CLASSIFICATION AND ORIGIN OF ORTHOGNEISSES IN THE AREA OF THE OKROUHLÁ RADOUŇ URANIUM DEPOSIT

Miloš RENÉ

Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, V Holešovičkách 41, CZ-182 09 Praha 8, Czech Republic, E-mail: rene@irsm.cas.cz

Abstract

The orthogneisses in the area of the Okrouhlá Radouň uranium deposit belong to the Monotonous as well as the Varied group of the Moldanubian Zone. According to modal and chemical composition, the examined orthogneisses can be divided into two larger groups with significant differences in the contents of biotite, CaO, K_2O and Ba. The group of leucocratic muscovite- and sillimanite-bearing, leucocratic garnet-biotite, Ca-poor orthogneisses originated by polyphase metamorphic evolution of original peraluminous leucogranite melt. The second group of biotite-rich orthogneisses has signatures of regional metamorphism of intermediate magmatic rocks and/or signatures of partial melting of the Moldanubian metasediments.

PETROLOGY OF ANATECTIC GRANITES OF THE STRÁŽEK PART OF THE MOLDANUBIAN ZONE

Miloš RENÉ

Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, V Holešovičkách 41, CZ-182 09 Praha 8, Czech Republic,
E-mail: rene@irsm.cas.cz

Abstract

Bodies, dykes and sills of anatectic granites of Variscan age represent an important component of the Strážek Crystalline Complex in the northwestern part of the Moldanubian Zone of the Bohemian Massif. Anatectic granites are in some cases accompanied by concordant bodies of stromatitic migmatites. These granites are mainly leucocratic, massive rocks with very simple modal composition (K-feldspar, plagioclase An8-15, quartz, biotite, ± garnet). The origin of anatectic granites is connected with low-grade, fluid-absent partial melting of biotite and biotite-amphibole gneisses. Temperatures of partial melting of 675–715° C were obtained from saturation equations for Zr and LREE.

PETROGRAPHICAL AND GEOCHEMICAL CONSTRAINTS OF PORPHYRITIC TWO-MICA GRANITE FROM A NORTHEASTERN MARGIN OF THE KLENOV MASSIF

Miloš RENÉ [1] and Tomáš NOSEK [2]

1) Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, CZ-182 09 Praha 8, V Holešovičkách 41, Czech Republic

2) Forests of the Czech Republic, s. e., CZ-50 008 Hradec Králové 8, Přemyslova 1106, Czech Republic

Abstract

Porphyritic two-mica granite from a northeastern margin of the Klenov massif is the oldest variety of two-mica granites of this massif. Its modal composition is characterized by the presence of relatively basic plagioclase (basic oligoclase–andesine). Compared to other porphyritic granites of the Central Moldanubian pluton (Číměř granite), chemical composition of this granite shows a lower SiO_2 content (68.8-70.8 wt.%), a lower K_2O/Na_2O ratio (1.2-1.6) and a lower LREE/HREE ratio (9.2-17.3). In comparison with equigranular granites of the Klenov massif (Deštná granite) is for porphyritic granite significant a higher content of Ba, Sr, Zr and Th.

GEOCHEMICAL CONSTRAINTS OF ORIGIN AND EVOLUTION OF MIGMATITES IN THE CENTRAL PART OF THE MOLDANUBIAN ZONE (TEMELÍN AREA), BOHEMIAN MASSIF

Miloš RENÉ

Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, V Holešovičkách 41,

CZ-182 09 Praha 8, Czech Republic, E-mail: rene@irsm.cas.cz

Abstract

Migmatites of the Temelín area are a part of the Monotonous group of the Moldanubian Zone of the Bohemian Massif. Modal composition of this rock series is very monotonous, represented by migmatized biotite gneisses and sillimanite-biotite gneisses to metatexites with relatively rare intercalations of diatexites. The content of CaO and Sr in metatexites increases systematically with increasing of SiO_2. If compared to the composition of continental crust, metatexites of the Temelín area are enriched in Ba, Rb, Th and REE. Compared to metatexites, the diatexites have higher SiO_2 and Na_2O contents and lower FeO, MgO and K_2O contents. The origin of metatexites and diatexites of the Temelín area is controlled by partial melting of the original biotite-rich metasediments. Partial melting was connected with variable fractionation of SiO_2, FeO, MgO, CaO and K_2O and some trace elements (Ba, Sr, Rb, HREE and Eu). The calculated melt temperatures (808–867°C) agree with peak Variscan metamorphic conditions of other parts of the Moldanubian Zone.

