Petrography

The most representative rocks of the Tabaquito batholith consist of granodioritic compositions, although minor mozogranitic compositions have also been described (Llambías & Sato, 1995), with plagioclase (35–48 vol.%), quartz (23–30 vol.%), alkali feldspar (11–20 vol.%), biotite (8–15 vol.%), hornblende (up to 1.5 vol.%) and Fe-Ti oxides (magnetite; up to 1.4 vol.%). Apatite, zircon, Th-orthosilicate, magmatic epidote and allanite are the main accessory minerals. Titanite has not been identified although it has been previously reported by Llambías & Sato (1995).

Plagioclase is mostly subhedral with oscillatory zoning and polysynthetic twinning (see Figure 1 below). The equigranular rocks present three families of plagioclase: one of scarce big crystals ranging between 5×3 mm and 8×6 mm, and apparently exempt of inclusions; a second family, which is the most abundant, has a mean size around 2×1 mm and can present rare inclusions of amphibole, biotite and zircon; the third consists of fine-grained subhedral crystals (up to 0.7×0.2 mm) in interstitial position or included in quartz, alkali feldspar and biotite. In the porphyritic rocks, the plagioclase phenocrysts vary in size from 3×4 mm to 0.5×2mm and can present inclusions of biotite and quartz.

Quartz is mostly anhedral, medium-grained (Ø: 1–3 mm) and clean, although it can present rare very fine-grained inclusions of amphibole, biotite, plagioclase and Fe-Ti oxides. Note that quartz phenocrysts in the porphyritic varieties can present corrosion embayments and poikilitic rims plenty of inclusions of matrix minerals (mainly alkali feldspar).

Alkali feldspar is anhedral with irregular forms and sizes between 1×0.7 mm and 3×2 mm, being < 0.5 mm in the matrix of the porphyritic samples. It presents poorly

developed perthites and common inclusions of amphibole, biotite and plagioclase (ca. 0.2×0.4 mm), showing most crystals a clear poikilitic texture.

Amphibole has been described in the equigranular granodiorite (samples TAB-11 and TAB-34) and the enclave (TAB-32) and is subhedral to anhedral with sizes from 0.8×0.1 mm to 1.2×1 mm. In the granodiorite it normally appears forming mafic aggregates or clots with biotite and Fe-Ti oxides, but it also typically occurs as rare single crystals (see Figure 1 below). Inclusions of Fe-Ti oxides, apatite and zircon are frequent.

Biotite is subhedral and can appear as aggregates of small crystals (up to 0.4×0.2 mm) without inclusions, bigger crystals (0.8×0.5 – 3×1.3 mm) with inclusions of Fe-Ti oxides, apatite, zircon and plagioclase that in some cases show a clear poikilitic texture, or as patches replacing anhedral amphibole.

Epidote occurs as a secondary phase after plagioclase, amphibole and biotite and as a euhedral to subhedral primary phase (0.4×0.2 – 1.7×0.2 mm) associated to biotite, showing sharp contacts, and in interstitial position or included in alkali feldspar (see Figure 1 below).

The studied mafic, amphibole-biotite rich, enclave has quartz-diorite composition and is porphyritic with phenocrysts (size range: 1.2×1.5 – 6×4 mm) of plagioclase (ca. 10 vol.%) and quartz (ca. 4 vol.%) and aggregates (clots) of amphibole and biotite (up to 15 vol.%), set in a fine-grained equigranular groundmass of plagioclase (30 vol.%), amphibole (15 vol.%), biotite (10 vol.%), Fe-Ti oxides (magnetite, 11 vol.%) and quartz (5 vol.%). Rare poikilitic alkali feldspar can also appear. As accessory minerals these enclaves have apatite, zircon and occasionally possible chevkinite. The plagioclase phenocrysts can exhibit small inclusions of amphibole and biotite and are normally rounded by a poikilitic less calcic rim (see Figure 1 below). Both phenocrysts and

