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251123

Sample Number : 3021

Identification : Interstitially sulphide-mineralized rock, composed of silicified clasts in a chlorite matrix

Description :

The sample consists of greenish grey, ovoid to embayed lithic clasts with interstitial greenish black chlorite. Pyrite and minor chalcopyrite is conspicuous in the chloritic interstices.

A staining test revealed no K-feldspar.

In thin section the lithic clasts are seen to be rounded, but they are penetrated by stringers and disseminated flakes of chlorite, causing the distinction between clast and chloritic matrix to be vague in places. The clasts are essentially microcrystalline, allotriomorphic quartz about 0.02mm in grain size with minor chlorite. There are no ghosts of former phenocrysts or phenoclasts. In one clast there are subtle, disputable ghosts within the quartz mosaic which are consistent with undeformed vitric shards about 0.2mm in size.

The matrix between the siliceous clasts consists of bright green chlorite, up to 0.3mm in grain size, and disseminated grains of sulphide, generally subhedral pyrite 0.1 to 0.5mm in size. The grains have a tendency to occur along the boundaries of the siliceous clasts and many transgress the boundary porphyroblastically. A 5mm patch of anhedral chalcopyrite occurs with grains of quartz, up to 0.4mm in size in a structure resembling a cavity filling in enclosed by chlorite between siliceous clasts.

An approximate mode of the sample is :

65-75%	siliceous clasts
25-35%	chlorite
2-3%	pyrite
0.2-0.3%	chalcopyrite
tr	quartz with chalcopyrite

Comments and Interpretation :

This sample does not closely resemble any of the others examined for this report. It consists of rounded "cherty" clasts set in a chloritic and pyritic matrix which partly replaces some clasts. Chalcopyrite occurs with quartz as an apparent cavity filling in the chlorite matrix.

Disputable textural evidence suggests that the clasts may have been vitric tuff prior to silicification. Speculatively a vitric tuff has been silicified, hydrothermally disrupted and its clasts abraded and then chlorite and sulphides have been deposited as a cement with weak replacement features. This could happen within a hydrothermal vent.