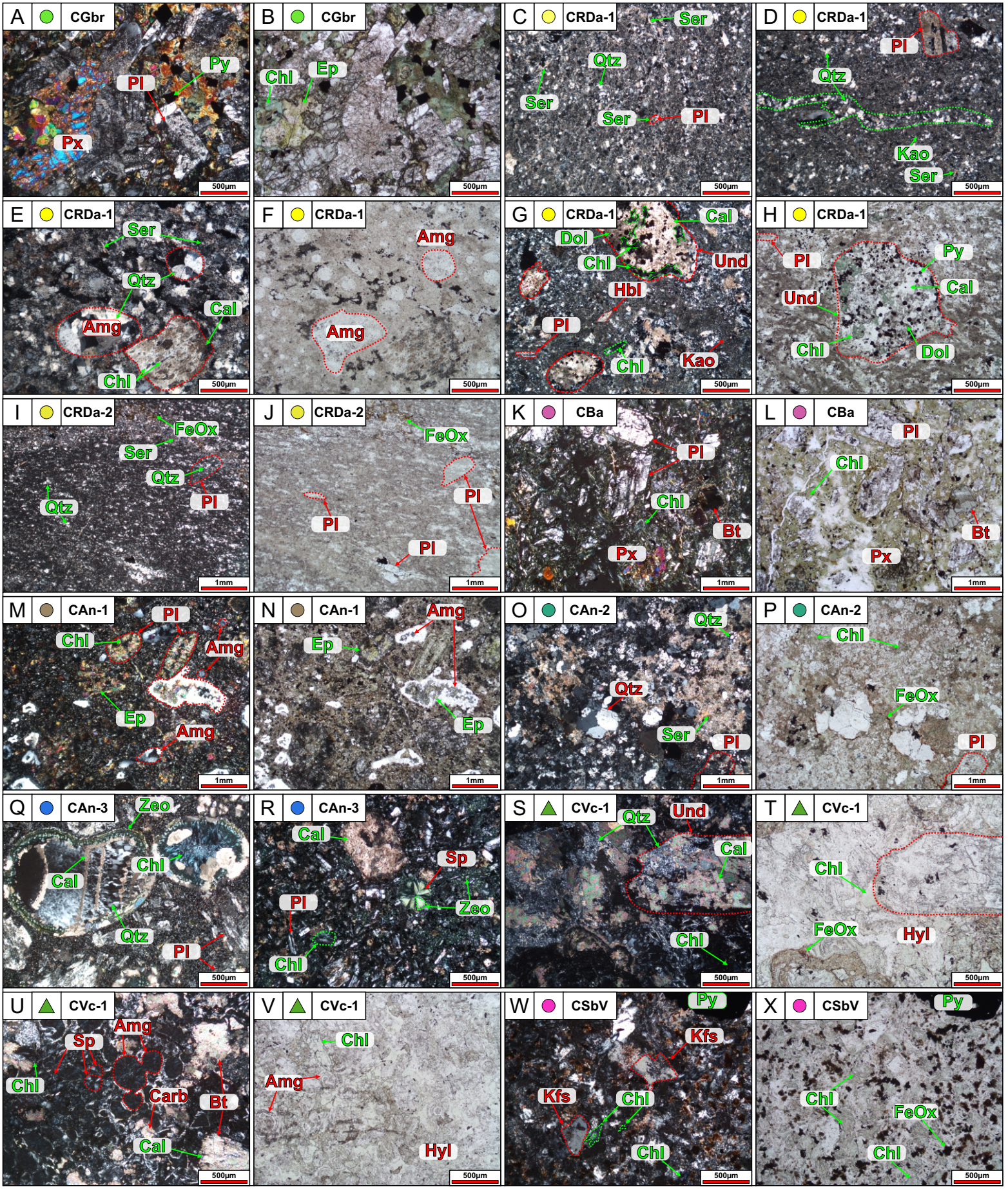
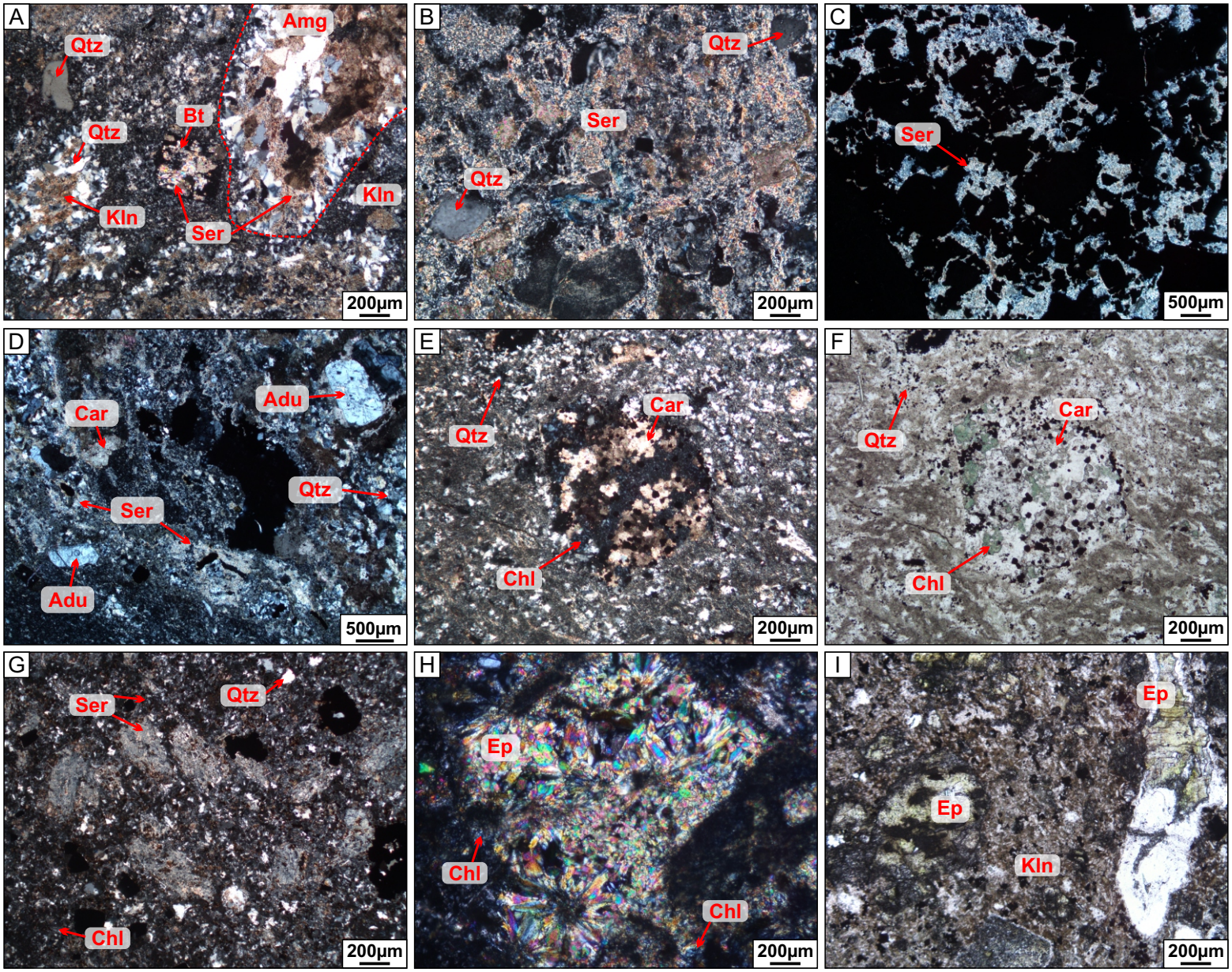
ESM 5 - Fig 1



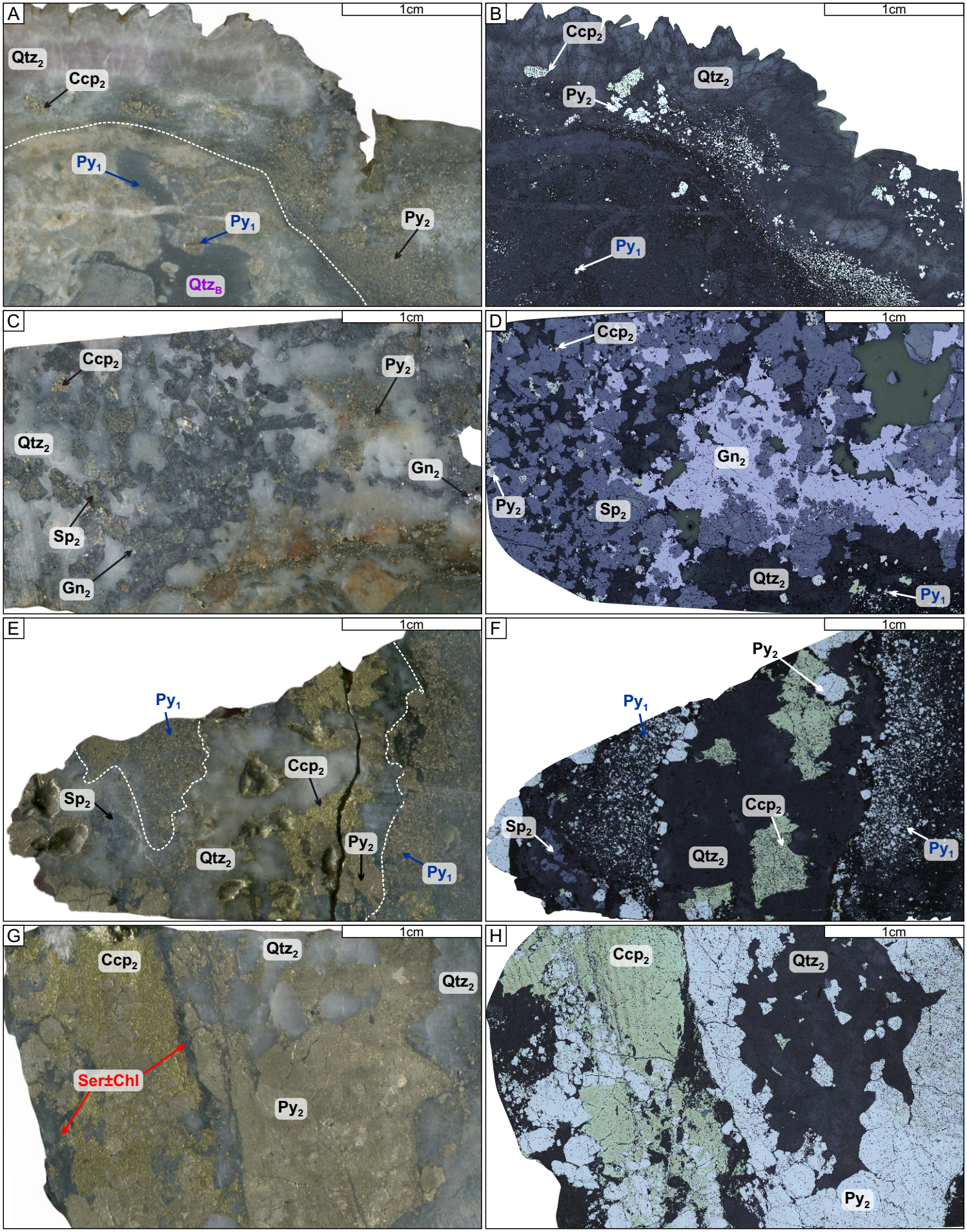
A) and B) Holocrystalline groundmass of the pyroxene-rich hornblende-bearing gabbro (CGbr) unit; C and D) the fine-grained to feldspar-phyric flow-banded and columnar rhyodacite/dacite (CRDa-1) unit with weak sericite-kaolinite alteration and minor quartz veinlets; E and F) the fine-grain to feldspar-phyric flow-banded and columnar rhyodacite/dacite (CRDa-1) unit with amygdaloidal textures; G and H) chlorite and carbonate alteration of the fine-grained to feldspar-phyric flow-banded and columnar rhyodacite/dacite (CRDa-1) unit, which have been filled by later quartz as well as sericite and chlorite alteration in the