

IA Grupa

KĪMISKO ELEMENTU PERIODISKĀ TABULA

Nemetāli

VIII A

Atoma numurs Z (Protonu skaits)
Elektronegativitāte
Vārīšanās temperatūra

Mn
Mangāns
[Ar] 3d54s2

Relatīvā atoma masa A Iekavās ieslēgtie [270] ir nukleotīdu skaits
radioaktīvajā izotopa kodolā ar ilgāko pussabrukšanas laiku

Table with 2 columns: Element symbols (H, Li, Na, K, Rb, Cs, Fr) and their properties (atomic number, name, symbol, configuration).

IIA
Kušanas temperatūra
Agregāstāvoklis
ieēnotie burti: gāzveidīgs
Italik burti : šķidr normāli burti: ciets
kont rburti: visi dabā ir rdoiakīvie izotopi

Table with 5 columns: Elements B, C, N, O, F, Ne, Al, Si, P, S, Cl, Ar and their properties.

Table with 2 columns: Elements Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Kr and their properties.

Table with 5 columns: Elements Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, I, Xe and their properties.

Table with 5 columns: Elements Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, At, Rn and their properties.

Table with 5 columns: Elements U, Uut, Fl, Lv, and their properties.

Rīga (RSU)
Stradiņa universitāte.
Cilvēka fizioloģijas un bioķīmijas
katedra
Asist.prof. A. Kaksis 2023. g.

Table with 5 columns: Lanthanoids (Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu) and Actinoids (Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr).

Table with 5 columns: Elements U, Uut, Fl, Lv, and their properties.

Table with 5 columns: Elements U, Uut, Fl, Lv, and their properties.

Table with 2 columns: Elements Lv, Lv, and their properties.

