THE LUNAR ENDOGENIC "MONOMINERALIC" GLASSES.

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Among the fragments of the lunar soil returned by the "Luna-24", glasses were distinguished, whose chemism corresponds in composition to the magmatic minerals. All the fragments show no traces of fracturing, mosaic extinction, amorphization or recrystallization - the signs of the thermal-shock metamorphism.

Sample 24184,4-4,5 contains a fragment of tridymite with a veinletlike amorphous separation. The fragment 0.15 mm in size is a monolith. The cementing glass-like substance in the streaky segregation is basically similar in composition to fayalite (Table, anal.1); at the same time some portions thereof are enriched in Ca. The cement features spheroidal segregations up to 10 mkm in size (Fig.1), relevant in composition to apatite and whitlokite (Table, anal.2-4). The latters' composition is heterogeneous: determined from the central portions are relatively high concentrations of silicon and somewhat lower concentrations of phosphorus. Distinguished in the separation are also the crystalline phase segregations: ilmenite and troilite.

In the fragment from sample 24192,4-4,1 the crystalline phases mingle with fluidal glass, casual streaks of which are relevant in composition to the rock-forming minerals. The fragment is 0.3 mm in size. The crystalline phases therein are represented by spinel, ilmenite and pyroxene (Table, anal.5),confined to the peripheral zones of the section, as well as by the mocrosegregations of sulphides, located inside the glass in the centre of the fragment. Between the crystalline phases is a hyaline substance characterized by minor crenulation. Direct contact with the spinel-and-ilmenite aggregate is made by (Fig.2) a thin (5-10 mkm) intermittent rim of pyroxenic glass (Table, anal.6). Concordingly it is followed by a streak of homogeneous fayalite glass (Table, anal.7) 30 mkm wide. The streak is replaced by the fayalite glass of the same composition, plunged in which are tiny segregations of peroxenic glass. The composition of the segregations is the same as that of glass rim agjacent to spinel. Their size is 5-10 mkm. The number of segregations gladually increases with the distance from the aggregate of ore minerals up to the point where the soild pyroxenic glass is followed by the crystalline pyroxene (Table, anal.5).

The fragment from sample 24092,4-4,6 is a piece of hornblende green glass 0.25 mm in size. Encountered in the glass were the skeleton crystals of hornblende of a fine delicate from.

In the fragment from sample 24184,4-4,5 the green hornblende glass (Table, anal.8) is crystallized forming stringly hornblende aggregates. The glass also contains an inclusion of a high-siliceous composition and a fragment of plagioclase.

In all the above-described examples the mineral equivalents represent themselves as the pre-crystallized magma differentiates. This is testified by no traces on the fragments of the influence of the imposed impact processes. The crenulation of the hyaline streaks in the fragment from sample 24192,4-4,1 points to the former plasticity of their building material. The presence in the lunar soil of the magmatic differentiates of the submonomi-

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neralic composition makes it possible to suggest that the formation of crystals undergoes the stage of separation in the magma of the substance having a relevant composition.

Table

The Chemical Compositions of the Monomineralic Glasses.

	1	2	3	4	5	6	7	8
SiO_2	30,45	1,60	3,62	5,89	51,10	49,0	29,41	43,8
TiO_2	0,21	0,02	0,00	0,12	0,45	1,0	0,27	1,5
Al_2O_3	0,03	0,08	0,22	0,21	1,47	1,4	0,04	10,40
FeO	67,81	0,28	6,95	8,16	23,72	27,2	62,46	18,1
MgO	0,02	0,20	0,05	0,02	10,76	3,6	2,69	10,7
MnO	1,14	0,10	0,06	0,00	0,40	0,30	0,68	0,27
K_2O	-	-	-	-	-		0,00	0,05
Na_2O	-	-	-	-	-		0,00	0,35
CaO	0,32	51,65	47,93	47,59	14,09	17,2	0,35	10,8
P_2O_5	0,19	42,17	40,57	37,77				
Cr_2O_3	0,00	0,03	0,10	0,00	-	0,20	0,06	0,14
	100,17	93,13	99,50	99,76	100,99	99,9	95,96	96,11

Glass compositions 1,7 - fayalite; 2 - apatite; 3,4 - whitlocite; 6 - pyroxene; 8 - amphibole; 5 - pyroxene crystal.

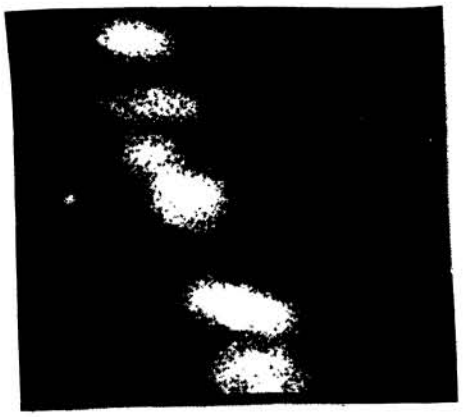

Fig. 1. Amorphous ellipsoidal corresponding in composition to apatite and whitlokite. Photo made in characteristical X-Ray flux PK_α.

Fig.2. Relations of crystalline phases and "monomineral" glasses in a chip of the sample 24192,4-4,1.

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