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## **32. Exsolution vermicular perthite and myrmekitic mesoperthite**

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### **Introduction**

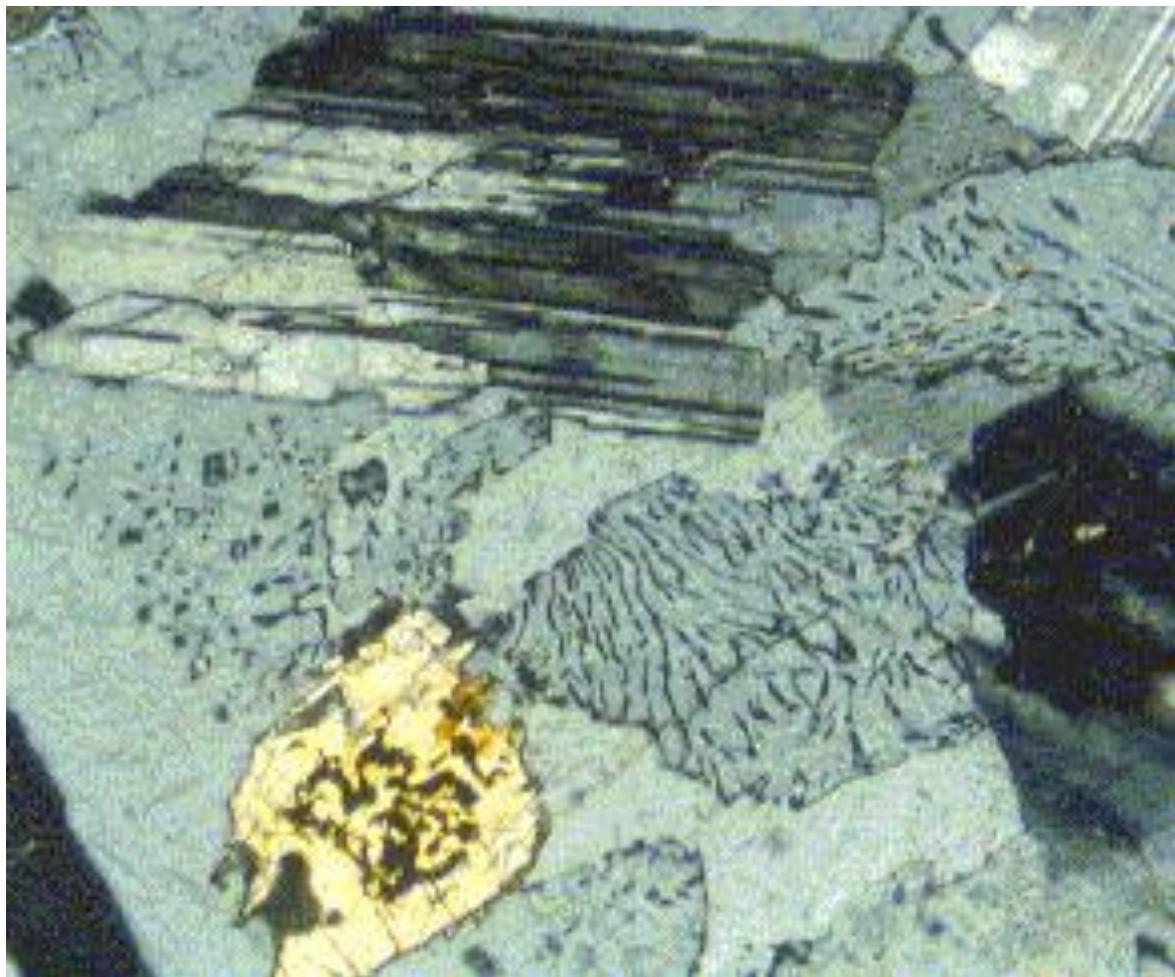
Two interesting feldspar-feldspar and feldspar-quartz textural intergrowths are herein reported from Greece and Norway.

