

Field and Petrographic Study of Mafic and Ultra-mafic rocks of Khararpeth area Chandrapur District, Western Bastar Craton, Central India

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Abstract: Mafic and ultra- mafic rocks which have metamorphosed in various degrees are relatively common throughout the Khararpeth area of Chandrapur district. Important source economic mineral including platinum, chromite serpentine, talc, asbestos and corundum. Enclaves of mafic and ultra-mafic bodies (gabbro- pyroxenite) exclusive of that extrusive origin. Mafic dykes are an important feature of the crustal evolution in the stabilized Archaean cratons all over the world. They constitute a common expression of crustal extension in both oceanic and continental environments, and represent major avenues by which basaltic magma is transferred from mantle to upper crust.

Keywords: Field, Petrography, Mafic and ultramafic rocks, Khararpeth, WBC.

Introduction:

Understanding of the crustal evolution of Peninsular India in totality would be incomplete without a proper understanding of the characteristics of the dyke rocks. The emplacement of the dykes usually postdates major magmatic and tectonic cycles. There may also be cases where they antedate or even be contemporaneous by Dora et al. (2011) mapped the area systematically and reported nickel group and Platinum group of minerals from the Gondpipri area. Dora et al. (2011) carried out preliminary investigation for Ni, Co and PGE in the ultr-mafic intrusives around Gondpipri area. Kumaravel et al. (2012) investigated for establishing zones of copper and associated mineralisation in the area between NaiDilli-Dighori and LalHeti-Dugala. Dora (2012) carried out detail investigation for PGE and nickel in the ultra-mafics rocks of Heti area.

Geological setting:

A Granulites suit of rock exposed in the area and situated at the northern shoulder of Godavari graben are named as Gondpipri granulites (Shashidharan, 2002, 2007). They represent the extension of Bhopalpatnam granulite (2450 Ma Rb-Sr age; Mishra et al., 1988) and have also been correlated with the Karimnagar Granulites (2500 Ma. Rb-Sr age; Rajesham et. al., 1993) across the Godavari graben in the Dharwar Craton.

This older sequence is intruded by under formed and unmetamorphosed granite of 2.25 Ga age along the southern thrust zone called Mul granite. It extends over an area of about 300 sq km (Sasidharan, 2007; Mukharjee et al., 2007) and bordered by the NW-SE trending Pranahita-Godavari rift bounded basin containing Meso-to Neoproterozoic Pakhal-Penganga-Sullavai group of sediments exposed along N-S to NNW-SSE trending north




Discussion and conclusion:

Mafic dykes are an important feature of the crustal evolution in the stabilized Archaean cratons all over the world. They constitute a common expression of crustal extension in both oceanic and continental environments, and represent major avenues by which basaltic magma is transferred from mantle to upper crust. Tonalite gneiss, pyroxene granulite, charnockite, mafic-ultramafic complex consisting pyroxenite, meta-gabbro and anorthosite are the main components of the granulite belt mafic enclaves in DQDT sometimes show gradational diffusive margin with apparent addition of mafic components into the felsic rich zones. This might be due to partial mixing of mafic and felsic magmas. The rock types of the area show polyphase deformational history and have left their imprints in the form of different planar and linear structures such as shear zones, folds, faults, brecciation, variable sets of joints, and different trends of foliations noticed in basement rocks. Pyroxenites show granulitic texture. Cumulate texture is also visible where pyroxenes are cumulus, while plagioclase is intercumulus. Meta-gabbros associated with pyroxenites also show granulitic texture with well-developed triple junctions. Mafic intrusive present in the area belong to two episodes of intrusive activity viz. pre-metamorphic and post- metamorphic. The former (older mafic intrusive) are seen as metamorphosed bodies such as meta-gabbros, meta-dolerite etc. exposed as dykes and oval shaped intrusions within the gneisses (showing crude ophitic to subophitic texture), whereas the post -deformational ones (younger mafic intrusive) are relatively fresh with original igneous textures (ophitic to sub-ophitic) well preserved and represented by gabbro and dolerite. The Bastar Craton has a potential for hosting smaller PGE deposits. Reserch work is carried out preliminary investigation for Ni, Co and PGE in the ultrabasic intrusive around Gondpipri area and number of mafic-ultramafic rocks and dyke swarms have been investigated from the Bastar Craton, Central India.

References:

- [1]Cox, K.G., Bell, J.D., and Pankhrust, R.J. (1979) The Interpretation of Igneous Rocks. George Allen and Unwin, London.
- [2]Dora, M.L. (2009) Preliminary investigation for copper and associated metals in southern extension of Thanewasana block, Chandrapur and Garhchiroli districts, Maharashtra. Unpub. Rep. Geol. Surv. India, Nagpur.
- [3]French, J.E., Heaman, L.M., Chacko, T. and Srivastava, R.K. (2008) 1891-1883 Ma southern Bastar-Cuddapah mafic igneous events, India: A newly recognized Large Igneous Province. Precamb.Res., v.160, pp.308-322.
- [4]Holmes, A.(1930) Petrographic methods and calculations. London, ThomosMurby& Co., 515p.




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