Elektrodu standart potenciāli

El	Reducētā forma=Oksidētā forme+ne ^{e-}	H ₂ O klasiskais E ₀	Termodinam. H ₂ O uzskaitē	Absolūtais -0.3982 V
H	$\text{H(Pt)+H}_2\text{O}=\text{H}_3\text{O}^++(\text{Pt})+\text{e}^-$ $\text{H(Pt)+OH}^-=\text{H}_2\text{O}+(\text{Pt})+\text{e}^-$	klasiskā 0 -0.932195	0.10166 -0.93268	-0,2965 -1.33088
O	$6\text{H}_2\text{O}=\text{O}_2^{(g)}+4\text{H}_3\text{O}^++4\text{e}^-$ $\text{H}_2\text{O}_2+2\text{H}_2\text{O}=\text{O}_2^{2\text{aq}}+2\text{H}_3\text{O}^++\text{e}^-$ $4\text{H}_2\text{O}=\text{H}_2\text{O}_2+2\text{H}_3\text{O}^++2\text{e}^-$ $\text{H}_2\text{O}_2^{2\text{aq}}+2\text{H}_2\text{O}=\text{O}_2^{2\text{aq}}+2\text{H}_3\text{O}^++2\text{e}^-$	1.2288 1.2764 1.776 0.6945	+1.48466 +1.58416 +2.08366 0.8477	1.0865 1.0829 1.6855 0.4495
N	$\text{NO}_2^-+2\text{OH}^-=\text{NO}_3^-+\text{H}_2\text{O}+2\text{e}^-$ $\text{HNO}_2+4\text{H}_2\text{O}=\text{NO}_3^-+3\text{H}_3\text{O}^++2\text{e}^-$ $\text{NO}_{\text{aq}}+6\text{H}_2\text{O}=\text{NO}_3^-+4\text{H}_3\text{O}^++3\text{e}^-$ $\text{NH}_4^++13\text{H}_2\text{O}=\text{NO}_3^-+10\text{H}_3\text{O}^++8\text{e}^-$	0.01 0.94 0.96 0.87	0.0602 1.2477 1.2677 1.4180	-0.3380 0.8495 0.8695 1.0198
Br	$2\text{Br}^-=\text{Br}_2(\text{aq})+2\text{e}^-$	1.0873	1.18896	0.79076
Bi	$\text{BiO}^++6\text{H}_2\text{O}=\text{BiO}_3^-+4\text{H}_3\text{O}^++2\text{e}^-$	1.80	2.210645	1.812445
Mn	$\text{Mn}^{2+}+12\text{H}_2\text{O}=\text{MnO}_4^-+8\text{H}_3\text{O}^++5\text{e}^-$ $\text{MnO}_2+4\text{OH}^-=\text{MnO}_4^-+2\text{H}_2\text{O}+3\text{e}^-$ $\text{MnO}_4^{2-}=\text{MnO}_4^-+\text{e}^-$	1.51 0.603 0.558	1.8588 0.6360 0.6597	1.4506 0.2378 0.2615
Pb	$\text{Pb}^{2+}+6\text{H}_2\text{O}=\text{PbO}_2(\text{s})+4\text{H}_3\text{O}^++2\text{e}^-$ $\text{Pb}+\text{H}_2\text{O}=\text{Pb}^{2+}+2\text{e}^-$	1.455 -0.126	1.8656 0.0272	1.4674 -0.3710
S	$\text{H}_2\text{SO}_3+4\text{H}_2\text{O}=\text{HSO}_4^-+3\text{H}_3\text{O}^++2\text{e}^-$ $\text{HSO}_3^-+4\text{H}_2\text{O}=\text{SO}_4^{2-}+3\text{H}_3\text{O}^++2\text{e}^-$ $\text{SO}_3^{2-}+2\text{OH}^-=\text{SO}_4^{2-}+\text{H}_2\text{O}+2\text{e}^-$ $\text{S}^{2-}=\text{S}_{\text{rombic}}+\text{H}_2\text{O}+2\text{e}^-$ $\text{HS}^++\text{OH}^-=\text{S}_{\text{rombic}}+2\text{H}_2\text{O}+2\text{e}^-$ $\text{H}_2\text{S}_{\text{aq}}+2\text{H}_2\text{O}=\text{S}_{\text{rombic}}+2\text{H}_3\text{O}^++2\text{e}^-$ $2\text{S}_2\text{O}_3^{2-}=\text{S}_4\text{O}_6^{2-}+2\text{e}^-$	0.172 0.172 -0.93 -0.4763 -0.478 0.142 0.08	0.47965 0.47965 -0.87984 -0.4261 -0.4793 0.3467 0.18166	0.08145 0.08145 -1.27804 -0.8243 -0.8775 -0.0515 -0.2165
Fe	$\text{Fe}^{2+}=\text{Fe}^{3+}+\text{e}^-$ $\text{Fe}(\text{s})+\text{H}_2\text{O}=\text{Fe}^{2+}+2\text{e}^-$	0.769 -0.4402	0.8717 -0.2870	0.4735 -0.6852
Ag	$\text{Ag}+\text{H}_2\text{O}=\text{Ag}^++\text{e}^-$ $\text{Ag}(\text{s})+\text{Cl}^-=\text{AgCl}(\text{s})+\text{H}_2\text{O}+\text{e}^-$ $\text{Ag}+2\text{NH}_3(\text{aq})=\text{Ag}(\text{NH}_3)_2^++\text{e}^-$ $2\text{Ag}+2\text{OH}^-=\text{Ag}_2\text{O}(\text{s})+\text{H}_2\text{O}+2\text{e}^-$	0.7994 0.2223 0.373 0.345	1.0041 0.2210 0.4747 0.3952	0.6059 -0.1772 0.0765 -0.0030
I	$3\text{I}^-=\text{I}_3^-+2\text{e}^-$	0.6276	0.72926	0.33106
F	$2\text{F}^-=\text{F}_2(\text{g})+2\text{e}^-$	2.87	2.97166	2.5735
Cl	$2\text{Cl}^-=\text{Cl}_2(\text{g})+2\text{e}^-$ $\text{Cl}_2(\text{g})+4\text{H}_2\text{O}=2\text{HOCl}+2\text{H}_3\text{O}^++2\text{e}^-$	1.358 1.63	1.45966 1.93765	1.06146 1.53945
Cr	$2\text{Cr}^{3+}+21\text{H}_2\text{O}=\text{Cr}_2\text{O}_7^{2-}+14\text{H}_3\text{O}^++6\text{e}^-$ $\text{Cr}^{3+}+11\text{H}_2\text{O}=\text{HCrO}_4^-+7\text{H}_3\text{O}^++3\text{e}^-$	1.33 1.20	1.7921 1.6793	1.3939 1.2811
C	$\text{H}_2\text{C}_2\text{O}_4+2\text{H}_2\text{O}=2\text{CO}_2+2\text{H}_3\text{O}^++2\text{e}^-$	-0.49	-0.28534	-0.6835
Cu	$\text{Cu}(\text{Hg})+\text{H}_2\text{O}=\text{Cu}^{2+}+(\text{Hg})+2\text{e}^-$	0.3435	0.4967	0.0985
Cr	$\text{Cr}+\text{H}_2\text{O}=\text{Cr}^{3+}+3\text{e}^-$	-0.744	-0.6080	-1.0062
Zn	$\text{Zn}+\text{H}_2\text{O}=\text{Zn}^{2+}+2\text{e}^-$	-0.7628	-0.6096	-1.0078
Al	$\text{Al}+\text{H}_2\text{O}=\text{Al}^{3+}+3\text{e}^-$	-1.662	-1.5260	-1.9242
Al	$\text{Al}+4\text{OH}^-=\text{H}_2\text{AlO}_3^-+\text{H}_2\text{O}+3\text{e}^-$	-2.33	-2.2627	-2.6609

