

SOLAR SYSTEM ELEMENTAL ABUNDANCES IN 2009.

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Introduction: H. N. Russell published the first comprehensive list of elemental abundances in the Sun, 80 years ago [1]. The influential abundance table based on CI chondritic and photospheric data by Anders & Grevesse dates back 20 years [2]. With two “abundance anniversaries” in this International Year of Astronomy, we report our latest evaluation of mass concentrations (ppm) in CI-chondrites and the atomic solar system abundances derived from CI-chondrites and solar photospheric measurements (Table 1). A detailed discussion of the recent data is given in [3].

Table 1. Abundances in CI-Chondrites and in the Solar System

	CI ppm	Solar System Si=10 ⁶ atoms		CI ppm	Solar System Si=10 ⁶ atoms
H	19700	2.59E+10	Ru	0.686	1.78
He	0.00917	2.51E+09	Rh	0.139	0.370
Li	1.47	55.6	Pd	0.558	1.36
Be	0.021	0.612	Ag	0.201	0.489
B	0.775	18.8	Cd	0.674	1.57
C	34800	7.19E+06	In	0.0778	0.178
N	2950	2.12E+06	Sn	1.63	3.60
O	458500	1.57E+07	Sb	0.145	0.313
F	58.2	804	Te	2.28	4.69
Ne	0.00018	3.29E+06	I	0.53	1.10
Na	4990	57700	Xe	1.74E-4	5.46
Mg	95800	1.03E+06	Cs	0.188	0.371
Al	8500	84600	Ba	2.41	4.47
Si	107000	1.00E+06	La	0.242	0.457
P	967	8300	Ce	0.622	1.18
S	53500	421000	Pr	0.0946	0.172
Cl	698	5170	Nd	0.471	0.856
Ar	0.00133	92700	Sm	0.152	0.267
K	544	3760	Eu	0.0578	0.098
Ca	9220	60400	Gd	0.205	0.360
Sc	5.9	34.4	Tb	0.0384	0.0634
Ti	451	2470	Dy	0.255	0.404
V	54.3	286	Ho	0.0572	0.0910
Cr	2650	13100	Er	0.163	0.262
Mn	1930	9220	Tm	0.0261	0.0406
Fe	185000	848000	Yb	0.169	0.256
Co	506	2350	Lu	0.0253	0.0380
Ni	10800	49000	Hf	0.106	0.156
Cu	131	541	Ta	0.0145	0.0210
Zn	323	1300	W	0.096	0.137
Ga	9.71	36.6	Re	0.0393	0.0581
Ge	32.6	115	Os	0.493	0.678
As	1.74	6.10	Ir	0.469	0.672
Se	20.3	67.5	Pt	0.947	1.27
Br	3.26	10.7	Au	0.146	0.195
Kr	5.22E-5	55.8	Hg	0.35	0.458
Rb	2.31	7.23	Tl	0.142	0.182
Sr	7.81	23.3	Pb	2.63	3.31
Y	1.53	4.63	Bi	0.11	0.138
Zr	3.62	10.8	Th	0.031	0.0440
Nb	0.279	0.780	U	0.0081	0.0238
Mo	0.973	2.55			

References: [1] Russell, H.N. 1929, ApJ. 70, 11. [2] Anders, A., Grevesse, G. 1989, GCA 53, 197. [3] Lodders, K. Palme, H. Gail. H.P. 2009, Landolt Boernstein, New Ser. in press; see also arXiv:0901.1149.