

***Le magmatisme basique Carbonifère dans le massif des Aiguilles Rouges**

MOLLEX Damien; Mars 2003

Supervisor: Dr. F. Bussy, Institut de Minéralogie et Géochimie

Crystalline units of the Aiguilles Rouges massif are relics from the pre-Mesozoic history of the Helvetic domain. This study is centred the middle to late Carboniferous mantle derived magmatism in the Variscan range collapse context. It is mainly about the migmatitic complex of the 307 My Fully massif that contains an acid and basic rock association, and some basic to intermediate rocks from various parts of the Aiguilles Rouges massif.

Acid and Basic suites are considered as independent in the Fully massif. Acid rocks are small granitic and granodioritic dykes coming from a mod to lower continental crust anatexis episode. In this study, the basal dacitic flow of the Salvan-Dorénaz carboniferous basin has been identified as genetically linked to the granodiorites. Basic rocks outcrops as sparse metric enclaves. Contamination from the surrounding rocks seems very low. These enclaves have been separated in two groups: gabbroic enclaves and vaugnerites. Gabbros are magnesio-potassic, with relatively high trace elements contents, Nb-Ta and Ti negative anomalies, $^{87}\text{Sr}/^{86}\text{Sr}(307\text{My})$ ratios ranging from 0,707 to 0,712 and from -2,3 to -5,3 for the $\text{eNd}(307\text{ My})$ values. The chemical characteristics of this gabbros imply the melting of an enriched mantle. It could have been metasomatized by crustal sediments during a subduction stage at the beginning of the Variscan orogenesis.

Vaugnerites show stronger magnesio-potassic characteristics, high trace elements contents, Nb-Ta and Ti negative anomalies, $^{87}\text{Sr}/^{86}\text{Sr}(307\text{My})$ ratio of 0,702 and an $\text{eNd}(307\text{ My})$ value of 0.702. A mixing between the gabbros magmatic liquid and basal crustal restites is proposed to explain the similarities and differences between the gabbroic enclaves and the vaugnerites.

The complementary study of some Middle to Late Carboniferous lamprophyric and vaugneritic rocks from various areas of the Aiguilles Rouges Massif concords to the hypothesis of the existence of a Carboniferous enriched mantle under the Helvetic basement.

These different basic rocks show strong to very strong magnesio-potassic characteristics, high trace element enrichments, Nb-Ta and Ti negative anomalies, and isotopic ratios showing a high ($^{87}\text{Sr}/^{86}\text{Sr}(331\text{My}) \sim 0,704$ and $\text{eNd}(331\text{ My}) \sim -3,4$) to very high crustal contribution ($^{87}\text{Sr}/^{86}\text{Sr}(307\text{My}) \sim 0,71$ and $\text{eNd}(307\text{ My}) \sim -7,05$).