

Abstract

Lamprophyres are mafic to ultramafic porphyritic rocks containing phenocrysts of hydrated mafic minerals, namely dark mica (phlogopite, biotite) and amphibole that are present also in the matrix and commonly are euhedral or nearly euhedral. On the other side, felsic minerals as various feldspars and feldspathoids, are present only in the matrix sometimes containing also significant amounts of primary carbonates. Lamprophyres are commonly divided into three major groups – (1) calc-alkaline, (2) alkaline, and (3) ultramafic. Some of them are closely related to kimberlites, lamproites and carbonatites and gradual transitions to these rocks as well as to other non-lamprophyric types do exist.

Lamprophyres are volumetrically minor group of igneous rocks.. In some respects, however, they are very important, particularly for our understanding of complicated petrogenetic processes in the upper mantle and lower crust, and also diamond or gold prospecting.

Significant role in proper lamprophyres classification is played by perception of processes of lamprophyres magmas forming and their possible interaction with crustal material or enrichment by some elements contained in mantle. Lamprophyres may be very similar to normal igneous rocks. These rocks can be distinguished only on the basis of some mineralogical and geochemical properties. One of the main problems is the correct classification of transitional rock types. Difficulties in classification can be caused by macrocrystals contained in lamprophyres which seem to be phenocrysts but these are mostly xenocrysts or frequently also hydrothermal alteration.

In course of nearly 140 years from the first description of lamprophyres, their definition and classification were changing. Difficulties arise not only in distinguishing lamprophyres from other rocks, but also in general agreement on their particular types classification. At first, the result of research was formation contradictory publications. Later research has brought some interesting ideas, such as a creating of the lamprophyre clan covering not only three groups of lamprophyres but also kimberlites and lamproites.

Contemporary classification of igneous rock presented by IUGS recognizes seven rock types of lamprophyres based on modal compositions. Two types of former ultramafic lamprophyres are rearranged to the melilite-bearing rock classification. Lamprophyres are characterized as a diverse group of rocks with very difficultly defined chemical differences from common igneous rocks. Unfortunately, this classification abolished the group of ultramafic lamprohyres what is considerable shortcoming that can lead to mutual misidentification of ultramafic lamprophyres, kimberlites and some lamproites.