matrix; I and J) predominantly fresh or weakly altered texture of the feldspar-phyric flow-banded rhyolite/rhyodacite (CRDa-2) unit; K and L) the fine- to o medium-grained pillow basalt (CBa) unit affected by late chloritic alteration of the matrix; M and N) the medium- to coarse-grained feldspar-phyric basaltic andesite (CAn-1) unit, which consists of plagioclase replaced by epidote and chlorite; O and P) the megacrystic feldspar-phyric andesite (CAn-2) unit with rare magmatic quartz phenocrysts; Q) megacrystic amygdaloid replaced by quartz and calcite as well as chlorite in the core and zeolite on the rim within the medium- to coarse-grained feldspar-phyric variolitic basalt/basaltic andesite (CAn-3) unit; R) rare amygdaloidal texture replaced by carbonate and zeolite-altered variolite features in the CAn-3 unit S, and T) hyaloclastite texture overprinted by late chlorite and calcite in a glassy matrix in the polymictic volcanic breccia with feldspar-rich matrix, hyaloclastite and peperite (CVc-1) unit; U and V) variolites and glass shards in a micropoikilitic texture; W and X) groundmass of the fine- to medium-grained sub-volcanic (dioritic?) rock (CSbV) unit with oxidized opaque minerals. (Amg – amygdaloid, Bt – biotite, Cal – calcite, Chl – chlorite, Dol – dolomite, Ep – epidote, FeOx – iron oxide, Hbl – hornblende, Hyl – hyaloclastite, Kao – kaolinite, Kfs – K-feldspar; Pl –plagioclase, Px – pyroxene, Py – pyrite, Qz – quartz, Ser – sericite, Var – variolite,Und – undefined mineral, Zeo – zeolite).

