RECONSTRUCTION OF THE TECTONIC ENVIRONMENTS IN MESOZOIC INTRUSIVE ROCKS BY THE CONSTITUENT OF ROCK-FORMING MINERALS

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Abstract: *the problem of identifying the various geological phenomena that occurred in the past is a very important business. In the article selected to the subject of research the Mesozoic intrusive rocks, which was an important period in geological history, and suggested a method to reconstruction the geological environment at the time of the formation of the rocks groups. The article discusses the general method on making of triangle diagram and all Mesozoic intrusive rocks of 83 existing in our country researched and formatted them to the groups of various granite rocks. We evaluated the tectonic environments of these from 329 data of rock – forming minerals.*
Keywords: *reconstruction, Mesozoic intrusive rock, rock-forming mineral.*

Until now, methods for reconstructing the tectonic environments in the formation of intrusive bodies have been widely used [2. 3]. But about all Mesozoic intrusive bodes the results of research resolved the character of magmatism was not published yet. Therefore in this paper all Mesozoic intrusive rocks of 83 existing in our country researched and formatted them to the groups of various granite rocks.

1. Method of tectonic environmental reconstruction by the constituent of rock-forming minerals

This method is a method to determine the tectonic environment by using the widely known QAP diagram [1]. In other word it made QAP diagram on the basis the rock- forming minerals of the standard intrusive properties explained until present, and in the diagram it is defined the character of individual granite's group.

At QAP diagram the tectonic character rifer each other, then lay in another place (Fig. 1). And the diagram regularize by the rate of content Quartz, Alkali feldspar and Plagioclase (QAP) [4].

The data used in this is not the constitute of standard mineral, but national`s.

The each zone indicate as follows:

(a) IAG – Quartz diorite, Quartz diorite, Tonalite and Granodiorite;

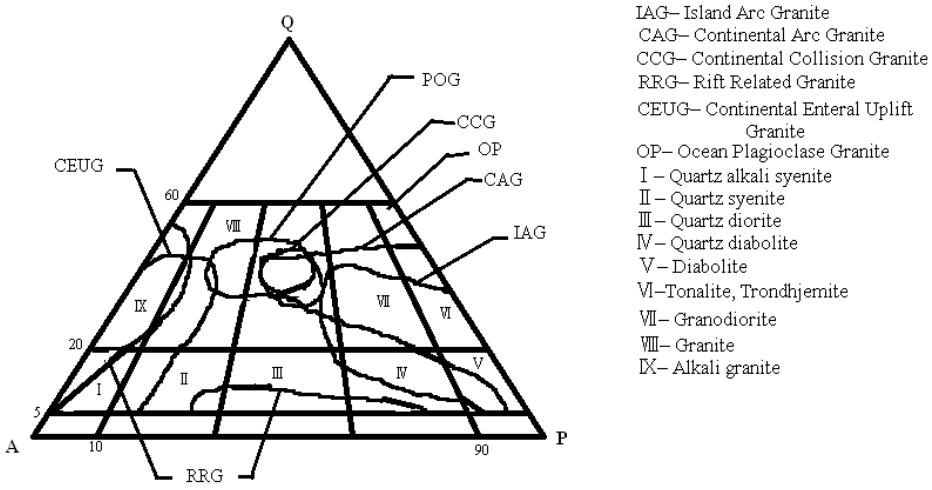

Fig. 1. Q(quartz)A(alkali feldspar)P(plagioclase) diagram

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(b) CAG – Tonalite, Granodiorite and Granite(A/ P< 2.0);
(c) CCG – Granite(A/ P< 2.0);
(d) POG (premature orogenic granite) – Granite;
(e) RRG – Alkali granite, Quartz alkali syenite and Adamellite;

(f) CEUG – Granite(A/ P>2.0), Alkali granite, Quartz alkali syenite and
Quartz Syenite;
(g) OP– Trondhjemite.
Depending on the tectonic environment the mineralogical character is as follows.

(1) At IAG, CAG, CCG and POG generally alkali feldspar is up 75% of orthoclase and, at RRG and CEUG contrarily is under 50% of orthoclase in alkali feldspar.

(2) All plagioclases in groups of granites are from albite to andesine.

(3) In basic minerals a biotite is great general, i. e. if calcium amphibole exist, that is known also biotite is being, but in case of some OP and IAG a biotite is not exist, yet a calcium amphilbole is shown. Also alkali amphibole shown only at RRG and CEUG, there are not biotite, too.

(4) Muscovite was recorded at CCG, CAG and POG.
Other peralumina minerals are shown only at CCG.

2. Classification of Mesozoic intrusive bodies by the reconstruction of the tectonic environments

In the same way, for reconstructing the tectonic environments of Mesozoic intrusive bodies, we synthesized and analyzed the data of rock – forming minerals of much intrusives which is measured in the process of research on the geological composition of our country, and its exactitude was verified.

