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John L. Lufkin and Paul Barton

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—John L. Lufkin and Paul Barton

It has been over 45 years since I first heard my co-author speak at the Short Course on Sulfide Mineralogy at the GSA Meetings in Miami, Florida, when he said "it is certain that ore textures present much information, but it is equally certain that there are few areas of scientific endeavor that are more subject to misinterpretation of ore textures. The interpretation of ore textures is the most maligned, most difficult, and the most important aspects of these (sulfide) rocks." (Barton, 1973, p. B-3) This is still true today, unfortunately. Our task today, however, is to focus on the latest, and perhaps the most challenging texture yet. It received its name one day by the well-known petrologist and microscopist, Jim Craig, Geology Professor at VPI, when he exclaimed, "this is not a texture, it is a disease!", and doggone it, the name stuck. More accurately, the texture should be described as disseminations or inclusions of dust to very fine-grained chalcopyrite in sphalerite.

Since the time of Paul Ramdohr, the "father of ore microscopy", it has been learned that ore textures are developed primarily a) as open-spaced fillings, and as processes of b) replacement, c) exsolution, and more recently d) coprecipitation.

Regarding "chalcopyrite disease," several papers have concluded that chalcopyrite has replaced the host sphalerite. Nakano (1937) was the first to suggest that chalcopyrite blebs in Kuroko ore were formed by replacement of zinc sulfide. All investigators of the disease, including Barton, 1978; Eldridge et al., 1983; Barton and Bethke, 1987; Eldridge et al., 1988, have suggested that copper was added to form the chalcopyrite in inclusions accompanied by loss of zinc and conservation of iron.

In a more recent paper by Bortnikov, et al, Econ. Geol, 1991, their microprobe data on the iron contents in sphalerite from at least one of their Russian deposits was nearly identical, both in zones without chalcopyrite blebs and in zones that are rich in chalcopyrite inclusions. This suggests to the authors that the texture resulted from coprecipitation, rather than by replacement.

We are reminded of Ramdohr's comment made almost 30 years ago, "...that many textures can be formed in a variety of ways and that even where at present only one mode of formation is known the possibility of several modes of formation exits" (Ramdohr, 1980, p. 195). During this presentation numerous photomicrographs will be shown featuring examples of ore textures produced by replacement, exsolution, and coprecipitation, as well as some unknowns, including the vermicular or "wormy" texture.