LA-ICPMS U-Pb ages of Paleo- and Mesoproterozoic granites in Bolivia

G.L. VARGAS-MATOS[1], M.C. GERALDES[1], R. MATOS[2] AND W. TEIXEIRA[3]

[1]UERJ, Faculdade de Geologia. Rua Sao Francisco Xavier 524, Rio de Janeiro (RJ), 22241-000, Brazil
[2]UMCLA. Universidad Mayor San Andreas. La Paz, Bolivia
[3]USP. Universidade de Sao Paulo. Sao Paulo (SP) Brazil

Proterozoic granites of Bolivia new U-Pb zircon ages indicate an important change in chronostratigraphy of Bolivian Precambrian. The age of the Correreca Granite (1894 ± 13 Ma and 1925 ± 32 Ma) suggest an important magmatic event which spatial distribution is bounded on the north by the San Diablo shear zone, defining the oldest terrain with distinct geological story from other areas of the Bolivian pre-Cambrian. The San Pablo granite (ascribed as the Lomas Manechi magmatic event) yielded 1617 ± 14 Ma, in agreement with the ages of the literature (1.67-1.62 Ga). The results of isotopic granitoids of Cachuela, Motacusal and Talcoso (San Ignacio orogeny), present U/Pb age between 1307 and 1333 Ma, suggesting an important period of generation of granitoids in the Bolivian pre-Cambrian.

The Sunsas magmatism presents predominantly crustal sources and presents temporal variation between 1071 Ma and 1047 Ma (Granites Naranjito, Taperas, Primavera and El Carmen).

The data here reported suggest a geological evolution for the Bolivian pre-Cambrian composed of four episodes of magmatism represented by the Correreca event, followed by San Pablo event. The younger San Ignacio event is represented by magmatic arc with important participation of older continental crust. Finally, the magmatism Sunsas is comprised of anarogenic (type A) and crustal rocks (S-type) representing an important collisional period in the SW Amazonian craton.

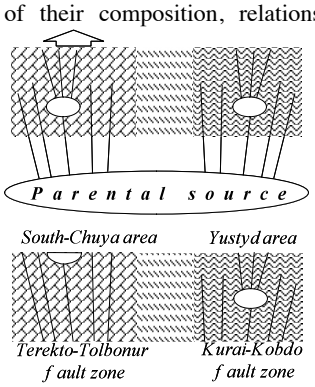
Petrology of lamprophyres as a result of the study of minerals

ELENA VASYUKOVA

IGM SB RAS, av. ak. Koptyuga, 3, Novosibirsk, Russia (lenav@inbox.ru)

Lamprophyres of the Chuya complex are one of the biggest displays of the alkali high potassium early mezozoic magatism of the Gorny Altay. Within this region dikes distributed unevenly, according to the fault zones and fractures. We have studied two largest and most saturated dikes local areas – South Chuya and Yustyd. The choice of these two areas is linked to the fact, that they are con fined to two distinct fault systems, located in the different host rocks and associated with the different ore disttricts. In addition, rocks of different areas vary in the degree of carbonatization, phenocrysts and structural-textural features.

Petro- and geocemical characteristics of rocks from different local habitats were so similar, that alowed to assert a single maternal source. Phenocrysts of pyroxen, phogopite, containing cromium and possibly olivine suggest, that the parental melt was high-Mg and its geochemical characteristics indicate the involvement of enriched mantle. Trends in harker variation diagrams, morphology (type 'dike-in-dike') – all this dose not in contradict the hypothesis on the formation of the dikes as a result of fractionation. Studies of minerals have confirmed this suggestion. Most informative for petrological studies in this rocks are phlogopites and apatites. The composition of plogopites reflects changes in the content of major elements, and apatites – of rare elements. In addition, their constituent volatiles significantly influenced the composition of the fluid phase of the rockforming melt. Study of their composition, relationships and restoration of the sequence of crystallization of minerals allowed to assume a model of formation of the Chuya lamprophyre complex, explain the differents between the two dikes areas.



The ultimate hypothesis is that the dikes South Chuya area formed at great depths directly from the source dyke Yustyd area are the result of crystallization of fractionated melt in the hypabyssal parts of the lithosphere, and associating with lamprophyre syenite massif is an intermediate chamber.