Table 1. Type of group and frequency of Mesozoic intrusive bodies

№	IAG	CAG	CCG	POG	RRG	CEUG	OP	Number of group	Figure of group	symbol
1	1							10	25	A
2	1	1						8	95	Ab
3	1	1	1					7	8	Abc
4	1	1	1	1				2	6	Abcd
5		1						12	18	B
6		1	1					6	25	Bc
7		1	1	1				14	94	Bcd
8			1					4	3	C
9			1	1				3	1	Cd
10				1				5	19	D
11					1			11	9	E
12					1	1		1	4	Ef
13						1		13	9	F
14								9	75	–

It analyzed a composition of rock – forming minerals of 392 rocks in of 83 intrusive, and on the basis made QAP diagram and reconstructed the tectonic environmental. The result is as follows table 1.

As shown in the table 1 the type of tectonic environmental are classified 14 of groups. The diagram made with data determined to the frequency of 14 groups (Fig. 2).

Each group responded to symbols, for example, of result analyzed were marked as symbol A for a number of 1 group, as C of 8, as F of 13 and so on.

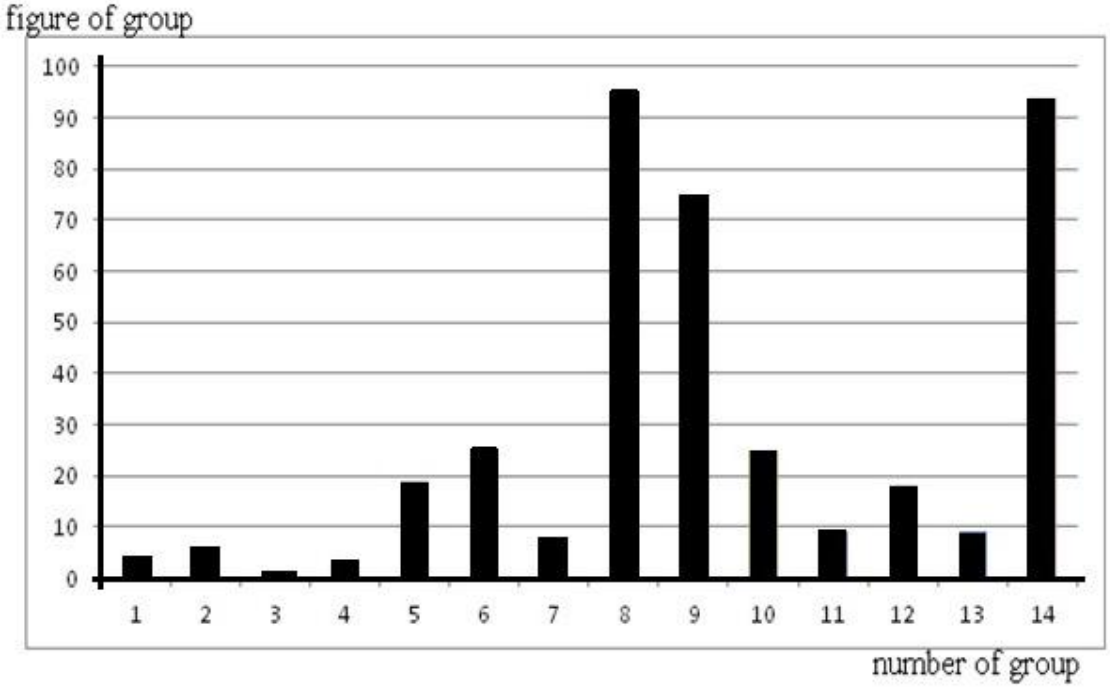

Fig. 2. Diagram of groups frequencies

In case of individual lithophase of one's intrusive it not lied at single part almost, but at two parts up of QAP diagram. If they are laid at two parts up, the first write an uppercase letter, next marked to a lowercase, and all does a grouping.

As shown at table 1 and figure 2 the sequence of most numerous group is Ab(type of magmatic arc – 95), Bcd(type of collisional complex – 94), A(type of island arc – 25), Bc(type of continental arc + collision – 25), D(type of late orogeny – 19) and B(type of continental arc – 18).

Type of collisional complex can explain what are product of the subduction and collision of two plates and the magmatic after collision.

This is shown that Mesozoic intrusive of our country was formed by the convergent of two plates and that main by collision or orogeny. Therefore can know which Mesozoic emplacement of magma was regulated by the convergent of central Asia plate to underneath at the Songrim tectonic movement time of Triassic mid – upper and by the collision plates or the late orogeny (mountain building) at the Daebo and Uprok river tectonic movement time after them.

Conclusion

There are 83 Mesozoic intrusive rocks in our country, and we evaluated the tectonic environments of these from 329 data of rock – forming minerals.

Most of them are in IAG type that formed at the convergent boundaries or subduction zones.

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