Granite

Description

Light coloured, acid igneous rock composed principally of alkali-feldspar, quartz and biotite, with some plagioclase. Individual crystals in the groundmass are greater than 2 mm diameter on average. May contain phenocrysts of feldspar (and quartz) in various proportions and up to about 25 mm diameter.

Key diagnostic features :

(i) Individual crystals are generally greater than 2 mm diameter.

(ii) The mineral assemblage is dominated by quartz, alkali-feldspar and biotite, with some plagioclase.

(iii) Generally massive (though locally sheared).

Comments

The granite is locally texturally heterogeneous, with abrupt variations in grain size and mineralogy. Veins of very coarse granite (pegmatite) and very fine granite (aplite) are observed occasionally. The freshest granite in Tung Chung drillcores has grey quartz, white feldspar and black biotite (Plate 12a). However, the biotite has commonly altered to chlorite, giving the rock a greenish appearance. Pervasively weathered granite is stained brown (Plate 12b).

Mineral and textural modifications of the granite are commonly observed in areas where it occurs close to metasedimentary rock. For example, in boreholes D-35, D-36 and D-37 in Site 5, the granite around thin intervals of metasedimentary rock has an intensely altered, 'bleached' appearance, contains small voids lined by euhedral crystals, and is mineralised by pyrite and galena. Much of the granite encountered in Site 3 drillcores has a similarly 'modified' appearance, again generally in close association with metasedimentary rock. Because of the close association with metasedimentary rocks, the modified granite has been termed 'contact facies' granite (Plates 13a and 13b). It is generally pink, often contains small, primary cavities, and is rich in quartz, which occurs in the groundmass and also as discrete 'blobs' and veins.

Reference sample no. : 5, 6, 25; also in Reference drillcore D-34 (120.5 - 139 m).

Plate A12a - Typical unweathered granite from Site 5.
Tung Chung, Site 5; Drillcore E-28; Box 3, 22.8 m

Plate A12b - Pervasively weathered granite from Site 5. Tung Chung, Site 5; Drillcore E-28; Box 2, 17.3 m

Plate A13a - Typical contact facies granite from Site 3. Tung Chung, Site 3; Drillcore CC-14; Box 11, 137. 81 - 141.63 m

Plate A13b - Contact facies granite and skarn. This is typical of granite-metasedimentary rock contacts in Site 3 drillcores : the granite, whose textural and mineralogical characteristics are clearly modified with respect to 'normal' granite encountered in Tung Chung drillcores, has a sharp, unfaulted contact (at the left side of the fourth drillcore stick in this view) with skarn. Tung Chung, Site 3; Drillcore CC-20; Box 7, 163. 22 - 168.71 m

Feldsparphyric microgranite

Description

Light coloured, acid igneous rock which is compositionally identical to granite, but in which individual crystals in the groundmass are less than 2 mm diameter on average, though still visible to the unaided eye; it is essentially a finer-grained version of granite. Contains phenocrysts of feldspar (±quartz) in various proportions and up to about 25 mm diameter.

Key diagnostic features :

(i) Individual crystals are less than 2 mm diameter on average, but still visible to the unaided eye.

(ii) The mineral assemblage is dominated by quartz, alkali-feldspar and biotite, with some plagioclase.

Comments

In some Tung Chung drillcores feldsparphyric microgranite grades into feldsparphyric rhyolite.

Reference sample no. : 3

Plate A14 - Typical feldsparphyric microgranite from Site 5. Tung Chung, Site 5; Drillcore G-12; Box 3, 35.0 m

Rhyolite

Description

Acid igneous rock which is compositionally identical to granite but in which individual crystals in the groundmass are too fine grained to be distinguished by the unaided eye.

Key diagnostic features :

(i) Crystals in the groundmass are too fine grained to be distinguished by the unaided eye.
(ii) No (or very few) phenocrysts.
(iii) siliceous, does not scratch with a steel knife.
(iv) Flow banding may be discernible.
(v) Fresh rock is dark grey to black. Alteration changes the colour to grey, purple or pink.

Comments

Rhyolite containing no phenocrysts is relatively rare in the Tung Chung drillcores. It is observed most commonly along the 'chilled' margins of feldsparphyric rhyolite bodies.

