

**New perspectives to decipher the
Geochemical and Geophysical
Signatures to Identify Concealed
Ultramafic bodies Associated with
Chromitite Lenses in Kathpal,
Sukinda, Orissa, India.**

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The Sukinda Chromite field is the world fourth largest chromite producing provinces with annual production of ~190-200 Metric Tonnes/Year. The prediction and studies suggest that by 2030, In India, the chromite demand vs supply is increased and resources will also be rapidly depleted. We attempted, to use classical geophysical methods like the Gravity, Magnetics, Induced Polarisation (IP) and Electrical resistivity tomography (ERT) coupled with ground geology to find the extensions of ultramafic bodies associated with lithounits of Chromitite. The results reveal two zones of concealed chromite mineralization in Kathpal block, Sukinda extensions. In Kathpal, One mineralized zone expressions, a high residual Bouguer anomaly amplitude of 0.350 mGal with a corresponding high magnetic anomaly of 2670 nT over a width of ~ 30m. The second mineralized zone with high residual Bouguer anomaly amplitude of 0.129 mGal and a high magnetic anomaly of 1320 nT over a width of 50 m. In corroboration with gravity and magnetic data, the ERT data is also comparable to resistivity data sets at depths of ~ 60 and ~120 m depth with ultramafic rocks thickness varying between 30-40m. Hence, the results suggest, that the ultramafic bodies are associated with a denser material like chromite and forms and nature of chromite ore could be of either pinch and swell, lenses or as typical layering etc.,