ESM 5 - Fig 2



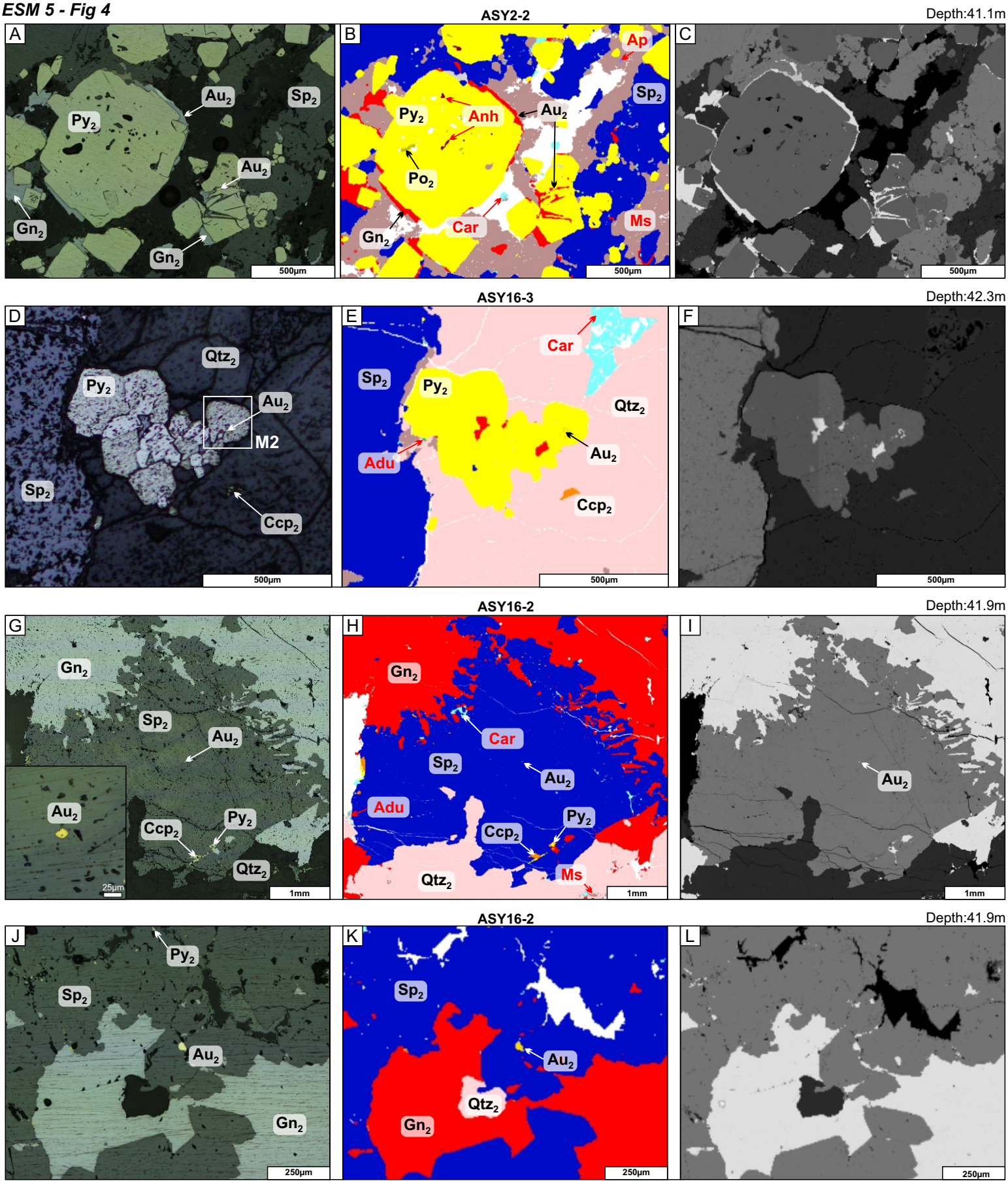
A) Highly sericitized and silicified texture with a late-stage kaolinite overprint of the polymictic phreatomagmatic breccia (CVc-3) unit. B) The fine-grained bedded rhyolitic tuff (CRt) unit exhibiting a pronounced sericite alteration. C) Relationship between opaque minerals (sphalerite-galena-pyrite±gold) and sericitic alteration. Sericite intergrown with opaque minerals. D) The polymictic phreatomagmatic breccia (CVc-3) unit affected by intense silicification, and sericitic and adularia alteration. E and F) XPL and PPL photos of an extensively altered ferromagnesian crystal (hornblende?) within the fine-grained to feldspar-phyric flow-banded and columnar rhyodacite/dacite (CRDa-1) unit. The crystal exhibits intense chlorite and carbonate replacement, whereas the matrix is predominantly affected by sericitic alteration. G) Intense sericitic alteration and silicified texture in the fine-grained to feldspar-phyric flow-banded and columnar rhyodacite/dacite (CRDa-1) unit. H and I) XPL and PPL photos of the pronounced chlorite-epidote alteration, notably observed in the medium- to coarse-grained feldspar-phyric basaltic andesite (CAn-1) unit. Epidote commonly replaces phenocrysts and is also present as fine crystals in the matrix. The matrix is also affected by a late-phase kaolinite overprint. Adu: adularia, Amg: amygdaloidal, Bt: biotite, Car: carbonate, Chl: chlorite, Ep: epidote, Kln: kaolinite, Pl: plagioclase, Ser: sericite, Qtz: quartz.

ESM 5 - Fig 3



