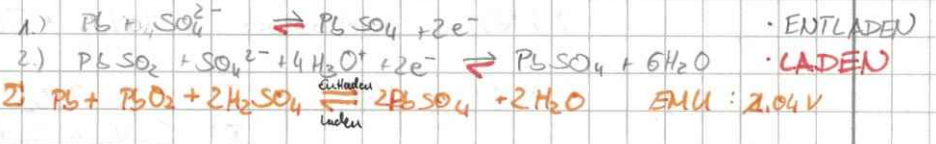


↳ Unedleres (kleineres SP) wird oxidiert // Edleres (größeres SP) wird reduziert

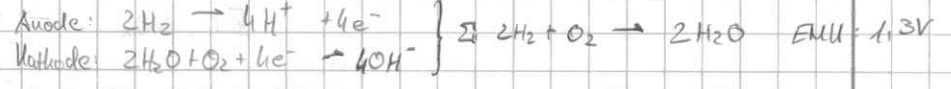
• Leclanché-Element:



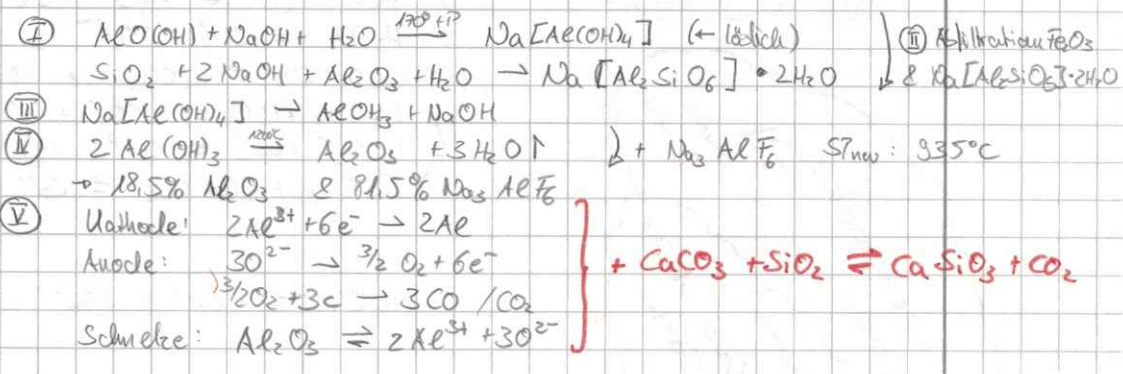
• Bleiakkumulator:



• Brennstoffzelle:

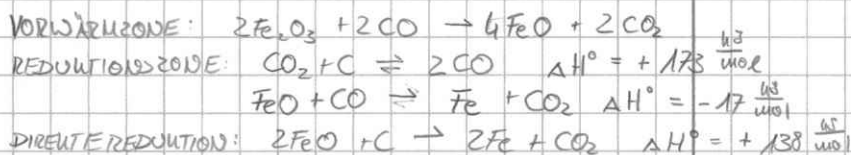


• Aluminium:

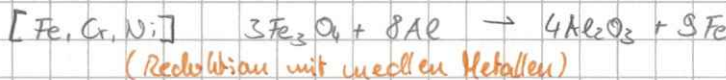


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Eisengewinnung im Hochofen:

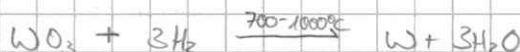


Thermit-Schweißen:



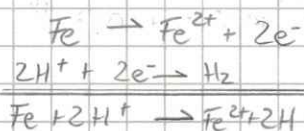
Metallgewinnung durch Wasserstoffreduktion:

[W, Mo, Cr]



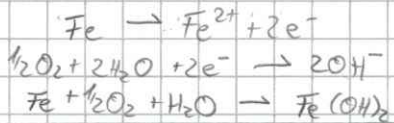
Korrosion:

Säurekorrosion:

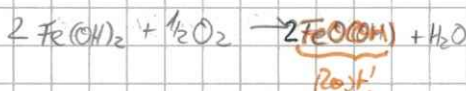


über Auflösung keine
 Restbildung! An ortho an
 anderer Stelle! (mit O₂)

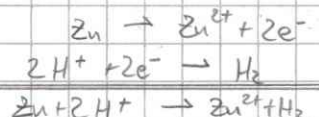
Sauerstoffkorrosion:



Folge



Unedles Überzug (Zn):

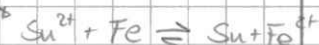
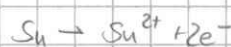
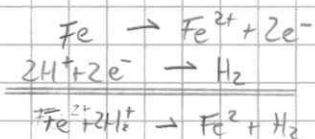


lang anhaltend solange
 Zn da!

Eddler Überzug (Sn):

Wahlblech

analog Chrom!



Sn-edler

Passivschichten:

Aluminium:

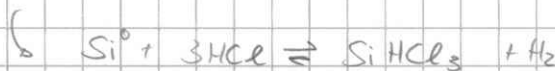
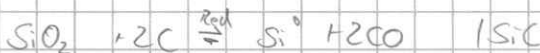


(Luft und
sehr kalt)

Chrom in Chrom:



elementares Silicium:



Trichlorsilan

