ZHAMANSHIN ASTROBLEME GLASSES: TRACES OF INITIAL MELT NON-HOMOGENEITY AND DEFINITION OF FORMATION PARAMETERS. L.V. Sazonova, N.N. Korotaeva, Simakin A.G. Moscow State University, 119899, Moskow, USSR.

Zhamanshin astrobleme impact melt rocks are represented by glassy bombs, lapilli, jet fragments and splashes (thickness in first tens of cm.) of the massive and porous glasses lying inside and outside a crater in separate areals. The absence of homogeneous impact melt is a characteristic feature of this astrobleme. Very often flow textures (fig.1) are found in these glasses especially in the groups of high-silicic and very high-silicic glasses ($SiO_2$ content of 70-80% and 80-90%, respectively).

The thickness of separate microflows in such flow glasses ranges from fractions of mm to some mm. Microflows are of different colour. Sometimes the boundaries between differently coloured flows are distinct, sharp but more often they are diffuse, non-distinct which is well seen with the help of SEM at large magnification (fig.1). In such flow glasses lechatelierite-quartz glass (fig.1) is often present. It is visible only microscopically (because of its small size).

The contacts between lechatelierite grains and glass matrix, the contacts between separate microflows have been studied by the method of microprobe analysis (Camscan-4DV, Link, AN-10000). The analyses have been made every 3 mm, then profiles of contents of different elements (fig.2) have been drawn. The profiles at the boundaries of quartz and matrix (fig.2) glasses and those at the boundaries of separate microflows (fig.3) turned out to be diffusive, which is indicated by gradual content variation of many elements.

The formation of microflows in high and very high-silicic glasses of Zhamanshin astrobleme have apparently resulted from non-homogeneity of the initial melt formed at the place of the layered rocks of the target with different quartz quantities in separate layers. At homogenization of such melts the component diffusion processes are of primary importance. These processes were not completed because of quick impact melt cooling. Mechanical convective mixing of such melts is of secondary importance.

We have made an attempt of estimating initial temperatures, cooling velocity and hardening temperature of the portion of high-silicic Zhamanshin impact melts which had the form of small bombs and jet fragments (from first cm to first tens of cm across).

The process of diffusive mixing of quartz and granitic melts has been simulated. Theoretical diffusion profiles at the contact of quartz and acidic glasses have been made. The character of the profiles depends on the initial melt temperature, velocity of melt cooling and hardening temperature. The comparison of these theoretical profiles with the obtained element distribution enabled us to estimate some parameters of Zhamanshin glass formation. It has been stated that the initial temperatures of the involved impact melts were very high and ranged from 2200$^\circ$C to 2500$^\circ$C. The melt cooling velocity was
The melt hardening temperature (the end of diffusion) were 1600°-1700°C. The latter figure is close to the temperature of moderate silicions and high-silicon glass hardening obtained from the study of metastable liquid immiscibility which has been found in them. Thus a history and impact melt formation conditions are reflected in petrographic and geochemical peculiarities of impact melt rocks. Zhamanshin astrobleme glasses formed at the place of the same target rocks chemically homogenous at macrolevel appear to be non homogenous at microlevel as the processes of convective mixing and diffusive levelling are completed in the initial impact melts because of their practically instant cooling.

![Fig. 1] Differently coloured floes with diffuse boundaries. 

![Fig. 2] 

![Fig. 3]