### **Exsolution vermicular perthite from the Maronia pluton in northern Greece**

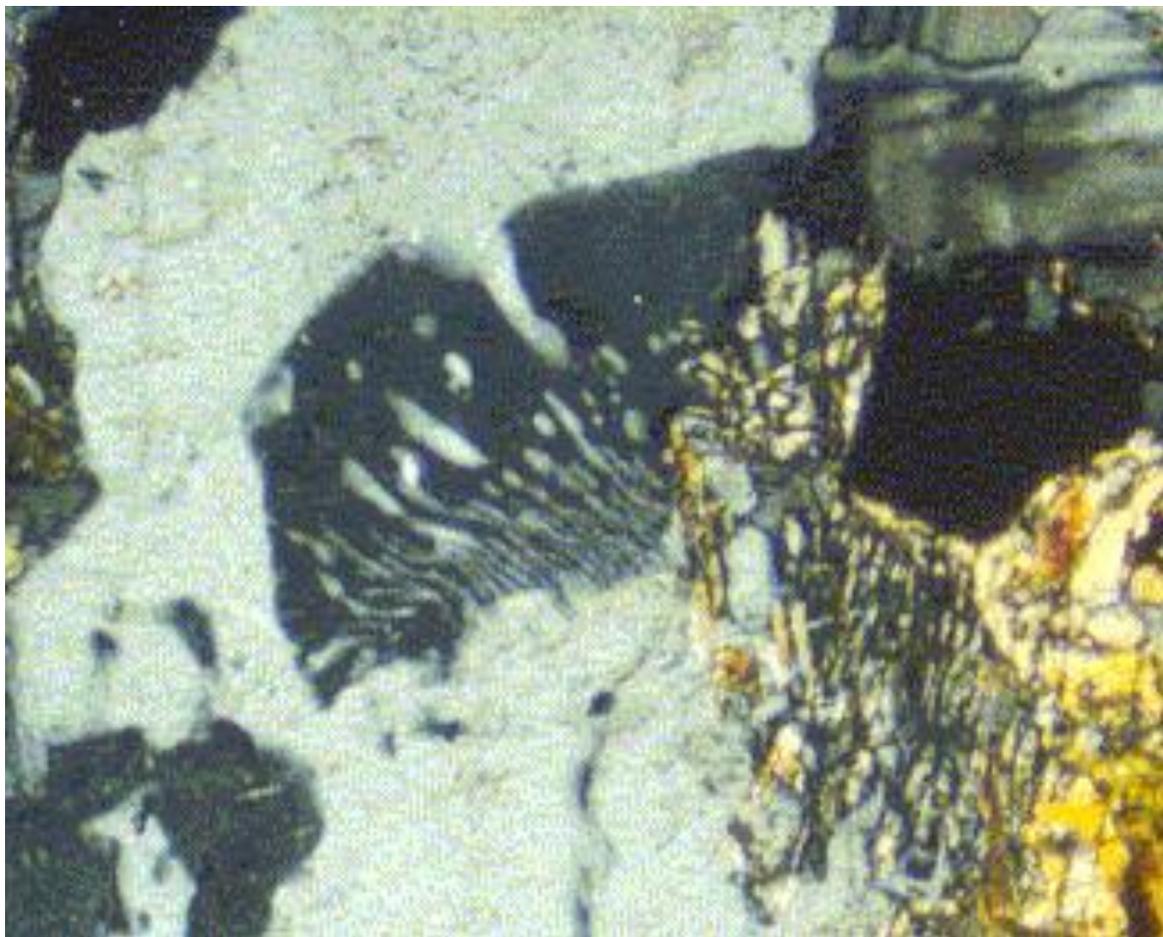
An unusual perthitic K-feldspar, containing vermicular plagioclase lamellae, occurs in monzonitic rocks from the Maronia pluton in northern Greece. This Tertiary pluton is in the Circum Rhodope massif and is composed of gabbro, monzonite, and granodiorite. There are two generations of K-feldspar filling interstices between clinopyroxene, orthopyroxene, calcic plagioclase, and occasional sphene (titanite). In some places olivine is also present. Alterations of the orthopyroxene and olivine locally occur, resulting in corona structures that consist of relics of orthopyroxene and olivine in the core, opaques (mostly magnetite), orthopyroxene (when the core is olivine), green biotite, and needles of orthopyroxene. Plagioclase is partly absorbed by K-feldspar as is also apatite. In many places the plagioclase is antiperthitic. The K-feldspar crystals that contain the vermicular plagioclase lamellae invade other K-feldspar crystals that lack the vermicular plagioclase and have more Ba than the latter.

The textures suggest that at high temperatures a K-feldspar-bearing melt resorbed borders of some of the calcic plagioclase crystals, incorporating some Ca and Na into the melt; the K-feldspar has as much as 30% Ab. This melt then must have crystallized as anorthoclase, which later, following cooling, exsolved the vermicular plagioclase in the K-feldspar; see Fig. 1 and Fig. 2. The plagioclase vermicules are distinguished from quartz vermicules by having lower birefringence colors of first order gray instead of white. More work is being done on this rock by Georgios Christofides (Department of Mineralogy, Petrology, and Economic

Geology, Aristotle University of Thessaloniki, 54006 Thessaloniki, Macedonia, Greece, email: christof@geo.auth.gr). Comments on ideas of formation are welcome.



**Fig. 1.** Perthitic K-feldspar (darker gray) with vermicular plagioclase lamellae (black), invading relatively non-perthitic K-feldspar (lighter gray). Calcic, albite-twinned plagioclase (top; black and white). Orthopyroxene (light tan) with magnetite alterations (black) in core.



**Fig. 2.** Perthitic K-feldspar (black; center) with vermicular plagioclase lamellae (light gray), invading relatively non-perthitic K-feldspar (light gray). Orthopyroxene (light tan); plagioclase (black and white; albite-twinned; upper right corner).

### **Exsolution myrmekitic mesoperthite in charnockitic gneiss, Rogaland, SW Norway**

Maijer (1996) describes several unusual feldspar-feldspar and feldspar-quartz intergrowths from the Proterozoic of Rogaland in southwest Norway associated with the Egersund anorthosite complex. Contact metamorphism of wall rocks by the anorthosite may have been as high as 1000° C. The intergrowths illustrated in his article include antiperthite, mesoperthite, myrmekitic mesoperthite/mesoperthite myrmekite, and 'calcic' myrmekite. The myrmekitic mesoperthite is from a charnockitic gneiss near Lauperak, Rogaland.

Arguments supporting an exsolution origin for this unusual myrmekite are logically presented by Maijer (Department of Geochemistry, Utrecht University, P.O. Box 80.021, 3508 TA Utrecht, The Netherlands).

### **Reference**

Maijer, C., 1996, Exsolution and decomposition of high-temperature feldspars from Rogaland, SW Norway; *in* Demaiffe, D., (ed.), *Petrology and geochemistry of magmatic suites of rocks in the continental and oceanic crusts*. A volume dedicated to professor Jean Michot: Universite Libre de Bruxelles. Royal Museum for Central Africa (Tervuren), p. 99-110.