The genesis of the Cu-Mo deposits related to island-arc type plutonism: Evidence from the Şükrüpaşa granitoid, Kırklareli, Turkey

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The Şükrüpaşa granitoid is one of the upper Cretaceous granitoids located in the Srednogorie - Stranja - Pontid Belt. In the Şükrüpaşa area, the rocks are made up of Mesozoic limestones, schist, calc-schist, and metasandstones which unconformably overlay a basement of metamorphic rocks and the intrusive rocks of Cretaceous age. The mineralization occurs as pirometasomatic type in the contact zone between the intrusive and sedimentary cover rocks, and as disseminated, fine vein, and stockwork types in the calc-alkaline magmatic rocks, mainly including granodiorite. Major ore minerals are chalcopyrite, pyrite, molybdenite, and scheelite. The Şükrüpaşa orebodies are strongly enriched in certain trace elements. In addition to the commercial components of the ore (Cu, Mo), most samples show substantial quantities of W, Bi, Zn, Pb, Au and Te. Average $\delta\ ^{34}S$ values for chalcopyrite, galena and pyrite are 2.43, 3.35 and 5,24 $^{o}/_{oo}$ respectively, suggesting an igneous source for both the sulphur and metals. Fluid inclusions in main-stage sphalerite homogenize at 253^{o} to 330 ^{o}C with salinities ranging from 1.3 to 17,9 eq. wt % NaCl. The deposits formed during the interaction of two aqueous fluids: a higher-salinity fluid (probably magmatic) and a dilute meteoric fluid.