SĀĻU ŠĶĪDĪBA

jons	H ⁺	NH ₄ ⁺	K ⁺	Na ⁺	Ba ²⁺	Ca ²⁺	Mg ²⁺	Al ³⁺	Cr ³⁺	Fe ²⁺	Fe ³⁺	Mn ²⁺	Zn ²⁺	Ag ⁺	Hg ²⁺	Pb ²⁺	Sn ²⁺	Cu ²⁺
Cl ⁻	+	+	+	+	+	+	+	+	+	+	+	+	+	n	+	s	+	+
S ²⁻	+	+	+	+	+	s	+	#	#	n	n	n	n	n	n	n	n	n
SO ₃ ²⁻	+	+	+	+	n	n	n	#	#	n	#	n	n	n	n	n	#	n
SO ₄ ²⁻	+	+	+	+	n	s	+	+	+	+	+	+	+	s	+	n	+	+
PO ₄ ³⁻	+	+	+	+	n	n	n	n	n	n	n	n	n	n	n	n	n	n
CO ₃ ²⁻	+	+	+	+	n	n	n	#	#	n	#	n	n	n	n	n	n	n
SiO ₃ ²⁻	n	#	+	+	n	n	n	n	n	n	n	n	n	n	#	n	#	n
NO ₃ ⁻	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
acetāts ⁻	+	+	+	+	+	+	+	s	+	+	+	+	+	+	+	+	+	+
OH ⁻	#	+	+	+	+	s	n	n	n	n	n	n	n	#	#	nn	n	n

Apzīmējumi tabulā:

+ - šķīstošs, **n** - praktiski nešķīstošs, **s** - vāji šķīstošs, **#** sāls nepastāv ūdens šķīdumā

Kas ir jāatceras par šķīdību:

- visi nitrāti NO₃⁻ ir šķīstoši .
- lielākā daļā hlorīdi Cl⁻, sulfāti SO₄²⁻ un acetāti CH₃COO⁻ ir ūdenī šķīstoši .
- citu skābju sāļim perasti ir šķīstoši sārmu (Na⁺, K⁺) un amonija NH₄⁺ sāļis.
- sulfīdi S²⁻ parasti ir nešķīstoši sāļi .

METĀĻU AKTIVITĀTES RINDA (PĒC ŠO METĀĻU RED—OX POTENCIĀLIEM)

Li > K > Ca > Na > Mg > Al > Mn > Cr > Zn > Fe >

> Co > Ni > Sn > Pb > H > Cu > Hg > Ag > Au