Reference sample no. : No sample.

Coarsely feldsparphyric rhyolite

Description

Rhyolite (see Section 2.19) with abundant phenocrysts of feldspar, mostly 5-25 mm.

Key diagnostic features :

(i) As rhyolite, but with abundant phenocrysts of feldspar (±quartz), mostly 5-25 mm.

Comments

Fresh rock has a distinctive appearance : white and grey phenocrysts in a dark grey groundmass (Plate 15a). With slight alteration, the phenocrysts become pinkish and the groundmass alters to greyish-green, or greyish purple (Plates 15b and 15c). Pervasive weathering turns the groundmass to orange-brown (Plate 16a). Intensely altered coarsely feldsparphyric rhyolite containing pyrite and galena (Plate 16b) occurs in and near to borehole A-18 in Site 4. A texturally modified variant of coarsely feldsparphyric rhyolite, in which 'phenocrysts' of feldspar and quartz have irregular, curved outlines, occurs rarely in Tung Chung drillcores.

Reference sample no. : 14, 7, 2, 13, 19

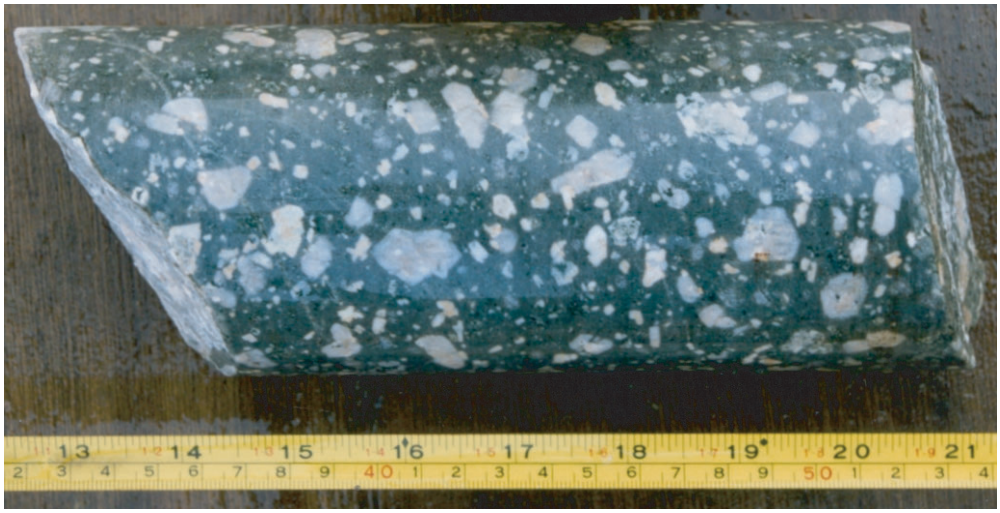

Plate A15a - Typical fresh coarsely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore D-23; Box 7, 57.3 m

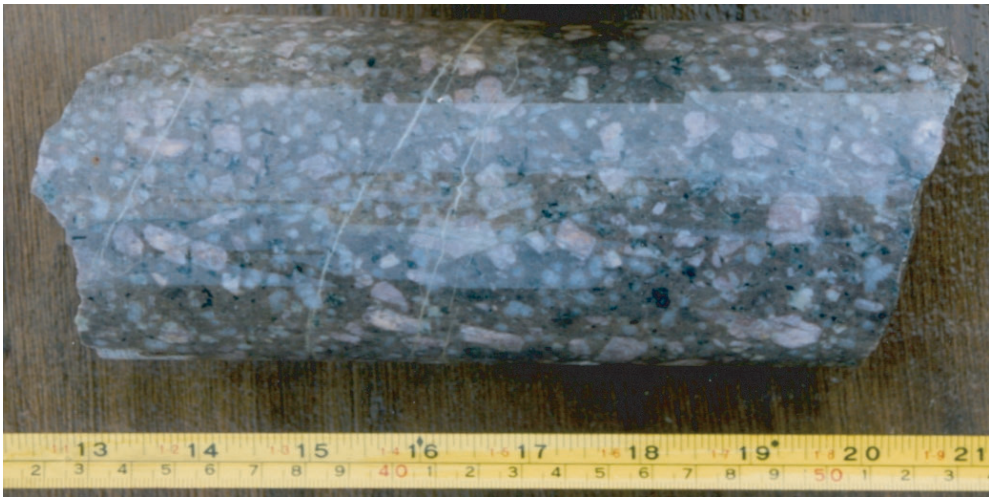

Plate A15b - Typical altered coarsely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore E-84; Box 3, 48.05 m

