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**ON THE PROBLEM OF GENERATING ULTRABASIT-GABBRO-GRANITE ASSOCIATIONS**

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***Abstract.** Some formation aspects of ultrabasit-alkali-gabbro-granite associations are under consideration.*

***Keywords:** ultrabasit-gabbro-granite association, diapir, dynamic model of magma formation.*

The issue of ultrabasit-gabbro-granite association formation was touched upon by many investigators in different years. Some researchers tried to explain separate aspects of the issue from certain points of view. It is impossible to say about any association having such composition that it can be considered as a single genetic series. A close genetic relationship between igneous rocks is not always taken into consideration thus causing certain difficulties that are particularly evident in the fragmentation of gabbroids that, on the one hand, finish hyper-alkali-gabbro series, and on the other hand, initiate gabbro-granite ones. From this interrelationship, it follows that only initial (hyper-alkali-gabbro) or final (gabbro-granite) fragments of such complete formation series can be classified separately [3].

The distribution of igneous rocks in the Earth's crust composition is irregular. Intrusive formations of a three-level association occurring in different regions are given consideration to in a number of papers. Occurring families of magmatic rocks in the crust that can be attributed to an **ultrabasit-gabbro-granite** association is possible as a result of forming several independent igneous systems in a great magma-forming permeable structure simultaneously under the impact of one and the same factors of endogenous activation. Platform rising, the Earth's crust thinning and extending connected with this abnormal state of the mantle result in magmatism activation. A prolonged pulsating excitement («loosening») of the mantle is the main specificity of this process. It shows itself in repeated generating depth mantle alkaline, basic and ultrabasit kinds of magma and granitoid kinds of crust magma [2] Evidently, this is in the greatest correspondence with the activation conditions of different kinds related to edge permeable structures located at the borders of great blocks forming continental lithosphere, the blocks being favorable not only for generating magma pockets but also for carrying melts on one and the same level of depth up to the surface [1].

The dynamic model of magma generating in a continental permeable structure, developed by A. N. Ivanov and A. G. Kalinin in 1997, is taken as a theoretic fundamental of forming hyper alkali-alkali-granite associations. As it's shown by the calculations, formation and interaction of all the three types of melts generating the products of the association under consideration is possible within the integer magma forming system. By means of modelling the formation of a magma melt in a depth fracture zone the availability of a three-pocket system is established:

- acid melts –at the depth of 12–20 km.
- basic melts – at the depth of 20–50 km.
- ultrabasit melts –at the depth of 100–120 km

The process of diapirism and flow concentration at the depth in a structure having different sections was introduced into the given mechanism. This mechanism can be characterized as a natural process of quick shifting the magma forming front from the mantle into a cank layer and then into a granite one (Figure.). In a ripe and thermally unperturbed continental lithosphere, linear-oriented vertical structure comes into being at some initial moment (a depth fracture), its power increasing downwards. The depth of the structure location corresponds to the lower border of the lithosphere (120 km.). At the same time, the temperature of the fluid in its flow coming from downwards starts increasing on this very border.

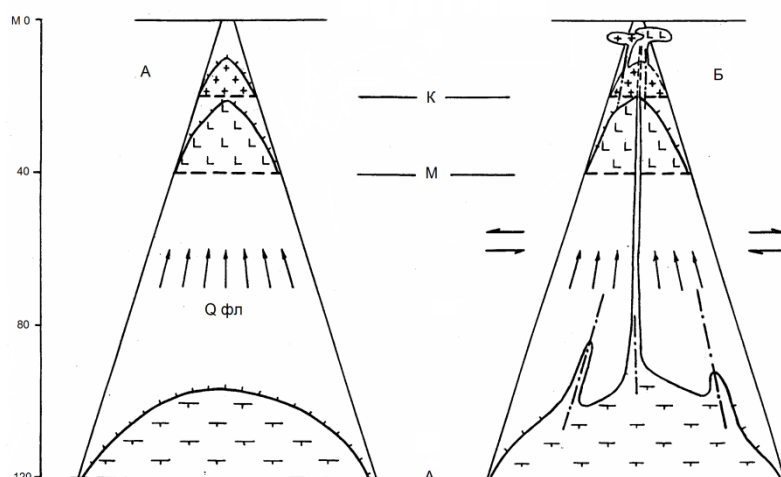


Figure. This is a scheme of a complicated magmatic system in a great penetrable structure. A is the location of melting region borders at the moment of time, 30 mln. years, i.e. the final stage of a fluid flow heating. B is a conditional picture of separate introducing different kinds of magma at the initial stage of a diapir – type process (up to the stage of a total diapir movement over the whole penetrable structure). Fluid flows are indicated by arrows, early folds acting as magma pacemakers are marked by dash-and-dot lines, the symbols marking the regions of melting correspond (top to bottom) to granite, whinstone and ultrabasic magmas as well as to the products of their crystallization.

As soon as certain values are achieved: time, fluid consumption and fluid temperature, pockets of melting come into being in the penetrable structure and the general substrate decomposition takes place. It is necessary for the subsequent movement of the substance to the surface. Transmagmatic fluids are extremely important for formation of associations, as they penetrate the whole of the column and ensure the formation of magma in the proper places of the crust strata.

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### О ПРОБЛЕМЕ ФОРМИРОВАНИЯ УЛЬТРАБАЗИТ-ГАББРО-ГРАНИТНЫХ АССОЦИАЦИЙ

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*Аннотация.* Рассматриваются некоторые аспекты формирования ультрабазит-габбро-гранитных ассоциаций.

*Ключевые слова:* ультрабазит-габбро-гранитная ассоциация, диапир, динамическая модель магмаобразования.