

The Characteristics of Chromite in the Lateritic Nickel Deposit from East Sulawesi Ophiolite, Indonesia

Ibnu Munzir, Marek Michalik

Institute of Geological Science, Jagiellonian University, Krakow, Poland

The chromite present in the peridotite mantle in ophiolites offers valuable insights into the evolution and formation of ophiolites. Podiform chromites have been identified in the lateritic nickel deposit within the Phanerozoic East Sulawesi Ophiolite (ESO) located at Sulawesi Southeast Arm. As a result of metamorphism and significant deformation, the majority of chromite grains in the ESO peridotites are present in various types, including chromite and aluminum-rich chromite. Most of the Al-rich chromites are found in the primary chromite, while Cr with positive correlations with Fe are found in secondary chromite. Chemically, Fe substitutes the Al in the primary chromite during the weathering process causing the increasing value of Fe with the lowering of Al. The values of major and trace elements largely vary from both types, indicating that the chromites have experienced a strong alteration and element mobilization. Major, minor, and trace elements that occurred in the chromites are calculated to determine the tectonic origins and the peridotites mantle evolution in the ESO. The chromite characteristics from the Phanerozoic ESO peridotites mantle have higher Cr# values and lower Mg# values, indicating a higher degree of Mg mobility. In-situ major, minor, and trace element characteristics of podiform chromites in the ESO show a strong signature of peridotite geological evolution.