

EMPLACEMENT AND DEFORMATION OF THE SITHONIA GRANITOID PLUTON (MACEDONIA, GREECE)

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The Sithonia granitoid pluton is an Eocene I-type calcalkaline body emplaced, in concordance with its envelope, at the boundary between the Serbomacedonian massif and the Circum Rhodope Belt, in Central Macedonia.

Its exposed part has a rather elliptical shape with the long axis in NW-SE direction. However, the observed internal structures and its possible connection with the neighbouring granitoids (i.e. Ouranoupolis and Gregoriou granitoids) indicate that the WSW-ENE direction has played a very important role in its emplacement.

At the larger part the Sithonia granitoid pluton reveals a modified magmatic foliation (S-fabric) which varies in intensity, but increases toward the marginal parts, wherein the fabric is planar-linear (SL-fabric) with the development of a WSW trending stretching lineation. Both the foliation and stretching lineation of the marginal parts are in similar orientation with the continuous foliation and stretching lineation of the country rocks (Svoula group, Chortiatiss Magmatic Suite and Vertiskos Unit) of the envelope.

Two regional and progressive (partly overlapped), D1 and D2 deformation events, which affected both the envelope and the Sithonia granitoid pluton have been recognized. They are in connection with the emplacement of the Sithonia granitoid pluton and are responsible for the modification of the initially magmatic foliation, which however is easily recognized both in the microscopic and mesoscopic scale.

The D1 event (shearing, top to ENE) is a pure ductile process and associated with the foliation and WSW trending stretching lineation observed in the envelope, contact aureole and the marginal parts of the Sithonia granitoid pluton. The D2 event (NNW-SSE shortening) is a ductile to ductile-brittle and even brittle process, which caused the final configuration and folding of the foliation as well as the observed S-C structures, shear zones and "early joints" of the granitoid.

The Sithonia granitoid pluton reveals characteristics such as of a syn-tectonic granitoid in respect to the regional deformation state (D1 and D2 events). The possible emplacement mechanism could be the syn-tectonic ballooning due to the external tectonic forces.

The deformation state (D1 and D2 event) of the Sithonia area could be compared with the referred deformation stata (D1 and D2 event) which took place in Eocene-Oligocene times in Rhodope massif. The fact that the Sithonia granitoid pluton is a syntectonic granitoid and crystallized in Middle-Eocene time (about 50 Ma) lead us to suggest a regional pre-syn-Middle Eocene deformation process which was imprinted in the Sithonia granitoid pluton and extended at least to Oligocene.