Red & Ox

1. Oxidationszahlen

Kategorie: leicht

Bromid-Ion	-I
	Br^-

Chlorid-Ion	-I
	Cl^-

Fluorid-Ion	-I
	Cl^-

Hydrid-Ion	-I
	H^-

Hydroxid-Ion	-II,+I
	OH^-

Aluminium-Ion	+III
	Al^{3+}

Ammoniak	-III,+I
	NH_3

Barium-Ion	+II
	Ba^{2+}

Calcium-Ion	+II
	Ca^{2+}

Eisen-Ion	+III
	Fe^{3+}

Hydrogen-Ion	+I
	H^+

Kalium-Ion	+I
	K^+

Kupfer-Ion	+II
	Cu^{2+}

Sauerstoff (Gas)	0
	O_2

Wasserstoff (Gas)	0
	H_2

Magnesium	0
	Mg

Kupfer	0
	Cu

Wasser	+I,-II
	H_2O

Natrium-chlorid	+I,-I
	NaCl

Kategorie: schwer

Ammonium-Ion	-III,+I
	NH_4^+

Carbonat-Ion	+IV,-II
	CO_3^{2-}

Oxonium-Ion	+I,-II
	H_3O^+

Chlorat-Ion	+VII,-II
	ClO_4^-

Chromat-Ion	+VI,-II
	CrO_4^{2-}

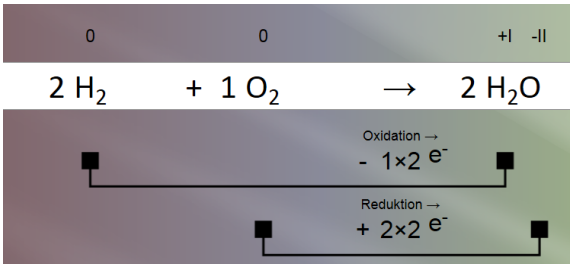
Dichromat-Ion	+VI,-II
	$Cr_2O_7^{2-}$

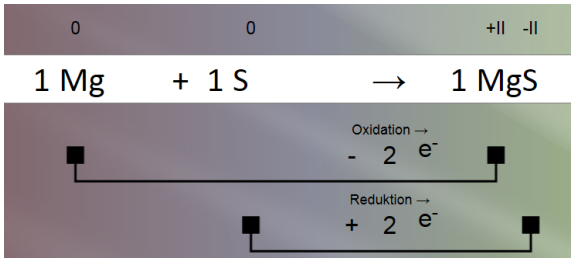
Dihydrogen-phosphat-Ion	+I,+V,-II
	$H_2PO_4^-$

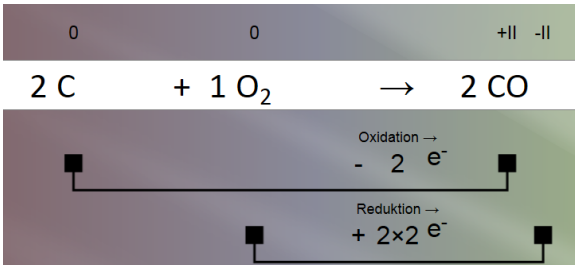
Kaliumper-manganat	+I,+VII,-II
	$KMnO_4^-$

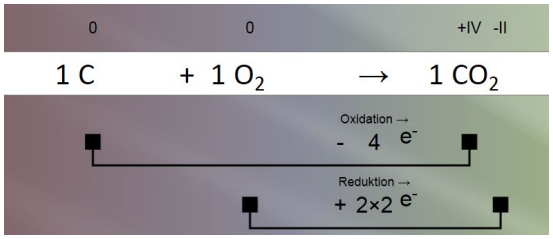
Schwefel-säure	+I,+VI,-II
	H_2SO_4

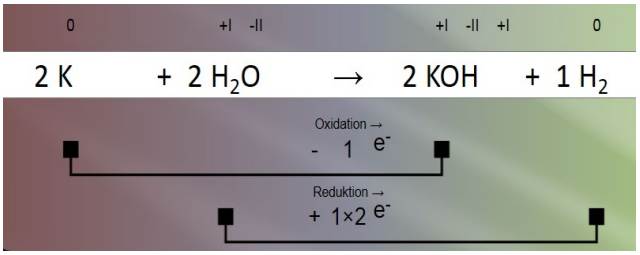
2. RedOxgleichungen mit Ladungszahlen, Oxidation und Reduktion, Elektronen und Koeffizienten
Kategorie: leicht