Macroscopic and reflected light scanned views of Ore Stage 2 quartz veins and associated ore minerals. A and B) Comb-textured amethyst vein from the upper ore zone, containing chalcopyrite (Ccp_2) and pyrite (Py_2). The white dashed line indicates the contact between the host rock and the Ore Stage 2 quartz vein (Qtz_2). Disseminated pyrite-bearing clasts from Ore Stage 1 hosted by a silicified matrix (Qtz_B). C and D) Upper zone sphalerite (Sp_2) and galena (Gn_2) in a milky comb-quartz vein (Qtz_2), accompanied by pyrite (Py_2) and chalcopyrite (Ccp_2). Gold (Au_2) (not shown here) also accompanies these sulfide minerals. E, F, G and H) Pyrite (Py_2) and chalcopyrite (Ccp_2) in a milky comb-quartz vein in the lower zone of the system. The brecciated pyrite crystals (Py_2) are cemented by chalcopyrite (Ccp_2). Sphalerite (Sp_2) (not shown here) is also present in these veins.

ESM 5 - Fig 4



Gold (Au_2) and pyrite (Py_2), sphalerite (Sp_2), and galena (Gn_2) association within the upper ore zone. association within the upper ore zone. A) Ore microscopy, B) QEMSCAN, and C) backscattered electron (BSE) images of Ore Stage 2 in sample ASY2-2. Early, euhedral and subhedral pyrite crystals (Py_2) are brecciated. Free gold precipitation coincides with the brecciation event. Gold tends to be concentrated in zones with elevated concentrations of arsenic and copper. D) Ore microscopy, E) QEMSCAN, and F) backscattered electron (BSE) images of Ore Stage 2 from sample ASY16-3. Non-brecciated pyrite crystals (Py_2) are coeval with sphalerite (Sp_2) and galena (Gn_2). Free gold is present within the pyrite crystals. G) Ore microscopy, H) QEMSCAN, and I) backscattered electron (BSE) images of Ore Stage 2 in sample ASY16-2. Free gold is present as inclusions within sphalerite crystals. J) Ore microscopy, K) QEMSCAN, and L) backscattered electron (BSE) images of Ore Stage 2 from the same sample. Sphalerite (Sp_2) and galena (Gn_2) demonstrate co-precipitation with gold (Au_2), with gold being tightly associated with sphalerite.