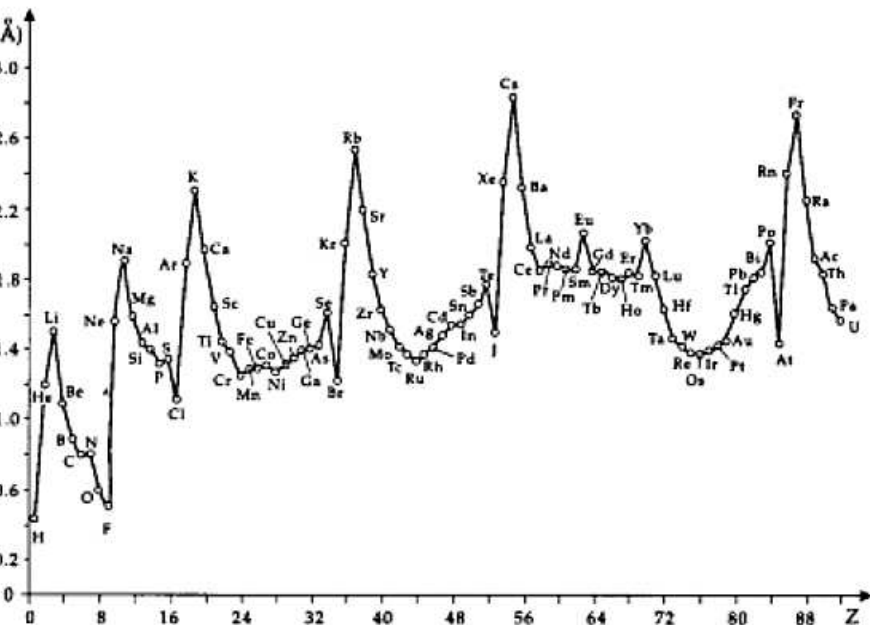
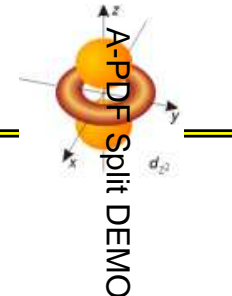


