The Precambrian Chromites of the Eastern Desert (Egypt): Chromite Mineral Chemistry

[1]ATTIA, A.K.M., [2]HILMY, M.E., [3]GARUTI, G., [4]ZACCARINI, F., [5]BOULIS, S.N.,
[1]Central Metallurgical R&D Institute, P.O. Box 87, Helwan, Cairo-Egypt; [2]Dept. Of Geology, Ain Shams University, Cairo-Egypt; [3]Dept. Of Earth Sciences, University of Modena, Italy; [4]Dept. Of Earth Sccience, University of Bolognia, Italy; [5]Central Metallurgical R&D Institute, P.O. Box 87, Helwan, Cairo-Egypt

Chromite deposits occur in the Eastern Desert of Egypt related with altered and metamorphosed Precambrian ophiolites. The composition of chromite has been investigated by electron microprobe in selected samples from a number of localities. Chromite generally displays rims of magnetite and cores of chromite grains and shows TiO_2 <0.30 wt% and Fe_2O_3 less than 6.0 wt% and Cr-Al and Fe-Mg distribution in agreement with the attribution of chromites to the podiform type. Two main groups of chromite have been identified corresponding to Cr-rich (Cr_2O_3 = 55-63 wt%) and Al-rich (Al_2O_3 = 19-27 wt%) ores. This feature previously unreported for chromites of this area suggests that the Precambrain ophiolites of the Eastern Desert are similar to Mesozoic and Paleozoic ophiolite complexes characterized by bimodal distribution and vertical zoning of the chromite deposits. The low silica and iron content recorded in the studied chromite make them quite suitable for refractory purposes.