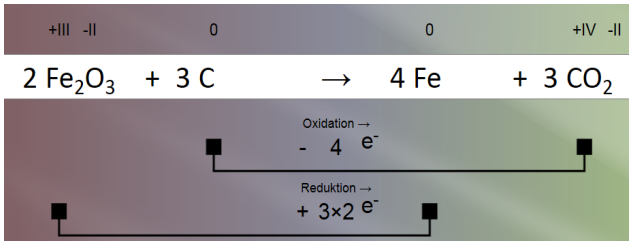


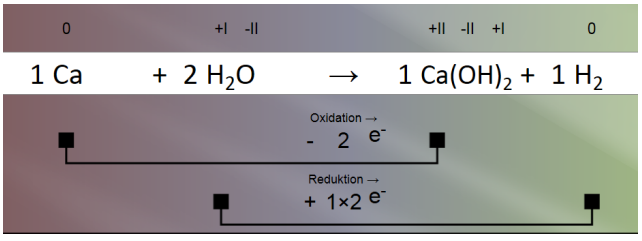


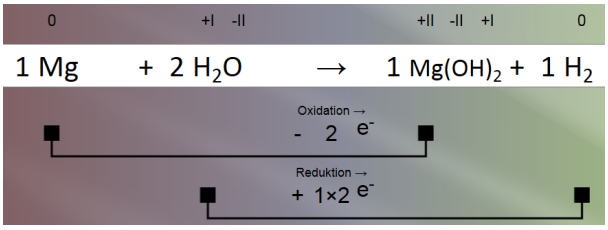


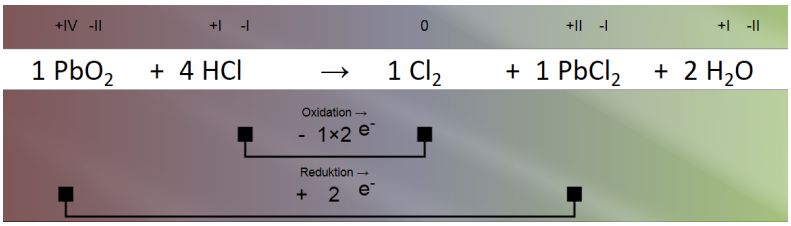




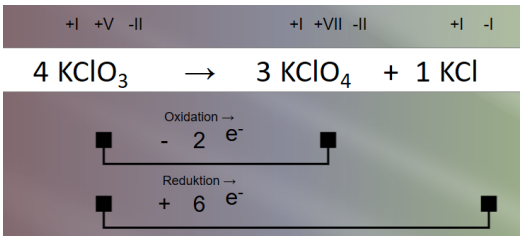


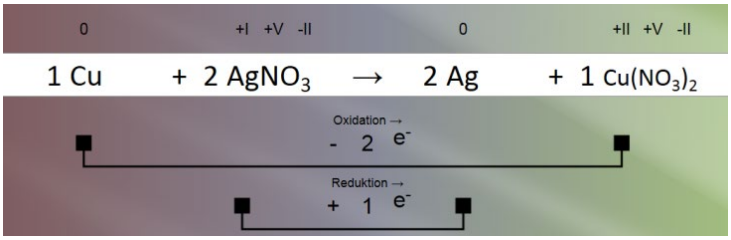


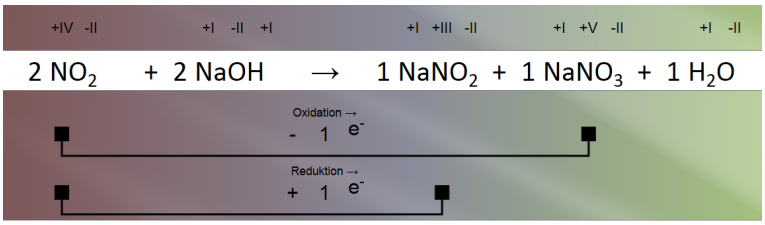


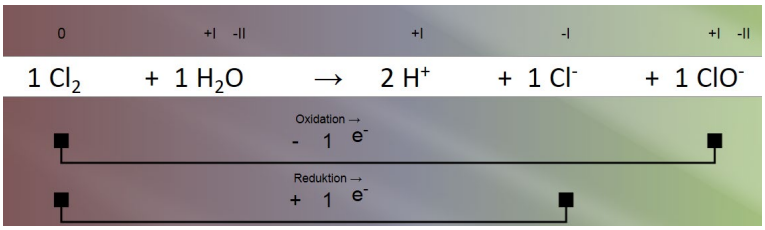


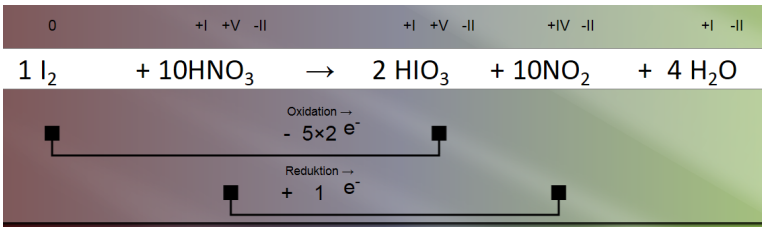
Kategorie: schwer

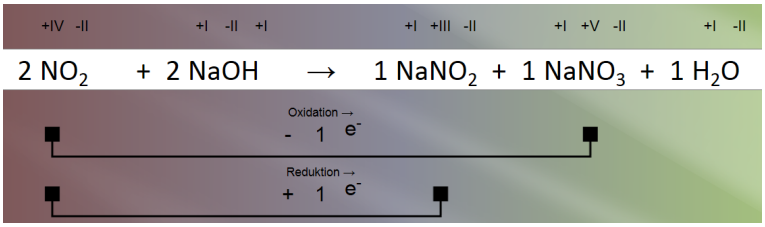


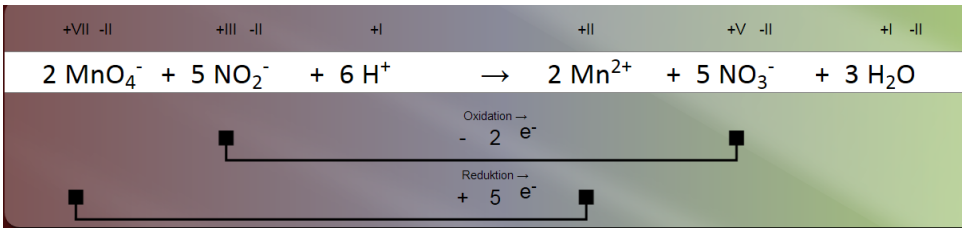


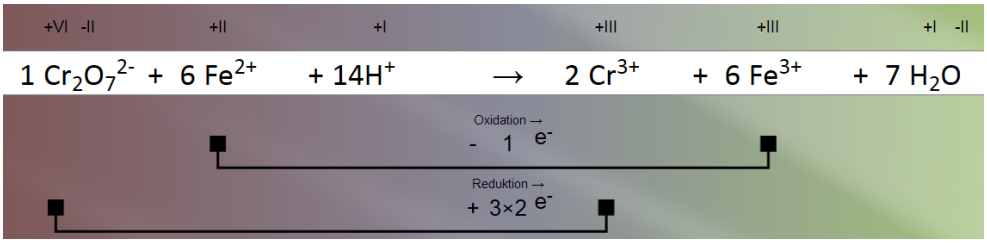


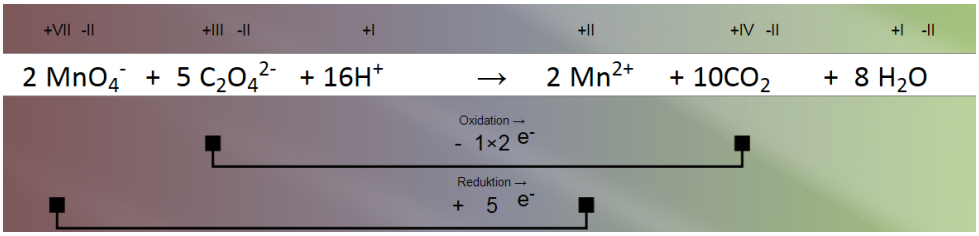


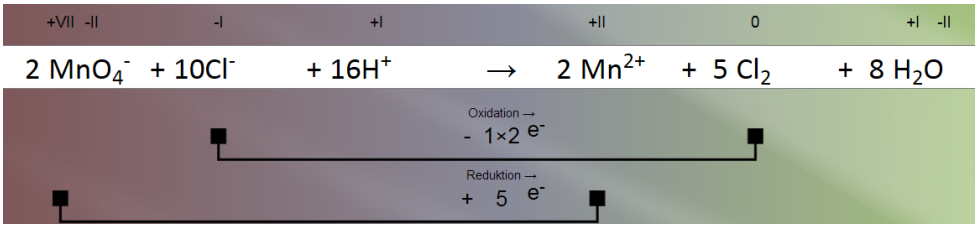












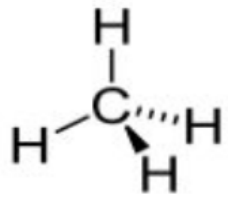
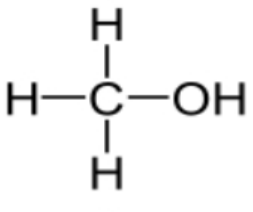
