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251142

Sample Number : 3159

Identification : Mildly deformed, partly recrystallized andesitic lithic crystal tuff with a fissure vein of coarse quartz and sulphides

Description :

The sample is lightly weathered sample of tuffaceous appearance with part of quartz fissure vein with partly oxidized sulphides adhering to one edge. The rock displays many light grey feldspar phenoclasts in a medium grey, somewhat wispy matrix.

A cobaltinitrite staining test revealed minor fine grains of K-feldspar.

In thin section the vein is seen to consist of fissure-style, weakly strained quartz (about 0.1 to 3mm), partly oxidized pyrite and pale yellowish sphalerite (about 0.4 to 1mm) and a black opaque mineral which may be weathered galena.

The adjacent host is a mildly deformed rock, composed of many phenoclasts (about 0.3 to 2mm) and volcanic lithic clasts (about 1 to 5mm and commonly obscured by deformation and recrystallization) and a subordinate matrix of chlorite, sericite and fine feldspar.

Most of the phenoclasts are optically positive (aobite-oligoclase), twinned grains, deformed but mainly free of inclusions. Some stretched chlorite-rutile aggregates may reflect mafic clasts. There seems also to be minor sphene. Many lithic clasts are porphyritic or possibly tuffaceous intermediate felsite or andesite, but some are fine untwinned plagioclase and chlorite with hints of perlitic fractures reflecting former glass.

There are rare grains of sphalerite and pyrite (about 0.05mm and finer) in a few chloritic shear fractures.

An approximate mode of the host rock is :

25-35%	plagioclase phenoclasts
50-60%	intermediate lithic and recrystallized vitric clasts
5-6%	chlorite, mainly in the matrix
4-5%	matrix sericite
4-5%	matrix feldspar (some potassic)
0.2-0.3%	rutile and (?) sphene
0.05%	sphalerite and pyrite

Comments and Interpretations :

The host rock is considered to be mildly sheared, partly recrystallized lithic crystal tuff of andesitic derivation. It does not seem likely to have experienced more than mild hydrothermal alteration and it is possible that its chlorite and sericite is mainly, if not wholly of dynamothermal metamorphic origin, since most of it is restricted to shear fractures. The few grains of sphalerite and pyrite in shear fractures may have migrated from the fissure vein of quartz and sulphides, rather than vice versa.