

SOME PECULIARITIES OF THE IRGIZITES CONSTRUCTION AND COMPOSITION.
KAPUSTKINA I.G. (Moscow State University)

Irgizites (or tektites of the Zhamanshin crater) are the small fragments of acid glass ($\text{SiO}_2 \sim 75\%$) [1].

They have the shape of dumb-bells, maces, stream fragments, spherules, sticks, often stuck together and forming complex accumulations. The length of the irgizites usually don't exceed 2-3 cm.

The study was fulfilled by means of the scanning microscope Camscan-4DV with energy-dispersive Link AN-10000.

Among 24 observed particles, corresponding to the irgizites by definition, four of them contained $\sim 55\%$ SiO_2 , two $\sim 61\%$, sixteen $\sim 75\%$ and two $\sim 79\%$ SiO_2 . Here we consider only the particles with the concentration of $\text{SiO}_2 \sim 75\%$.

In optical microscope we see homogeneous colorless noncrystallized glass (fig.1a), or inside the particle colorless glass matrix there are brown branching strips (fig.1b), often stretched along extension and repeating the crooked shape of the particle. Sometimes the brown strips seem to mark the places of sticking the balls and sticks together or the places of spherules stuck to the surface of the larger glass fragments (fig.1c). The strips have diffuse boundaries and the mean width of the strips being 10-20 μm .

The analyses of the 16 irgizites show that in terms of the analytical error the glass matrix composition is extremely homogeneous (tabl.). The composition of the balls and the sticks, stuck to the irgizite surface, is also homogeneous and corresponds to the composition of the host-irgizite (in term of the analytical error) as well as any observed particle. In terms of the sensibility of the method no compositional difference is observed in irgizites matrix glass between the core and the edge of the particles as well as between the particle sections of different porosity.

In the strips if compared with the matrix the lower SiO_2 and the higher FeO_{tot} , MgO , CaO are observed (fig.2, tabl.). There is P_2O_5 in the strips composition that differs them from the matrix.

We assume that the discussed irgizites are the microportions of the high temperature impact melt, that were moving in the gas cloud, without mixing with the melt of different composition. They were obviously the distinct small streams and drops and before they could stick together while moving, their narrow bysurface parts were subjected to the selective vaporization process with the relative reducing concentrations of the Si and K. The temperature of the melted particles exceeded 2000°C that corresponds to the silica high volatility [2]. By the following sticking of the drops and streams the particles quick cooling and hardening didn't result in complete homogenization of the glass, and the parts, subjected to the selective vaporization were fixed and preserved in the internal structure of the irgizites.

References: 1. Флоренский П.В., Дабижа А.И.(1980), Метеоритный кратер Жаманшин. М., Наука; 2. Ударные кратеры на луне и планетах.(1983), М., Наука.

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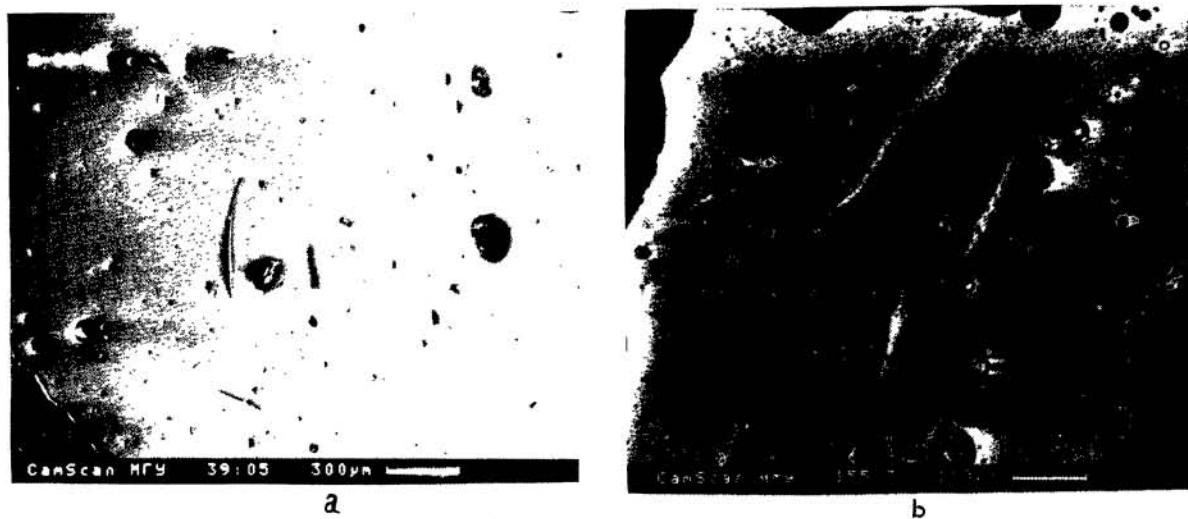


