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February 23, 1974

Peter Lewis
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Dear Peter:

Thank you for the letter of February 12th. I am glad to hear that you are going back for your Ph. D. under Ramsay.

Things are going fairly well here. I am presently writing up my thesis but have a pile of data to organize and try and make some sense out of.

With regards to your enquiries, please find enclosed a copy of my thesis proposal. Most things laid out here are still being incorporated in the thesis although the emphasis on certain aspects may have changed somewhat. This proposal should give you some idea on just what I am covering in my work.

Two chapters of my thesis would appear to contain data that may be of interest to you and probably overlap somewhat with the work that you have proposed. I am writing a chapter on the structural geometry of the host rocks for the Faro deposit describing in detail the mesoscopic structural elements in the pit and expanding the scale to cover the Faro grid area. This description will cover the fabric elements associated with each of the $D_1 - D_5$ events.

Another chapter of my thesis will deal with the metamorphism of the massive sulphides and related textures. The sulphides contain a host of good examples of metamorphic textures that will be documented - recrystallization, large pyrite porphyroblasts, triple junctions etc. As well, the main penetrative metamorphic foliation found in the host rocks (S_2) can be shown to be parallel to compositional banding, layering and "form orientation" of sulphides within the sulphide mass (S_2). This is the only fabric element that I can relate from the host rocks into the sulphides. No fabric can be seen in the sulphides that I can relate to my S_3, S_4, S_5 , axial planar foliations in the silicates. However, these features are not even penetrative throughout the silicates on the scale of the pit and any development of them in the sulphides could have been destroyed by later recrystallization of the sulphides.

Please understand that my observations in relating the structural fabric in the silicates to that seen in the sulphides is based only my investigations in the pit, on hand samples in the lab and on study of numerous polished and thin sections. I have done ^{NO} work on the sulphide fabric using an X-ray goniometer as you have suggested.

I think that a project as you have suggested would be very interesting. I am confident that you would be able to relate D_2 fabrics with no problem but would be pessimistic about anything younger.

Concentrations of massive pyrrhotite containing a good S_2 metamorphic foliation defined by "form oriented" pyrrhotite grains occur in the NW corner of the pit. Whether these pyrrhotites exhibit a preferred orientation of crystal axes could be determined on the goniometer and has not been done by me.

SULPHIDES IS ESSENTIALLY RECRYSTALLIZED MASSIVE PYRITE WITH INTERSTITIAL SPHALERITE AND GALENA, COMPOSITIONAL BANDING (S_2) DEFINED BY VARYING AMOUNTS OF THE

The main bulk of the various sulphides can be seen poorly to moderately developed throughout much of the sulphide mass. Here, however little or no "form oriented" sulphides are noted. During recrystallization pyrite, being higher on the crystalloblastic scale, develops euhedral to subhedral grains while the softer sphalerite and galena are forced to fill the interstices between these grains. Sphalerites in this type of ore would be fairly equigranular or have their long axes controlled by available space between the pyrites. Nevertheless, this does not rule out the possibility that all of these sulphides may in fact show some preferred orientation of their crystal axes.

Anyway, enough of this B.S. I could write numerous pages more.

My chapter on structure is not all on paper yet but I would be happy to send a copy of it to you shortly along with stereo plots of structural data (~ 2-3 weeks).

Please let me know if I can be of further assistance.

Good luck on your Ph. D.

Yours truly,

John B. Heslop