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Alteration Mineralogy and Geochemical Characteristics of Porphyry Cu-Mo Mineralization in Domaniç (Kütahya) Area

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The study area is located at 30 km northwest of Domaniç (Kütahya) and covers on approximately 250 square kilometers. The Devonian (Paleozoic) schists which are composed of gneiss, mica schist and chlorite schist is the oldest unit of the study area. This units are overlain unconformably by the Permian Allıkaya Marbles. Eocene granodioritic intrusives cut other rock series and located as a batholite. Magmatic units present porphyric and holocrystalline textures. Granodioritic intrusions are represented by tonalite, tonalite porphyr, granodiorite, granodiorite porphyr, granite, diorite, diorite porphyries. Potassic, phyllitic and prophyllitic hydrothermal alteration zones are determined in host rocks and wallrocks. Mineralizations are observed as disseminated, and stockwork types within the granodioritic rocks. Ore minerals are pyrotine, pyrite, chalcopyrite, molybdenite, rutile, bornite, sphalerite, marcasite and limonite. Geochemically, it is of sub-alkaline affinity, belongs to the high-K, calc-alkaline series and displays features of typical I-type affinity. They show enrichment in large-ion lithophile elements (LIL) and depletion Nb and Ti indicating a subduction zone related magmatic signature for their origin. δ18O (quartz) values range from 8,8 to 12,1 ‰δ18O (biotite) and δD (biotite) values range from 2,6 to 6,1 ‰ and -87 - -125 (SMOW). These values indicate that mixture magmatic-meteoric of hydrothermal solutions origin which are potassic to propylitic zones. δ13C (calcite) values range from 1,9 to 3,3 ‰ (PDB). Calcite values within the marine carbonates in the study area.