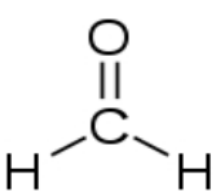
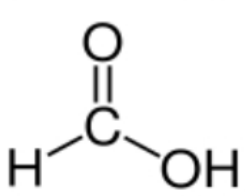
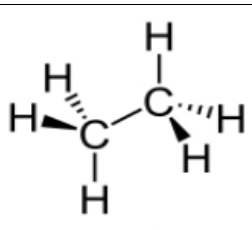
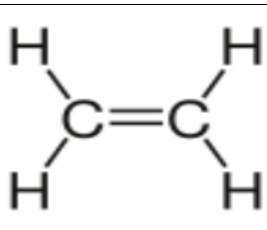
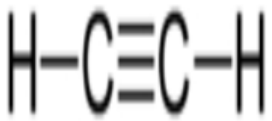
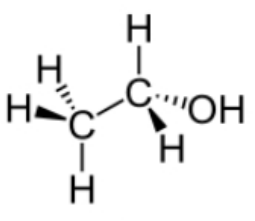
3. Zementierungsreaktionen:

$Au + 3\ Ag^+$	$\rightarrow Au^{3+} + 3\ Ag$	oder $\underline{Au^{3+} + 3\ Ag \rightarrow Au + 3\ Ag}$
$Cu^{2+} + 2\ Ag$	$\rightarrow Cu + 2\ Ag^+$	oder $\underline{Cu + 2\ Ag^+ \rightarrow Cu^{2+} + 2\ Ag}$
$Pb^{2+} + 2\ Ag$	$\rightarrow Pb + 2\ Ag^+$	oder $\underline{Pb + 2\ Ag^+ \rightarrow Pb^{2+} + 2\ Ag}$
$Zn^{2+} + 2\ Ag$	$\rightarrow Zn + 2\ Ag^+$	oder $\underline{Zn + 2\ Ag^+ \rightarrow Zn^{2+} + 2\ Ag}$