# Atomsugár, ionsugár



**IUPAC Periodic Table of the Elements**

1 H hydrogen 1.007 84(7)	2 He helium 4.002 603(2)	3 Li lithium 6.941(6)	4 Be beryllium 9.012 183(3)	5 B boron 10.811(7)	6 C carbon 12.010 7(8)	7 N nitrogen 14.006 4(4)	8 O oxygen 15.999 4(3)	9 F fluorine 18.998 403(1)	10 Ne neon 20.1797(6)	11 Na sodium 22.989 769(2)	12 Mg magnesium 24.3040(6)	13 Al aluminum 26.981 538(6)	14 Si silicon 28.085 5(3)	15 P phosphorus 30.973 761(5)	16 S sulfur 32.06(6)	17 Cl chlorine 35.45(3)	18 Ar argon 39.948(1)	19 K potassium 39.0983(1)	20 Ca calcium 40.078(4)	21 Sc scandium 44.955 910(6)	22 Ti titanium 47.867(1)	23 V vanadium 50.9415(6)	24 Cr chromium 51.996 1(6)	25 Mn manganese 54.938 045(3)	26 Fe iron 55.845(2)	27 Co cobalt 58.933 195(5)	28 Ni nickel 58.693 4(4)	29 Cu copper 63.546(3)	30 Zn zinc 65.38(4)	31 Ga gallium 69.723(1)	32 Ge germanium 72.64(1)	33 As arsenic 74.921 6(3)	34 Se selenium 78.96(3)	35 Br bromine 79.904(1)	36 Kr krypton 83.7958(3)	37 Rb rubidium 85.4678(3)	38 Sr strontium 87.62(1)	39 Y yttrium 88.905 84(2)	40 Zr zirconium 91.224(2)	41 Nb niobium 92.906 38(2)	42 Mo molybdenum 95.94(2)	43 Tc technetium 97.907(2)	44 Ru ruthenium 101.07(2)	45 Rh rhodium 102.905 50(2)	46 Pd palladium 106.907(1)	47 Ag silver 107.868 2(1)	48 Cd cadmium 112.411(8)	49 In indium 114.818(3)	50 Sn tin 118.710(1)	51 Sb antimony 121.757(1)	52 Te tellurium 127.60(3)	53 I iodine 126.904 47(3)	54 Xe xenon 131.29(6)	55 Cs cesium 132.905 451(2)	56 Ba barium 137.327(1)	57 La lanthanum 138.904 7(1)	58 Ce cerium 140.12(1)	59 Pr praseodymium 140.907 68(2)	60 Nd neodymium 144.24(2)	61 Pm promethium 144.912 6(2)	62 Sm samarium 150.36(2)	63 Eu europium 151.964(1)	64 Gd gadolinium 157.25(3)	65 Tb terbium 158.925 3(2)	66 Dy dysprosium 162.50(3)	67 Ho holmium 164.930 32(2)	68 Er erbium 167.259(1)	69 Tm thulium 168.930 4(2)	70 Yb ytterbium 173.054(1)	71 Lu lutetium 174.967(1)	72 Hf hafnium 178.49(2)	73 Ta tantalum 180.947 88(2)	74 W tungsten 183.84(1)	75 Re rhenium 186.207(1)	76 Os osmium 190.23(2)	77 Ir iridium 192.222(1)	78 Pt platinum 195.083(3)	79 Au gold 196.966 569(5)	80 Hg mercury 200.59(2)	81 Tl thallium 204.3833(2)	82 Pb lead 207.2(1)	83 Bi bismuth 208.980 4(1)	84 Po polonium 209(2)	85 At astatine 210(1)	86 Rn radon 222(1)	87 Fr francium 223(1)	88 Ra radium 226(1)	89-103 actinoids	104 Rf rutherfordium 261(1)	105 Db dubnium 262(1)	106 Sg seaborgium 266(1)	107 Bh bohrium 264(1)	108 Hs hassium 277(1)	109 Mt meitnerium 268(1)	110 Ds darmstadtium 271(1)	111 Uuu unnilunium 272(1)	112 Uub ununbium 285(1)	113 Uut ununtrium 288(1)	114 Uuq ununquadium 289(1)	115 Uup ununpentium 290(1)	116 Uuh ununhexium 292(1)	117 Uus ununseptium 294(1)	118 Uuo ununoctium 296(1)
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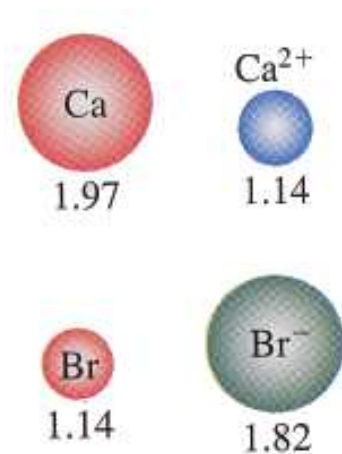
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\* Elements with atomic numbers 112, 114, and 115 have been reported but not fully authenticated.

