Секция «Минералогия»

Morphology and geochemical characteristics of zoned zircons, two mica granites, El Sela area, Eastern Desert, Egypt

Научный руководитель – Панова Елена Геннадьевна

Ghoneim Mohamed Mahmoud Fathy
Кандидат наук
Санкт-Петербургский государственный университет, Институт наук о Земле,
Санкт-Петербург, Россия
E-mail: moh.gho@mail.ru

Zircon is one of the most important accessory mineral of intrusive rocks, which is crystallized in the wide range of PT conditions. The difference of its crystal morphologies depends on the magma rock type, aluminum-alkali balance, chemistry of granites, and temperature of crystallization [1]; therefore, zircon is considered as a tracer of petrogenesis of granites. It occurs generally, as small, in small minerals and may form large well-developed crystals (in the form of prism and bipyramids) in granitic rocks. El Sela area is characterized by rugged topography with low to high relief and incorporation different rock types of the basement complex of the Pre-Cambrian age. Two-mica granite (3 * 5 km) trending ENE-WSW and NNW-SSE parallel to shear zones. El Sela two-mica granite is dissected by two perpendicular shear zones. This shear zone is characterized by invading of microgranite, dolerite dikes, and quartz and jasperoid veins. Morphologically, zircon in two mica granite is euhedral coarse grained with zonation and the other type is fine grained massive without zonation. Zircon from two mica granite is represented by crystals up to 125 μm and conform to S_{10} and P_2 type (Pupin, 1976). Overgrowths are presented in considerable amount. The studied zircons have some inclusions which are mainly thorite occur as white spots zircon. These inclusions are haphazardly oriented. Some zircon crystals are free of inclusions. The Electron probe micro-analyzer (EPMA) shows that the major oxides in the core of the zircon of the two mica granites are ZrO_2 (62.5-65.01 wt%), SiO_2 (31.1 to 32.42 wt.%), HfO_2 (1.8 -2.1 wt%), and UO_2 (0.8 to 1.6 wt%), In the rim of zircon, the contents of the major oxides are mainly ZrO_2 (50.4 to 57.1 wt.%), SiO_2 (30 to 31 wt.%), HfO_2 (2.8 to 4.5 wt .%), UO_2 (2.9 to 4.4 wt.%). ZrO_2 have higher values in the core whereas UO_2, ThO_2 and HfO_2 increase at the peripheries of crystals. Y_2O_3 may occur only at the crystal rim. Microprobe analyses of zircon showed that P was absent so, no xenotime overgrowths was observed.

Acknowledgments

I would like to express my deepest appreciation to Panova Elena Genadevna, professor of geochemistry, doctor of geological and mineralogical sciences, Saint Petersburg University for her supervision, help and guidance. Analytical work was done by Geomodel Research Center, Saint Petersburg State University, Saint Petersburg, Russia.

Источники и литература

1) Pupin, J.P.: Signification des caractères morphologiques du zircon commun des roches en pétrologie. Base de la méthode typologique. Applications. Thèse Doct Etat, Univ Nice (France), 1976, 394 p.