MORPHOLOGY AND TEXTURE OF ZIRCONS AND THEIR INCLUSIONS OCCURRING IN GRANITOID ROCKS OF THE MECSEK MTS., HUNGARY

KIS, A.[1]*, KLÖTZLI, U.[2], KOLLER, F.[2] & BUDA, Gy.[1]
[1] Department of Mineralogy, Eötvös Loránd University, Pázmány Péter sétány 1/C, H-1117 Budapest, Hungary
[2] Department of Lithospheric Researches, University of Vienna, Althanstraße 14, A-1090 Vienna, Austria
* E-mail: annamari.kis@gmail.com

Major outcrops of Variscan plutonic rocks are found in South Hungary in the Mecsek Mountains. Four major rock-types can be distinguished: microcline megacryst-bearing granitoids (quartz monzonite), mafic enclaves (melasyenite, melamonzonite) in granitoids, hybrid rocks (quartz syenite) in the zone between granitoids and enclaves, and microgranite (dikes). This granitoid is mainly I-type. Rock forming minerals are microcline, plagioclase with "spike" zonation, biotite (Mg-rich), hornblende (Mg-rich) and quartz. Accessory minerals are allanite, zircon, apatite, titanite, pyrite, chalcopyrite in all rock-types. In the mafic enclaves, small amount of chromite can be found, too.

We studied the morphology of zircons of the microcline megacryst-bearing granitoids, mafic enclaves and hybrid rocks using Pupin-diagram. Three zircon types have been distinguished: 1. "normal" calc-alkaline magmatic zircon (S_{24}, S_{25}) in biotite, amphiboles and feldspar, 2. flat prismatic zircon (AB_5) (that had been earlier considered as S_4) in biotite 3. elongated, prismatic zircon (P_5) in feldspar and quartz.

Detailed internal textures of zircons had been studied by cathodoluminescence and backscattered electron imaging methods. Four zircons texture-types (primary textures and secondary texture) were distinguished: The primary textures are 1. grown zoning (possibly oscillatory zoning), 2. normal magmatic zoning with xenocrystic core, both occur in the three rock types, 3. sector zoning (that had not been earlier considered) in hybrid rock. The secondary texture is convolute zoning also occurring in the three rock types. Modifications of magmatic zircon during late and post-magmatic cooling or metamorphism tends to result in a disruption of grown zoning.

Different inclusions have been found in zircons: apatite, feldspar, biotite, quartz, chlorite, thorite/uranothorite. We distinguished multiphase (K-feldspar, albite, quartz) and single phase inclusions in zircons. This indicating that zircon crystallized continuously during the solidification of granitoid magma. The multi phase inclusions crystallized latter at a lower temperature from the Si-rich granite melt.

These morphological and textural investigations are important before applying the U-Pb, Th-Pb geochronology of zircon using LA-ICP-MS techniques in order to select the different generations of zircons and exclude metamictization and other secondary alterations by the picking of entire zircons without cracks. By these methods we can determine the origin and age of the crystallization of different rock-types and probably age of K-metasomatism e.g. mafic enclaves can be restitic in origin (ages of granitoids and enclaves are different), or "in situ" unmixing of felsic and mafic magma (same crystallization age). Xenolithic origin is not possibly because of the morphology and very similar composition of the enclaves.

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