$Cu + 2\ Br^-$	$\rightarrow Cu^{2+} + Br_2$	oder $\underline{Cu^{2+} + Br_2 \rightarrow Cu + 2\ Br^-}$
$Zn^{2+} + H_2$	$\rightarrow Zn + 2\ H^+$	oder $\underline{Zn + 2\ H^+ \rightarrow Zn^{2+} + H_2}$
$2\ Cl^- + Br_2$	$\rightarrow Cl_2 + 2\ Br^-$	oder $\underline{Cl_2 + 2\ Br^- \rightarrow 2\ Cl^- + Br_2}$
$Zn^{2+} + 2\ Cl^-$	$\rightarrow Zn + Cl_2$	oder $\underline{Zn + Cl_2 \rightarrow Zn^{2+} + 2\ Cl^-}$
$Zn^{2+} + Sn$	$\rightarrow Zn + Sn^{2+}$	oder $\underline{Zn + Sn^{2+} \rightarrow Zn^{2+} + Sn}$
$Sn^{2+} + H_2$	$\rightarrow 2H^+ + Sn$	oder $\underline{2H^+ + Sn \rightarrow H_2 + Sn^{2+}}$
$Zn^{2+} + Pb$	$\rightarrow Zn + Pb^{2+}$	oder $\underline{Zn + Pb^{2+} \rightarrow Zn^{2+} + Pb}$