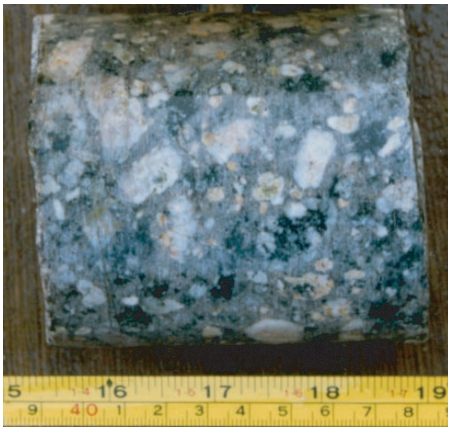

Plate A15c - Typical altered coarsely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore E-44; Box 3, 33.55 m

Plate A16a - Pervasively weathered coarsely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore D-31; Box 5, 66.5 m

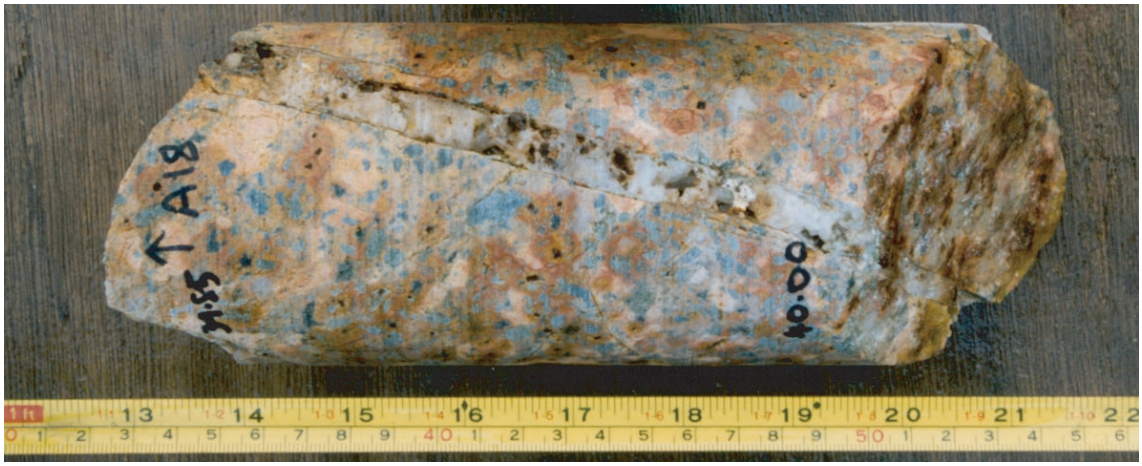

Plate A16b - Strongly altered and mineralised coarsely feldsparphyric rhyolite. Tung Chung, Site 4; Drillcore A-18; Box 3, 39.93 m

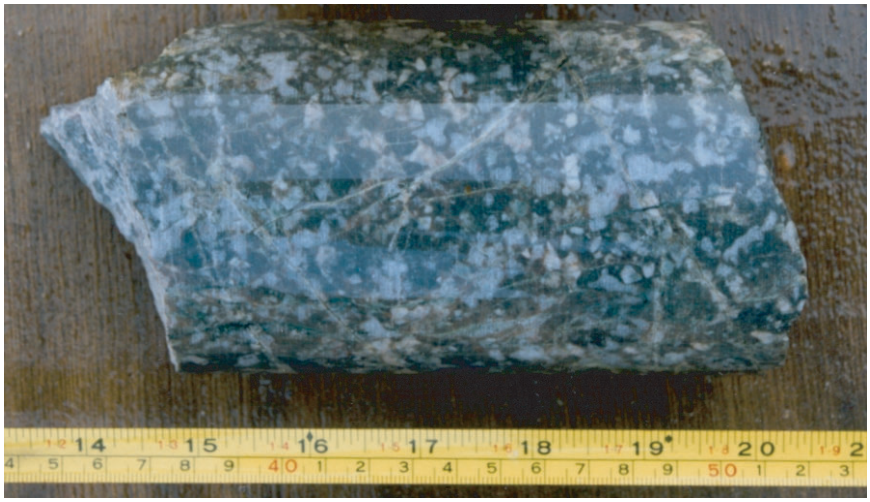

Plate A16c - Texturally modified coarsely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore G-23; Box 3, 58.7 m