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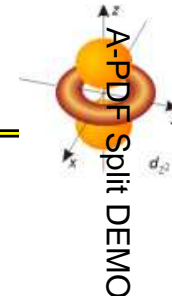
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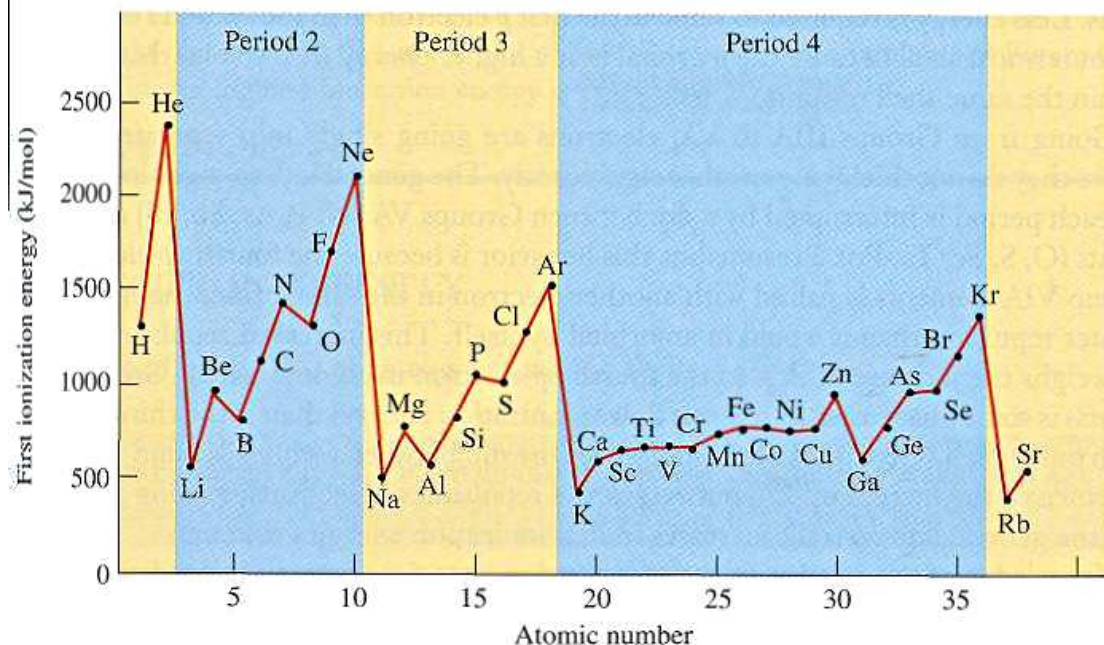
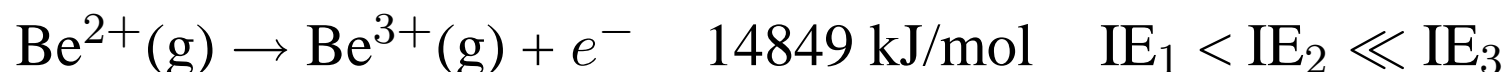
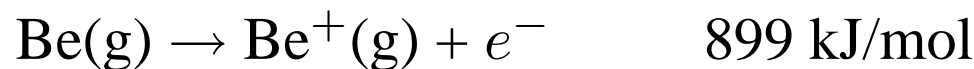
<sup>5</sup> Elements with atomic numbers 112, 114, and 115 have been reported but not fully substantiated.

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# Ionizációs energia



Az első ionizációs energia: egy gázállapotú atomból a legkönnyebben leszakítható elektron eltávolításához szükséges energia.



