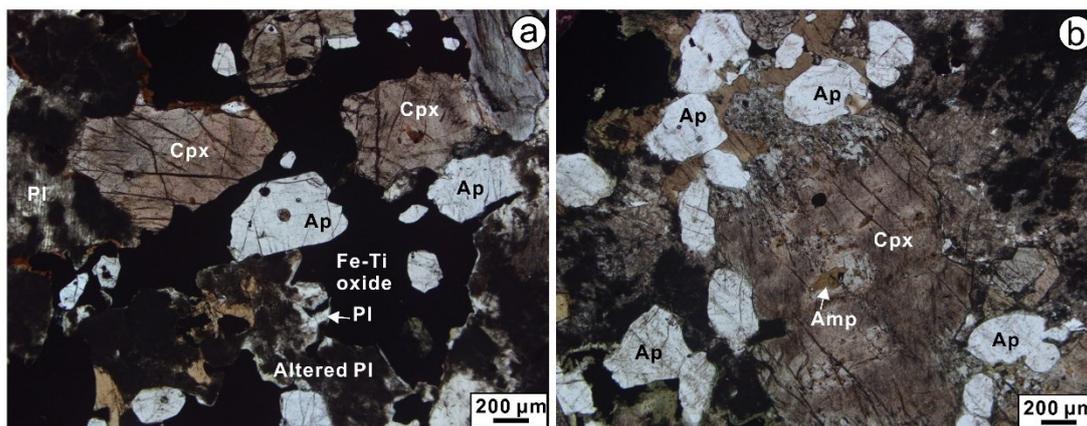
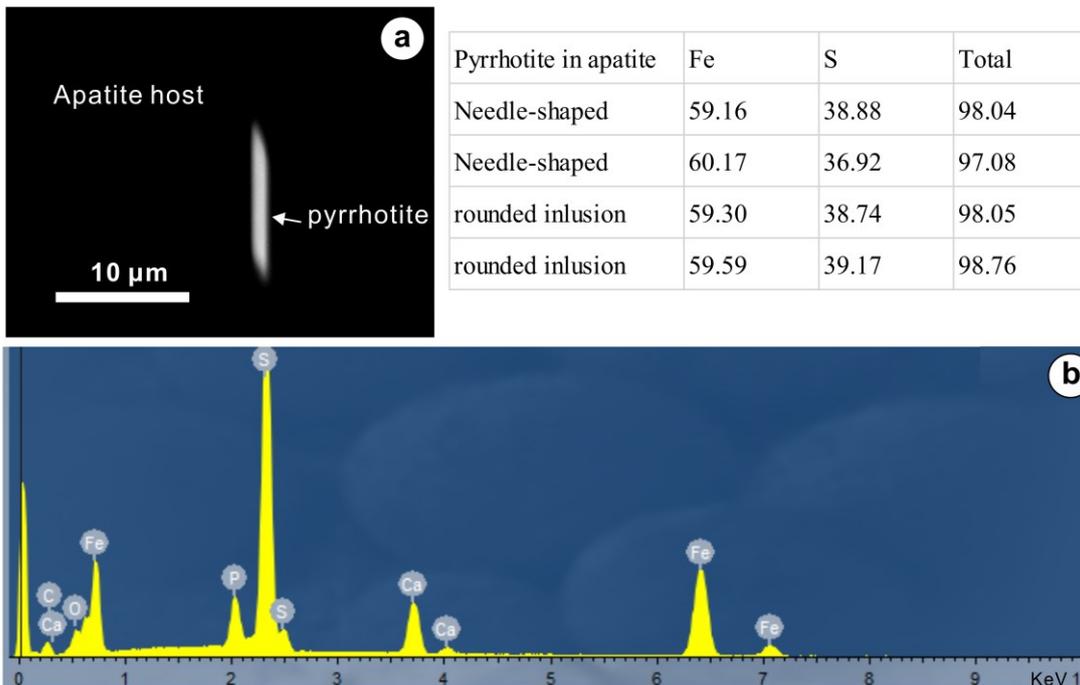


Supplemental Fig. 1



**Supplemental Fig. 1** Photomicrographs of fluorapatite (Ap)-bearing rocks of the Hongge layered intrusion showing that plagioclase (Pl) commonly experienced saussuritization and albitization and the relicts of primary plagioclase can be observed in some altered grains (**a**), whereas clinopyroxene was partly altered to amphibole in the intensely altered samples (**b**). Under plain polarizer and transmitted light. Sample HG1532 (a), HG1529 (b).

**Supplemental Fig. 2**



**Supplemental Fig. 2** (a) BSE image of a micron-scale, needle-shaped pyrrhotite inclusion within fluorapatite in the Hongge intrusion. (b) Energy dispersive X-Ray spectroscopy (EDS) analytical result for the needle-shaped inclusion within apatite showing that the inclusion is composed of Fe and S. Electron probe micro-analyzer (EPMA) results of needle-shaped pyrrhotite and rounded pyrrhotite inclusion enclosed in fluorapatite are shown for comparison.