



The In Allarene ultramafic complex (Western Hoggar, South Algeria)

Mohamed Talbi, Abderahmane Bendaoud, and Khadidja Ouzzegane

Faculté des Sciences de la Terre, de la Géographie et de l'Aménagement du Territoire, U.S.T.H.B., B.P. 32, El Alia, Alger, Algérie

The In Allarene ultramafic complex localized in the south of the In Ouzzal terrane is the unique mafic to ultramafic known pluton interpreted as Panafrican in age. It has spherical shape of around 20 km² with concentric structure. Field, petrology and geochemistry studies show that the core of the pluton is composed of hazburgites and dunites surrounded by lherzolites (olivine > 40% – orthopyroxène – clinopyroxène) and olivine-bearing websterite rocks (olivine < 40% - orthopyroxène – clinopyroxène). In all these facies we remark the presence of chromite with very low proportions. The marginal border in the outer part of the complex consists of gabbros (plagioclase - orthopyroxene – clinopyroxene - olivine) with variable amounts of olivine and present coarse or finer textures. All is cross-cutted by dolerite dykes (plagioclase, amphibole, orthopyroxène, clinopyroxène).

Mineralogical study shows that the evolution of mineral composition progressively changes to one facies to another. Thus, in the core of the complex from the dunites to the olivine websterites, the XMg of olivine is between 0.77 to 0.92, those of orthopyroxene is from 0.78 to 0.92 and clinopyroxene is between 0.82 to 0.92. In the periphery of the pluton, in the gabbros, XMg of olivine varies between 0.70 to 0.75, while XMg of clinopyroxene is from 0.77 to 0.83 and those of orthopyroxene are 0.71-0.76. In the dolerites, XMg of clinopyroxene presents a range between 0.73 to 0.77 and those of orthopyroxène is 0.63-0.65 while the anorthite content of plagioclase varies between 75 to 81 %.

The arc tholeiitic domain emplacement of this complex is shown by the whole rock geochemistry and the clinopyroxenes of gabbros and dolerites mineralogy. This is in perfect relation with a subduction and the bracketing of In Ouzzal terrane with the surrounding terranes during the early stage of Pan African orogeny.

Key words: ultramafic, petrography, mineralogy, subduction.