

ELEMENTAL COMPOSITION OF ACCESSORY MINERALS FROM ADHI KOT EH4 CHONDRITE. Z.A. Lavrentjeva, V.I. Vernadsky Institute of Geochemistry and Analytical Chemistry, Russian Academy of Sciences, Moscow, Russia.

In the present paper the results of elemental abundances in accessory minerals of enstatite chondrite Adhi Kot are reported. The mineral fractions were isolated by hand physical separation methods and their elemental composition was determined by instrumental neutron activation analysis. Table 1 shows the average elemental enrichment factors relative to C1 chondrite [1].

The mineral fractions Q and R have cristobalite grains (Q has small inclusions), the fractions S and T have olivine grains (S - light-green, T- dark-green), the fraction U has yellow pyroxene grains, the fraction V has sphalerite grains, the fraction W has osbornite grains, the fraction X has schreibersite grains.

The enrichment factors of siderophile Fe, Ni, Co, Ir and Au in Q, R, S, T, U and W fractions are less than 1 (Tabl. 1). The abundances of Ni and Co in sphalerite are less than 1 and Au (6.0 x C1) and Ir (1.0 x C1). Schreibersite are enriched in siderophile Fe (3.6 x C1), Ni (3.9 x C1), Co (5.5 x C1), Au (4.1 x C1) and depleted in Ir (0.7 x C1). Fractions Q, R, S, T, U and X are enriched in lithophile non-refractory Na and K and in refractory Ba, Sc, Ca and REE. Most part fractions (Q, S, T, U, W and X) are enriched in heavy REE [Lu/Lu (C1)]/[La/La(C1)]=1.8 (mean) and

have an Eu minimum [Eu/Eu (C1)]/[Sm/Sm (C1)]=0.66 (mean).

All accessory minerals are enriched in moderately volatile siderophile As (1.5-403 x C1), Sb (6.4-462 x C1) and Cu (1.2-865 x C1) The enrichment factors of volatile chalcophile element Se in cristobalite and yellow pyroxene are 1.3 and 2.9, accordingly. All fractions are depleted in Cr, with exception sphalerite Cr (6.1 x C1). The fraction Q has the ratio [(Ir/Ni) Q/(Ir/Ni)C1]/[(Au/Ni)Q/(Au/Ni)C1] =16.7 (cosmic is 3.44). The superabundant in Ir relative to Au and Ni witness to formation of small inclusion of cristobalite by agglomeration of grains enriched in refractory metal (Ir) with grains enriched in non-refractory metal (Au).

The 5 accessory minerals (cristobalites, olivines, yellow pyroxene, sphalerite and osbornite) of Adhi Kot EH4 are enriched by refractory elements Ba, Ca, Sc and REE relative to their abundances in C1 chondrites a mean factor is 102. This fact supports the opinion that, these minerals are samples of high-temperature condensates from the solar nebula.

Acknowledgment: The author is grateful to A. Yu. Lyul for INAA of mineral fractions.

References: [1] Anders E. and Grevesse N. (1989), GCA, 53, 197-21.

TABLE 1. Average element enrichment factors of mineral fractions of Adhi Kot chondrite.

Fraction	Ir	Cu	Zn	Se	Sb	Ba	La	Sm	Eu	Yb	Lu
Q	0.5	2.8	0.5	1.3	<11	260	1.7	1.7	1.4	<2.5	<2.5
R	<0.1	3.1			248	1611	13	2.4	3.6	<4.4	<4.5
S	<0.2	9.0	21		<36	913	<14	<10	<6	<19	<20
T	<0.2	3.8	3.3		<36	1068	<9	<10	<16	<12	<30
U	<0.3	4.2	1.1	2.9	11	256	9.9	7.6	2.5	12	20
V	<1.0	157	922		462	1718	23	20	19	14	18
W	<0.3	865	160		12	299	2.1	1.3	0.9	2.8	5.0
X	0.7	1.2	0.3		6.4	44	0.6	0.4	0.9	<0.9	1.5

Fraction	Na	K	Ca	Cr	Sc	Fe	Ni	Co	Au	As
Q	6.8	13	0.7	1.0	1.3	0.4	0.2	0.1	<0.03	1.5
R	15	4.7	1.9	0.02	0.5	0.05	0.04	0.03	<0.09	403
S	2.7	<3.6	<1.7	0.09	1.0	0.07	0.07	<0.07	<0.3	39
T	5.9	2.9	<0.3	<0.08	1.1	0.2	<0.1	0.3	<0.9	<5
U	2.7	12	1.8	0.5	4.5	0.3	0.3	0.3	0.3	<3
V	3.6	<0.5	<2.4	6.1	2.0	1.4	<0.2	0.5	6.0	86
W	0.03	<0.5	<3.1	0.008	0.2	0.008	<0.09	0.02	<0.08	1.6
X	0.3	<1.3	<0.1	0.06	0.2	3.6	3.9	5.5	4.1	5.0