

Abstract - Study of lamproites of Northeastern Algeria -

Lamproites are rare ultrapotassic rocks of economic importance because they may be host rocks of diamonds. A small outcrops of lamproitic rocks have been reported in Northeastern Algeria, near Kef Hahouner and Koudiat el Anzazza, but only few studies have been done on these rocks. We have conducted petrographic, mineralogical and geochemical study on the volcanic massif of Kef Hahouner. The rocks of the massif occurs as lava flows within the continental Miocene of the Constantine basin. Our study indicates the existence of two types of rocks : lamproitic rocks at the bottom and shoshonites at the top, which are separated by a red level of continental Miocene. Lamproitic rocks are composed of olivine phenocrysts (Fo_{72-87}) in a groundmass composed of sanidine with a barium-rich core, clinopyroxene ($Wo_{43}En_{46}Fs_{11}$), plagioclase (labrador, An_{50-65}), apatite, phlogopite and glass. Opaque minerals consist of titaniferous and chromiferous spinels often included in olivine. chlorophaite and bowlingite are the main alteration minerals. Geochemically, the lamproitic rocks are ultrapotassic ($K_2O/Na_2O > 2$; $K_2O > 3\%$ and $MgO > 3$) with a high [Mg] ($[Mg] = Mg/(Mg+Fe^{2+})$) around 0,71, indicating that the studied rocks are relatively primitive in character. The chondrite-normalized rare-earth element (REE) patterns of the lamproitic rocks display a high LREE enrichment relative to HREE and the primitive mantle-normalized multi-trace element patterns show an extreme enrichment in large ion lithophile elements (LILE) such as Cs, Ba, Rb, Th, U and LREE with concentrations of about 3000 times higher than primitive mantle. Shoshonites are composed of plagioclases laths (Labrador, An_{60-70}) in a groundmass composed of barium-rich sanidine, clinopyroxene ($Wo_{45}En_{42}Fs_{14}$), apatite and ilmenite. Large crystals of calcite occupy the rock vesicles or replace ferromagnesian minerals, probably olivine. Shoshonites show a chondrite-normalized rare-earth element (REE) and primitive mantle-normalized multi-trace element patterns similar to those of the lamproitic rocks, but with less important LREE and LILE contents. The rare-earth element (REE) and multi-trace element patterns of Kef Hahouner lamproitic rocks are similar to those of lamproites of the Mediterranean basin, which indicates same petrographic affinity and a common origin. A south vergence subduction followed by a post-collisional lithosphere delamination may be responsible of the lamproitic and shoshonitic volcanism in this part of the Maghrebides chain.