Metals zone distribution in old ore deposits Egypt: A pathfinder for site of chief metal accumulation

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Geochemical zoning, is a reliable exploration criterion for revealing site of accumulation of chief ore metal . Studies established the clark of concentration CC and zoning coefficient to investigate the old exploited deposits of gold, zinc-copper, molybdenum–silver hosted by the Pan-African ophiolitic, island arc and cordilleran-extension rocks of the Nubian shield. These studies considered the general zoning sequence. Be, Ni, Co, B, Sn, U, Mo, W, As, Bi, $Cu_{(1)}$, Zn, Pb, $Sn_{(2)}$, Au, Ag, B, $As_{(2)}$, Cu, Sb, Hg, Te, I. The zoning sequence of Sukkari mineralization upward is Au, Sn, Mo, Zn, As, Ni, Pb, Ba favoring gold accumulation site deeper than ~ 400 m .In Abu Marwat mine the zoning sequences favored increase of gold northward as follow :Upper zone northern part Ag, Zn , Mo, Pb, Ba, Au, sn, Cu, Au and lower zone northern part Sn, Ni. Pb, Ba, Au, Zn, Cu, Mo, Ag. The recommended site of gold accumulation is meta-volcanic rocks and quartz veins bordering Wadi Abu Marwat from north and their extension under the Wadi alluvial. The study of Gattar molybdenite-silver occurrence recorded gold. The vertical zoning sequence from altitude 10 m to 953 m . is Au, Cu Pb, (Co, Ni) , Ag, Zn, Sb, (Sn-W), Cr, Mo enhanced 2 mineralization phases and gold accumulation at deeper levels . In Um Zuriq mineralization at Wadi kid in Sinai , the data of a drill hole penetrated repeated sheared and altered chlorite schist and garnet biotitic andalusite schist forming two limbs of a recumbent fold placed basal mineralization zone at south western side above the top of the zone at north eastern part. The recorded sequence Cu(Zn, Pb), Au, Ag upward in the basal limb is normal and another inverted one for the upper limb. The mineralization is syngeneic to the schist. The arc-like island arc meta-volcanic rocks hosting seven As, Pb, Zn, Cu sulfides litho- structurally controlled forming a belt. In El Atshan mine variable high CC values of only Cu and Zn in all rock units favored that the volcanic magma was bearing Cu-Zn. The recorded high Pb and As contents in the talc carbonate and serpentinite enhanced its relation to dynamo-thermal activity during thrusting. The vertical zonal sequence is Fe, Cu , Zn (Pb-As) upward . These features were recorded at the Derhib mine. Similar deposit was recorded in Wadi Allaqi.

Late Neoproterozoic Nuqara Dokhan Volcanics, Central Eastern Desert, Egypt: Geochemistery and petrogenesis

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The Neoproterozoic Nuqara Dokhan volcanics are one of the northernmost outcrops of the Arabian- Nubian Shield . The origin and tectonic setting of these rocks is highly debated .Debate concerns the tectonic setting they formed as a result of subduction (El Gabby et al, 1990) or crustal extension(Stern,1994).Nuqara dokhan volcanics comprises two main rock suites: (a) an intermediate volcanic suite, consisting of basaltic andesite, andesite and their associated pyroclastics rocks; and (b) a felsic volcanic suite composed of dacite, rhyolite and ignimbrites .The two suites display well-defined major and trace element trends and continuum in composition with wide ranges in SiO_2 (52-75.73%), CaO (9.19-0.22%), MgO(5.29-0.05%), Sr (1367-7.4ppm), Zr (688.5-172.7ppm), Cr (207-0.4 ppm), and Ni (86-0.2ppm).The Nuqara Dokhan volcanics are characterized by strong enrichment in LILE relative to HFSE and affiliated to the calc-alkaline subduction – related magmatism .Modeling results display that the evolution of these rocks was governed byfractional crystallization of plagioclase, amphiboles, pyroxene, magnetite and apatite in the intermediate varieties and plagioclase ,amphibole, magnetite ,apatite and zircon in the felsic varieties. The obtained mineral chemistry of these volcanics reveals: (a) Plagioclase range in composition from An_{59} to An_{55} in basaltic andesite and from An_{49} to An_{27} in andesite. (b) Alkali feldspars have sanidine composition. (c) Clinopyroxenes have augite composition .The low Al_2O_3 contents (2.055-5.588 wt %) indicate that clinopyroxene crystallized at low – pressure. (d) Amphiboles have ferro hornblende to ferro barrosite composition.

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DOI:10.1180/minmag.2013.077.5.8