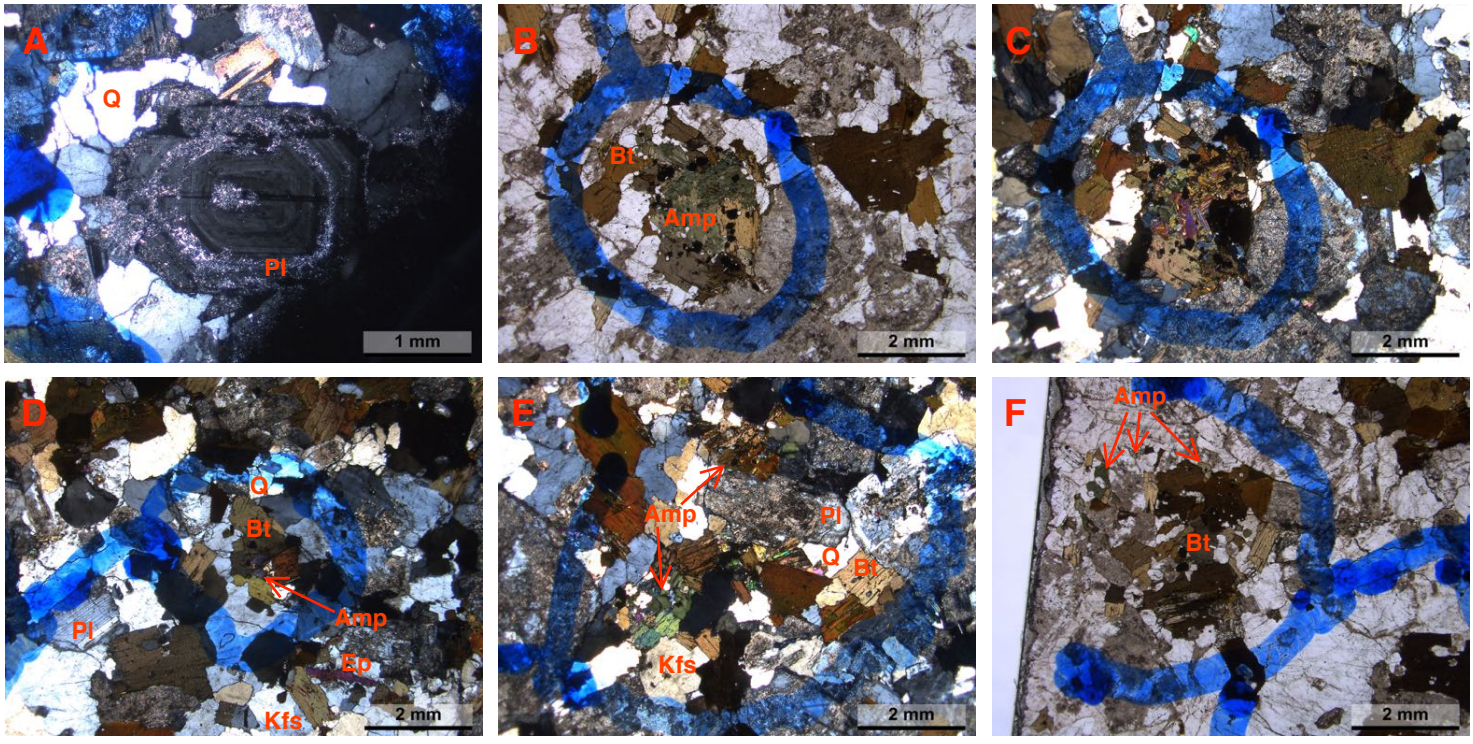
plagioclase from the matrix are strongly sericitised. Quartz appears as poikilitic crystals or forming aggregates of few crystals with undulose extinction.

References:

Llambías, E.J. & Sato, A.M., 1995. El batolito de Colangüil: transición entre orogénesis y anorogénesis. Revista de la Asociación Geológica Argentina 50 (1-4), 111–131.