Finely feldsparphyric rhyolite

Description

Rhyolite (see Section 2.19) with abundant small (mostly <5 mm) phenocrysts of feldspar.

Key diagnostic features :

(i) As rhyolite but with abundant small (mostly <5 mm) phenocrysts of feldspar (±quartz).

Comments

Less commonly encountered in Tung Chung drillcores than coarsely feldsparphyric rhyolite. Fresh rock has small white and grey phenocrysts in a black groundmass (see Plate 17). When altered, the groundmass becomes reddish or pink (Plates 18a, 18b and 19a). Pervasive weathering turns the groundmass to pinkish-orange (Plate 19b). These variants of finely feldsparphyric rhyolite are encountered in drillcores from throughout the Tung Chung area.

Reference sample no. : 8, 1, 15, 12

Plate A17 - Typical fresh finely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore E-67; Box 6, 62.6 m

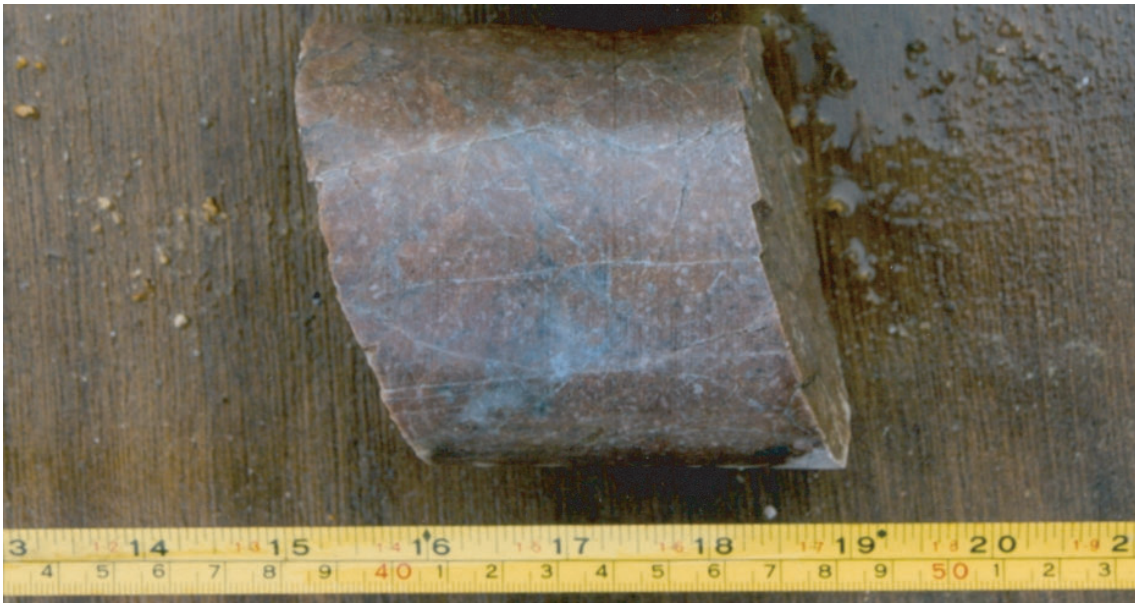

Plate A18a - Altered finely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore E-84; Box 6, 557.5m

Plate A18b - Altered finely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore D-23; Box 9, 63.3 m

Plate A19a - Altered finely feldsparphyric rhyolite with epidotisation (green alteration) around fractures. Tung Chung, Site 3; Drillcore CB-42; Box 2, 60.0 m

Plate A19b - Pervasively weathered finely feldsparphyric rhyolite. Tung Chung, Site 5; Drillcore D-8; Box 2, 29.6 m