Fig.1(a,b,c). Scanning electron microscope photomicrographs of a polished sections of the irgizites. (a) Homogeneous glass matrix. (b) Strips in the glass matrix. (c) Strips which mark the places of the balls sticking to the larger glass fragment.

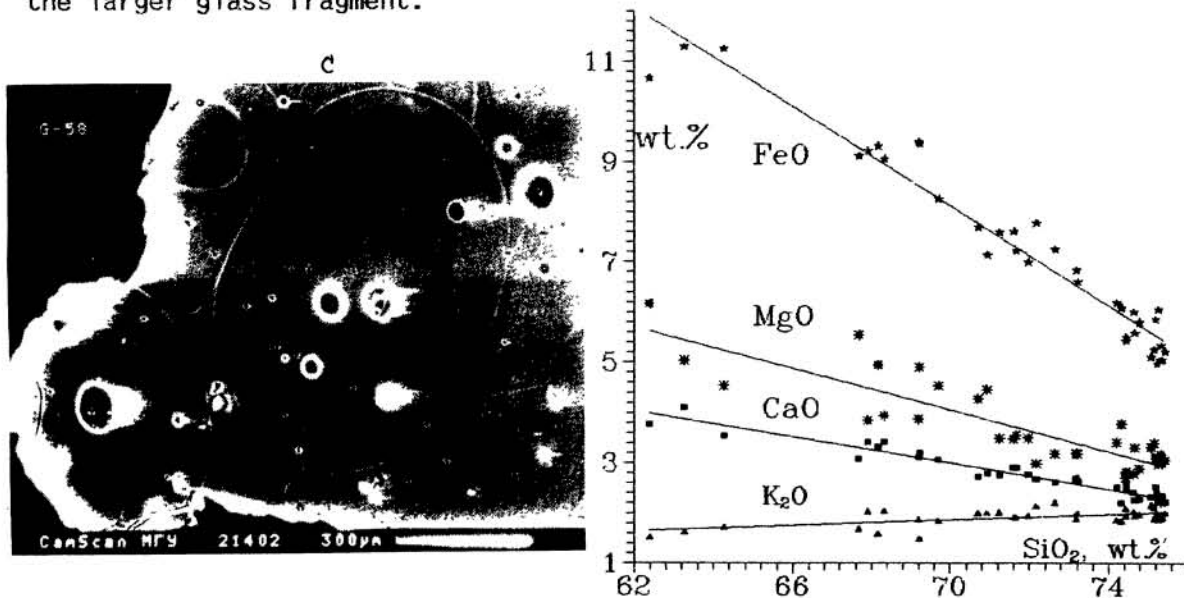


Fig.2. Oxides Fe, Mg, Ca and K versus SiO₂ in the glass matrix and strips.

Tabl. Contents of main elements in : irgizites glass matrix (1), some strips (2-5).

N		SiO ₂	TiO ₂	Al ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅
1	\bar{x}	74.99	0.79	10.21	5.55	3.12	2.32	0.91	1.95	—
(n=16)	σ	0.399	0.088	0.257	0.447	0.359	0.117	0.109	0.086	—
2		73.18	0.94	9.68	6.84	3.20	2.70	0.87	1.90	0.41
3		71.24	1.02	10.57	7.59	3.49	2.77	0.84	2.02	0.30
4		68.16	0.81	10.32	9.31	4.91	3.33	0.98	1.59	0.50
5		63.27	1.21	10.00	11.29	5.04	4.11	0.76	1.64	2.60