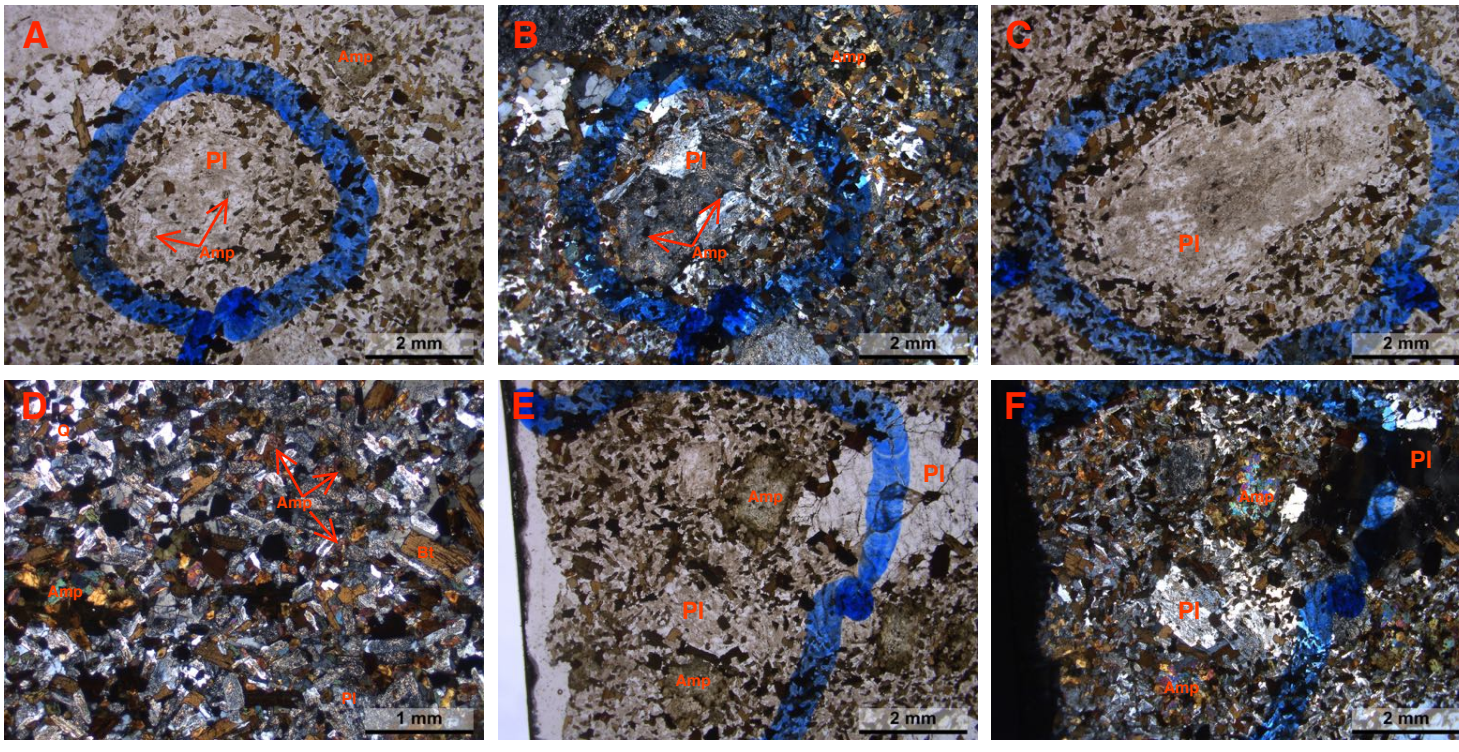
Figure 1

TAB-34 (granodiorite)



(A) Partially sericitised plagioclase showing compositional zoning. (B-C) Mafic clot of amphibole, biotite and opaque minerals surounded by plgioclase, alkali feldspar and quartz. (D-F) Various views of the sample highlighting single crystals of amphibole assosiated or not with biotite, and roughly euhedral epidote included in alkali feldspar. Blue marker pen lines delimitate areas studied by electron microprobe. Abbreviations: Amp, amphibole; Bt, biotite; Ep, epidote; Kfs, alkali feldspar; Pl, plagioclase; Q, quartz.

TAB-32 (mafic enclave)



(A-C) Partially sericitised plagioclase phenocrysts set in a fine-grained matrix, showing amphibole inclusions and poikilitic rims. (D) Microphotograph of the fine-grained matrix made of plagioclase, amphibole, biotite, opaque minerals and interstitial quartz. (E-F) Amphibole clots and plagioclase phenocryst set in a fine-grained matrix. Blue marker pen linesdelimitate areas studied by electron microprobe.Abbreviations: Amp, amphibole; Bt, biotite; Ep, epidote; Kfs, alkali feldspar; Pl, plagioclase; Q, quartz.