

Magmatic-hydrothermal transition in the Mont Lozère Massif, Cévennes, France: Structural framework and fluid processes

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Context

The Late-Hercynian evolution of the French Massif Central is synchronous with the emplacement of numerous calc-alkaline granites around 300 Ma. This magmatism has been intensively studied and most models argue for a magmatic activity related to the late-orogenic extension, postdating the main compressional event at 340 Ma. During this event, large-scale fluid circulation occurred in the crust, generating various ore manifestations, the latest event being associated with the formation of gold-bearing quartz veins.

The main objective of the project is to characterize the fluid processes occurring in the Mont Lozère Massif, responsible for the formation of gold-bearing quartz-tourmaline-arsenopyrite veins and their structural framework. Whole rock geochemistry, trace element signatures of hydrothermal minerals and fluid inclusion analysis will be used to track back the fluid-rock interaction and P-T-X of the mineralizing fluids, in order to characterize major processes at the magmatic-hydrothermal transition.

Objectives and Methods

The Master project aims to apply a combination of field (structural analysis, Anaconda style of mapping) and analytical techniques in order to study the magmatic-hydrothermal transition. Methods to be applied: i) Detailed field mapping and sampling; ii) Macro- and micro-structural analysis; iii) Transmitted/reflected-light petrography; iv) QEMSCAN; v) XRF analysis; vi) EPMA and LA-ICP-MS; vii) Fluid inclusion analysis.

Literature

Chauvet A, Volland-Tuduri N, Lerouge C, Bouchot V, Monié P, Charonnat X, Faure M (2012) Geochronological and geochemical characterization of magmatic-hydrothermal events within the Southern Variscan external domain (Cévennes area, France). *Int J Earth Sci* 101: 69-86.

Charonnat X, Chauvet A, Faure M (1999) Structural control of the Late-Hercynian Cévennes gold mineralization (French Massif Central). – *C.R. Acad. Sci. Paris, Earth and Planetary Sciences* 328:463-469.



http://cms.unige.ch/sciences/terre/research/Groups/mineral_resources/mineral-resources.php

<http://www.gm.univ-montp2.fr>

Choice of orientation : (supprimer les orientations qui ne conviendraient pas)

Geochemistry, Alpine tectonics, Ore Deposits