LAMPROITES OF RUSSIA (GEOLOGY, MINERALOGY, PETROCHEMISTRY, GEOCHEMISTRY).

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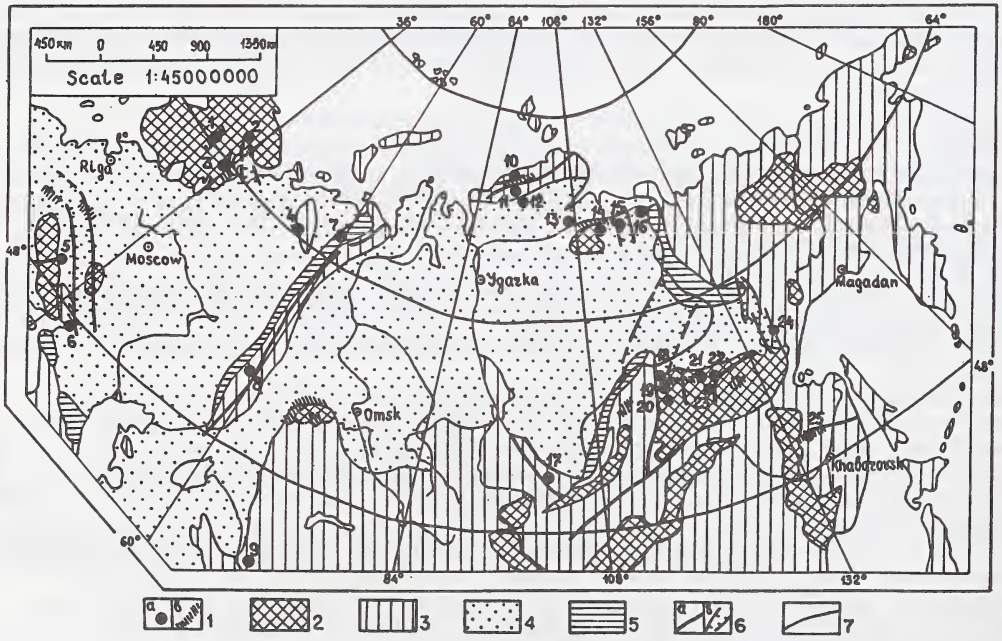
Analysis of lamproitic and similar ultrapotassic alkaline volcanic complexes location, allowed to distinguish several lamproitic provinces in Russia and neighboring countries: West Karelia, Witesea Onegskaja, South Ural, Taimyr, North Olenek, Anabarskaja, East Sajan, Aldan, Sette Daban (Fig.)

Fig. Scheme of distribition of lamproitic complexes on northeastern part Euroasia (Orlova, Krasnov, 1995).



1. Locations of lamproitic complexes: a) discovered, b) prognosic zones. 2-7. Geologic-tectonic structures: 2. shield and median massives, 3. fold areas, 4. ancient and new platforms, 5. foredeeps, 6. magma-controlling structures: a) deep faults, b) paleoriftogenic and avlacogens; 7. boundary

structures. Lamproitic complexes: 1. Kostomuksha, R_2, 2. Porja Guba R_2, 3. Lake Levuska, R?, 4. Chetlas R-V, 5. South-Cherkas R_1, 6. Petrovsky D_3, 7. Sharyus T_3-J_1, 8. Kuibasov, T_3-J, 9. Koshmansay, C_1, 10. Shrenk, Pz?, 11. Tareya, Pz?, 12. Gorbita, Pz?, 13. North-Anabar complex, Pz_{2-3}(Fomich, Kychkyn, Haibyt), 4. Talachtakh, R_3, 15. Tomtor, D_3-C_1, 16. Olenek-Khorbosuonka, V, 17.Okynsky, R-V, 18. Molbo, K_2, 19.Murun (Inarigda), K_1, 20. Khany, PR_1, 21. Tobuk-Khatystyr, K_1, 22. Low-Yakokut, K_1, 23.Upper-Yakokut, K_1, 24. Ariavkan, K_1, 25. Dayan, K_1.

Lamproitic complexes are connected with palaeorifts and avlacogenes zones in the ancient platforms. They are controled by the deep faults, which intersect stable parts ledged and blocks of more ancient districts.

Lamproitic complexes, like to the kimberlitic, developed many times. In Russia they are formed in four periods: early proterozoic (Hany, South West Aldan), late proterozoic (Karelo Kolsky complexes, Polar Siberia, East Sajan and Ukraine), middle paleozoic (complexes in the European and Siberian) and mezozoic (complexes of South Ural, Aldan, Sette Daban).

Dykes and pipes of the lamproites form swarms and halos. Lamproites are the final members of the mafic ultramafic formations in the palaeorifts and avlacogenes. In the north part of the Siberian platform are developed three time full line of the magmatic complexes of the different formations (from ancient to young): basalt dolerites, trachybasalts and alkaline basalts, alkaline ultramafites and carbonatites, nepheline and alkaline syenites, lamproites and (or) kimberlites. In another provinces the paragenesies of formations are reduced and lamproites crowns them together alkaline lamprophyres.

Mineralogical composition and petrochemical peculiarities of the lamproitic series in the different regions of Russia are visibly distinguished. By these parameters (Mitchell, 1988; Vaganov, Kaminsky, Kononova, Machotkin, 1988; Orlova, 1991) only part of the complexes may be concerned to lamproitic: Kostomuksha (Karelia), Kyibasov (South Ural), Cimara Udginsky (North Siberia), Murun (West Aldan), part of Jakokut (Central Aldan), Okinski (East Sajan). They are represented by the olivine phlogopitic, olivine diopside phlogopite leucitic, diopside phlogopite leucitic, olivine diopside phlogopite sanidinic lamproites and gialolamproites.

In the provinces are determined petrochemical trends of evolution their compositions, which are caused by the crystal differentiation. Individual pipes of the lamproites are changed by dykes on the depth (Guravlev, 1993).

Petrochemical analysis of Russia lamproites by means of the

factor analysis (Orlov et al., 1991) allowed to determine the position of the petrogenetical trends of the lamproitic complexes on the diagrams, and to compare it with trends of Australian lamproites (Jaques, Lewis, Smith, 1986) and other regions, to reveal the compositions of rocks, which most like to ultramafic diamondibearing varieties (Kostomuksha, Murun, Central Aldan, Kuibasov).

Content of the minor elements (Ba, Sr, Zr, Nb, U, Th, Rb, Cr, Ni) and REE in the lamproites of Russia are characterzed by high concentracions compare to alkaline pycrites, minettes, leucititites in these magmatic areals. Lamproites of Russia differ from australien lamproites by more low minor and REE contents. It is explained by the different mechanism of the mantle enrichment in Russia regions and geochemical specialization these regions (Bogaticov, Kononova, Machotkin, et al., 1987, Orlova, 1982) .

Deep xenoliths presents, Mg, Cr, Ni contents in rockforming and accessories minerals and their paragenetical associations it is evidence of the potential diamondibearing lamproites (Kostomuksha, Kuibasov). Lamproitic melts generation are developed in the upper mantle on the granat peridotite level (Lamproites, 1991). Sanidine and phlogopite are the source of potassium in the melts (Orlov, Orlova, 1990).

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