

## Geochemical Characteristics of Mafic Dykes from Wairagarh Area, Western Bastar Craton, Central India

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### Abstract

The NW-SE trending mafic dykes intrude the Amgaon gneisses and Dongargarh granite in Wairagarh area of the Western Bastar Craton (WBC). These dykes consist of mainly the clinopyroxene, plagioclase feldspar and minor amphiboles and titanomagnetite. These are metamorphosed to green schist facies. The mafic dykes show tholeiitic trend on multivariate geochemical plots and moderate range of variation in SiO<sub>2</sub> (50.15 to 52.84 wt.%), MgO (5.13 to 7.64 wt.%), Fe<sub>2</sub>O<sub>3</sub> (12.97 to 15.08 wt.%), Al<sub>2</sub>O<sub>3</sub> (12.74 to 14.48 wt.%) and the Mg<sup>#</sup> value ranges from 37.74 to 51.21. Strong positive correlation of Sr, Th, Hf, U, Ga, Ta, Pb, Cs, Rb and HREEs negate the effect of post magmatic alteration. Negative Nb, Ta and Ti with positive Zr and Hf anomalies suggest the effect of assimilation and crustal contamination, which is also supported by Ce/Nb (0.23-0.33) equivalent to the crustal value. Negative ΔNb value suggests depleted mantle source for the mafic dykes of the WBC. Restricted range of (Gd/Yb)<sub>N</sub> (1.05-1.67), (Dy/Yb)<sub>N</sub> (0.94-1.25) and (Sm/Yb)<sub>N</sub> (1.22-2.26) advocate that these mafic dykes were derived from spinel lherzolite source. About 5-15% degrees of partial melting of depleted mantle source is envisaged for the generation of the mafic dykes. The field and geochemical evidences suggest that the mafic dykes of Wairagarh area, WBC were emplaced within continental rift environment.

**Keywords:** Mafic dykes, Geochemistry, Wairagarh, Bastar Craton, Central India.

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