

FEATURES OF THE VOLCANIC FORMATION OF THE CHONDRITES.
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The glass composition of meteorite chondrules is naturally supposed that they are formed from the melt. The melting nature of chondrite material has the magmatic character in those chondrites which have not been under the influence of shock metamorphism. We can see the stages of the melt's development thanking to the details of inner chondrules' structure. The example is the typical chondrule of Caparob(L6) meteorite. The chondrule has porphyritic texture (fig.1) caused by lemmellar and idiomorphic crystals of olivine (SiO_2 39.36; FeO 20.97; MnO 0.4; MgO 39.27), and orthopyroxene (SiO_2 56.4; FeO 12.94; MnO 0.37; MgO 29.89; CaO 0.39) followed by olivine. The orthopyroxene grows on the olivine grain with the features of his reactionary replacement. Subcalcium clinopyroxene (SiO_2 57.1; Al_2O_3 0.44; FeO 10.17; MnO 0.43; MgO 23.81; CaO 8.04) is cristallized in the paragenesis with the orthopyroxene. The typical clinopyroxene is cristallized in the residual glass (SiO_2 63.8; TiO_2 0.42; Al_2O_3 9.69; FeO 4.0; MgO 8.69; CaO 6.48; Na_2O 5.57; K_2O 1.35) of the pyroxene - plagioclase composition. The clinopyroxene forms a great number of lemmellar crystals and submicroscope grains. There are two mineral parageneses: 1) olivine + orthopyroxene + subcalcium pyroxene and 2) interstitial glass (plagioclase composition) + fine-lemellates of clinopyroxene. Composition of the fine-lemellates clinopyroxene is principally differed from the subcalcium pyroxene of the phenocrysts. The presence of two parageneses is the evidence of two magmatic stages in the formation of these chondrules. The first paragenesis shows more depth stage of the chondrule cristallization. The second one illustrates fast cristallization in the volcanic conditions.

The magmatic nature of the Fe-silicate matrix of the chondrites is revealed according to its structure-texture features. It is evident in the chondrites, where the matrix predominate over the chondrules. We can see the following structures in the Eppemovka chondrite: the flow structure with evident signs of the chondrules with streamline form, with the elements of crushing large chondrules, abrupt edges and carrying small fragments at the visible distance. The morphology of the place where the tearing off have taken place is remained (fig.2). That is fulfilled only under the conditions of viscid system. In the whole the microstructure of the matrix is fine-banded porous. The smallest pores are stretched in the currents according to the main fluidity. The pores form the alternation of coarsed-fine-porous bands. The type of the porosity of bands (the degree of the enrichment of these zones in volatile components) determines the relationships of the matrix mineral phases. The phases make complex interlacings of sepearate rays, bundles and dendritic formations. The central part of the bundle is taken been place by one or several grains of olivine (SiO_2 33.6; FeO 48.18; MgO 18.02; CaO 0.2). The dendritic interlacings of

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simultaneously crystallized olivine-pyroxenic mass (CPx: SiO_2 49.37; Al_2O_3 2.43; FeO 10.04; MgO 15.29; CaO 21.74) disperse from the centre. The sizes of some grains of the olivine is not above 8-10 mkm, and the width of the rays of the dendritic formations is some microns. The inner structure of the matrix is a kind of the intersertal texture of the effusive genesis.

The comparison of the structure-texture features of the chondrites of different petrological types shows the following: the chondrites with the predomination of the broken chondrule material is the result of intensive explosive activity. And the chondrites of low petrological types with the matrix predomination have the features of the effusive genesis.

Fig.1. The inner chondrules' structure of the typical chondrule of the Caparob chondrite. 1. - olivine; 2. - orthopyroxene; 3. - clinopyroxene; 4. - subcalcium pyroxene.

Fig.2. The flow structure of the Ефремовка chondrite.

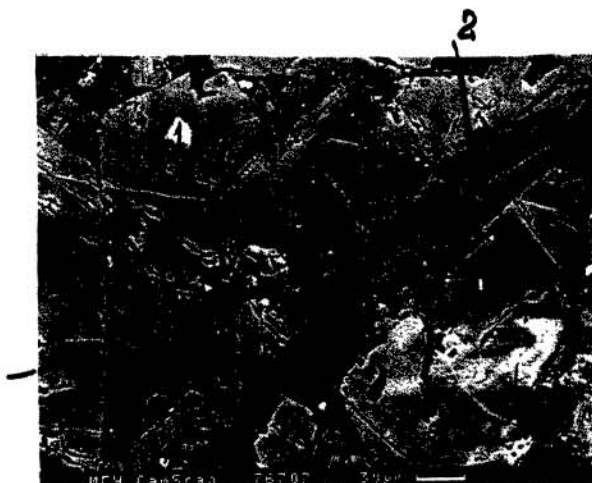


Fig. 1.

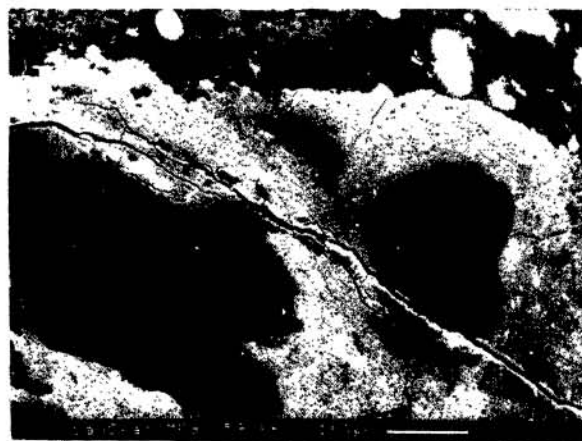


Fig. 2.