4. Potenzialberechnungen

		V	V	V	V	V	
l	Wasserstoff sprudelt um eine Pt-Elektrode in Salzsäure c(HCl) = 1,0 mol/L	0,0	-0,76	0,859	0,35	0,641	E = 0,0 V + 0,059 V*log(1) = 0,0 V
l	Ein Bleiblech taucht in Bleinitratlösung $c(Pb(NO_3)_2$ = 1,0 mol/L	0,918	0,00	0,13	0,682	-0,13	E =- 0,13V +0,0295V*log(1) = -0,13 V
l	Ein Goldblech taucht in eine Goldchloridlösung $c(AuCl_3)$= 1 mol/L	0,918	2,84	1,42	0,682	0,641	E = 1,42 V + 0,020 V * log(1) = 1,42 V
l	Ein Silberblech taucht in Silbernitratlösung $c(AgNO_3)$ = 1 mol/L	1,234	0,80	0,859	0,741	0,641	E = 0,8 V + 0,059 V * log(1) = 0,800 V
l	Ein Zinkblech taucht in eine Zinksulfatlösung $c(ZnSO_4)$ = 1 mol/L	-0,731	-0,76	0,859	-0,79	0,641	E = -0,76V + 0,0295V * log(1) = - 0,76 V
l	Ein Kupferblech taucht in Kupfersulfatlösung $c(CuSO_4)$ = 1 mol/L	-0,731	-0,35	0,35	-0,79	0,641	E = 0,35 V + 0,0295 V * log(1) = 0,35 V
s	Ein Silberblech taucht in Silbernitratlösung $c(AgNO_3)$ = 0,5 mol/L	1,234	0,782	0,859	0,741	0,641	E = = 0,8V + 0,059V * log(0,5) = 0,782 V
s	Ein Zinkblech taucht in eine Zinksulfatlösung $c(ZnSO_4)$ = 0,1 mol/L	-0,731	-0,769	0,859	-0,79	0,641	E = -0,76V+ 0,0295V*log(0,1) = - 0,79V
s	Ein Silberblech taucht in Silbernitratlösung $c(AgNO_3)$ = 0,001 mol/L	0,918	0,80	0,859	0,682	0,623	E = =0,8V+0,059V*log(0,001) = 0,623 V
s	Ein Silberblech taucht in Silbernitratlösung $c(AgNO_3)$ = 0,1 mol/L	1,234	0,80	0,859	0,741	0,641	E = =0,8V+0,059V*log(0,1) = 0,741 V
s	Ein Silberblech taucht in Silbernitratlösung $c(AgNO_3)$ = 0,01 mol/L	0,918	0,80	0,859	0,682	0,641	E = =0,8V+0,059V*log(0,01) = 0,682 V

5. Oxidationszahlen in der Organik

Methan	Methanol
	
Methanal	**Methansäure**
	
Ethan	**Ethen**
	
Ethin	**Ethanol**
	
Ethanal	**Ethansäure**