GEOCHEMICAL CONSTRAINTS ON THE ORIGIN OF A DISTINCT TYPE OF TWO-MICA GRANITES (DEŠTNÁ - LÁSENICE TYPE) IN THE MOLDANUBIAN BATHOLITH (CZECH REPUBLIC)

Miloš RENÉ [1], Dobroslav MATĚJKA [2] and Tomáš NOSEK [3]

1) Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic, CZ-182 09 Praha 8, V Holešovičkách 41, Czech Republic

2) Faculty of Science, Charles University, CZ-128 43 Praha 2, Albertov 6, Czech Republic

3) Forests of the Czech Republic, s. e., CZ-50 008 Hradec Králové 8, Přemyslova 1106, Czech Republic

Abstract

The Deštná granite and the Lásenice granite of south Bohemia represent a distinct type of two-mica granite in the Moldanubian batholith, which is significantly different from the Eisgarn granite, the major two-mica S-type granite suite of this area. The modal composition of the Deštná - Lásenice type is characterized by the presence of andalusite, sillimanite and/or cordierite and the occurrence of restitic nodules of biotite, sometimes with sillimanite. Like the Eisgarn granite the Deštná - Lásenice type is a felsic S-type granite (A/CNK ~ 1.1-1.3), however it shows a distinct depletion in HFS elements (Zr, Nb, Ta, Y, U, Th) and REE. It is argued that the magma was very probably generated through low-T disequilibrium melting of metapelites, whereas the Eisgarn granite formed at somewhat higher T from a source with a more metapsammitic character.

Ti-RICH GRANODIORITE PORPHYRIES FROM THE NORTHEASTERN MARGIN OF THE KLENOV MASSIF (MOLDANUBIAN ZONE OF THE BOHEMIAN MASSIF)

Miloš RENÉ

Institute of Rock Structure and Mechanics, Academy of Sciences of the Czech Republic,CZ-182 09 Praha 8, V Holešovičkách 41, Czech Republic

Abstract

Ti-rich granodiorite porphyries from the northeastern margin of the Klenov massif are a part of the youngest magmatic activity of the Variscan magmatic phase in the Bohemian Massif. The examined granodiorite porphyries differ from other intermediate and basic dyke rocks of the Moldanubian Zone in their modal and geochemical composition and higher content of Ti-minerals (ilmenite, sphene, rutile and allanite). From geochemical point of view these porphyries can be probably considered as product of fractionation of enriched mantle melt.

SEKANINAITE AND FINGERPRINT HERCYNITE IN SOUTH BOHEMIAN GRANULITES

Ferry FEDIUK and Eva FEDIUKOVÁ

IGeohelp, Na Petřinách 1897, 162 00 Prague, Czech Republic,
e-mail: fediukgeo@atlas.cz

Abstract

Two minerals rather atypical for the mineral assemblage of Moldanubian light granulites are dealt with in the present paper: the mineral of the cordierite series and the mineral of the spinel group. Both of them characterize HT/LP decompressional retromorphism of initial HT/HP rock system. As for the first mineral, its EMP analyses proved the prevalence of Fe over Mg; therefore it has to be classified as sekaninaite according to IMA rules. Its crystalloblastesis clearly postdates the origin of metamorphic granulite foliation. Chemical analyses for the mineral of the spinel group were hitherto missing as well and new determinations range it to hercynite. Nevertheless, much more interesting is its form in dactylitic intergrowths with quartz, originated evidently by the replacement of kyanite. Also the origin of hercynite postdates the primary granulitic mineral assemblage but precedes the origin of sekaninaite. Decomposition of primary granulite silicates (garnet, biotite and kyanite) is directly connected with the successive secondary blastic growth of these two minerals for which it provided necessary chemical material. Their compositions reflect the bulk rock chemistry.