IUPAC Periodic Table of the Elements																		
1 H hydrogen (1.00794)																	18 Ar argon (39.948)	
3 Li lithium (6.941)	4 Be beryllium (9.012182)															19 K potassium (39.0983)		
5 B boron (10.811)	6 C carbon (12.0107)	7 N nitrogen (14.00643)	8 O oxygen (15.999)	9 F fluorine (18.9984032)	10 Ne neon (20.1797)													20 Ca calcium (40.078)
11 Na sodium (22.98976928)	12 Mg magnesium (24.304)															21 Sc scandium (44.955912)		
13 Al aluminum (26.9815386)	14 Si silicon (28.08558)	15 P phosphorus (30.973762)	16 S sulfur (32.06)	17 Cl chlorine (35.45)	18 Ar argon (39.948)													22 Ti titanium (47.867)
19 K potassium (39.0983)	20 Ca calcium (40.078)	21 Sc scandium (44.955912)	22 Ti titanium (47.867)	23 V vanadium (50.9415)	24 Cr chromium (51.9961)	25 Mn manganese (54.938045)	26 Fe iron (55.845)	27 Co cobalt (58.933195)	28 Ni nickel (58.6934)	29 Cu copper (63.546)	30 Zn zinc (65.38)	31 Ga gallium (69.723)	32 Ge germanium (72.630)	33 As arsenic (74.9216)	34 Se selenium (78.96)	35 Br bromine (79.904)	36 Kr krypton (83.798)	
37 Rb rubidium (85.4678)	38 Sr strontium (87.62)	39 Y yttrium (88.90584)	40 Zr zirconium (91.224)	41 Nb niobium (92.90638)	42 Mo molybdenum (95.94)	43 Tc technetium (98.90625)	44 Ru ruthenium (101.07)	45 Rh rhodium (102.9055)	46 Pd palladium (106.90558)	47 Ag silver (107.8682)	48 Cd cadmium (112.411)	49 In indium (114.818)	50 Sn tin (118.710)	51 Sb antimony (121.757)	52 Te tellurium (127.6)	53 I iodine (126.90547)	54 Xe xenon (131.29)	
55 Cs cesium (132.90545196)	56 Ba barium (137.327)	57-71 Lanthanides and Actinides	72 Hf hafnium (178.49)	73 Ta tantalum (180.94788)	74 W tungsten (183.84)	75 Re rhenium (186.207)	76 Os osmium (190.23)	77 Ir iridium (192.222)	78 Pt platinum (195.083)	79 Au gold (196.966569)	80 Hg mercury (200.59)	81 Tl thallium (204.38)	82 Pb lead (207.2)	83 Bi bismuth (208.9804)	84 Po polonium (209)	85 At astatine (210)	86 Rn radon (222)	
87 Fr francium (223)	88 Ra radium (226)	89-103 Lanthanides and Actinides	104 Rf rutherfordium (261)	105 Db dubnium (262)	106 Sg seaborgium (266)	107 Bh bohrium (264)	108 Hs hassium (277)	109 Mt meitnerium (268)	110 Ds darmstadtium (271)	111 Uu ununnium (272)								
57 La lanthanum (138.90547)	58 Ce cerium (140.12)	59 Pr praseodymium (140.90766)	60 Nd neodymium (144.24)	61 Pm promethium (144.9127)	62 Sm samarium (150.36)	63 Eu europium (151.964)	64 Gd gadolinium (157.25)	65 Tb terbium (158.92535)	66 Dy dysprosium (162.5001)	67 Ho holmium (164.93033)	68 Er erbium (167.259)	69 Tm thulium (168.93032)	70 Yb ytterbium (173.05468)	71 Lu lutetium (174.967)				
89 Ac actinium (227)	90 Th thorium (232.0377)	91 Pa protactinium (231.03688)	92 U uranium (238.02891)	93 Np neptunium (237.04817)	94 Pu plutonium (244.0642)	95 Am americium (243.0613)	96 Cm curium (247.0763)	97 Bk berkelium (247.07125)	98 Cf californium (251.0833)	99 Es einsteinium (252.083)	100 Fm fermium (257.103)	101 Md mendelevium (258.103)	102 No nobelium (259.103)	103 Lr lawrencium (262.103)				

Notes:  
 \*Aluminum and oxygen are commonly used English language spellings for aluminium and oxygen.  
 \*IUPAC 2003 standard atomic weights (relative atomic masses) are listed with uncertainties in the last figure in parentheses [R. D. Lide, Pure Appl. Chem. 75, 1107-1122 (2003)].  
 These values correspond to current best knowledge of the elements in nature terrestrial sources. For elements with no IUPAC assigned standard value, the atomic mass (in unified atomic mass units) or the mass number of the nuclide with the longest known half-life is listed between square brackets.  
 †Elements with atomic number 111 has not yet been named. The IUPAC provisional name is shown.  
 ‡Elements with atomic numbers 112, 114, and 116 have been reported but not fully authenticated.  
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