

## **Contact relations and petrography of the Solarya intrusive complex (NW Turkey)**

Işıl Nur Güraslan, Alp Ünal, and Şafak Altunkaynak

Istanbul Technical University, Faculty of Mines, Geological Engineering Department, Istanbul, Turkey (guraslan@itu.edu.tr)

Solarya pluton is a N-S trending intrusive body exposed in the North of the Balıkesir city in NW Anatolia. It is Early Miocene in age and intruded into the Nilüfer and Hodul unit of Karakaya complex representing Triassic metamorphic and non-metamorphic basement of Sakarya Continent. Solarya plutonic complex consists of three granitic rock members: Porphyritic granodiorite with K-feldspar (orthoclase) megacrystals, microgranite-microgranodiorite and haplogranite. Coarse grained porphyritic granodiorite is common in northern part of the pluton while the southern part of the pluton is formed from microgranite-microgranodiorite. Haplogranite was emplaced between the pluton and the metamorphic country rocks and surrounds the pluton as a thin light coloured outer zone along northern half of the border. Haplogranitic envelope zone display graphic and granophyric textures. Main plutonic body also contains mafic enclaves and syn-plutonic mafic dykes. Along the southern border, the fine grained chilled margin of Solarya pluton gradually passes into the hypabyssal and volcanic rocks. At the western border of the pluton, a young fault separates the pluton from non-metamorphic Hodul Unit of Karakaya complex. Along the northern and eastern margin, Solarya pluton intruded into metamorphic rocks of Nilüfer Unit which consist mainly of marbles, metapelites and metabasites. Solarya intrusive complex developed contact metamorphism in a narrow zone (150-200 m) around its eastern margin between the marbles which reaches to hornblende-hornfels facies conditions. The grain sizes of the marbles grow towards the margin of the pluton. Contact metamorphic rocks surrounding the intrusive body are common with granoblastic texture and display calcite + plagioclase + tremolite + diopside + garnet ± quartz mineral paragenesis dominantly. This mineral paragenesis suggest that the contact metamorphic aureole has developed under 500-550 C° and 2-3 kbar temperature and pressure conditions, which refers to hornblende hornfels metamorphic facies.

Field relations and petrographical analyses of intrusive complex and the surrounding contact aureole indicate that the southern part of the Solarya intrusive complex emplaced into shallow levels in the crust (<1.5 km), although the northern part of the complex has contact metamorphic mineral paragenesis typical of relatively deeper levels of epizone.