

## PETROLOGY AND GEOCHEMISTRY OF PALAEOPROTEROZOIC MAFIC DYKES FROM KAWADGAON, CENTRAL INDIA: PETROGENETIC AND TECTONIC IMPLICATIONS

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### Abstract

The petrographic studies on mafic dykes (MDs) from the Kawadgaon area, Bastar Craton, Central India, reveal that they contain plagioclase feldspar and hornblende as major minerals, epidote, biotite, apatite and titanite as accessory and the opaques are represented by pyrite and iron oxide (magnetite). Geochemically, the major and minor oxide data (average contents) indicate 48.39% SiO<sub>2</sub>, 1.28% TiO<sub>2</sub>, 12.61% Al<sub>2</sub>O<sub>3</sub>, 15.56% Fe<sub>2</sub>O<sub>3</sub> (total), 5.73% MgO, 0.20 % MnO, 9.78% CaO, 0.25% P<sub>2</sub>O<sub>5</sub> and 3.2% total alkalis (Na<sub>2</sub>O + K<sub>2</sub>O) with Mg# varying from 31 to 61. Trace element abundances (average contents) are 151 ppm Cr, 63 ppm Co, 71 ppm Ni, 153 ppm Cu, 104 ppm Zn, 17 ppm Ga, 45 ppm Rb, 121 ppm Sr, 38 ppm Y, 77 ppm Zr and 200 ppm Ba. Total alkali-silica (TAS) diagram shows sub-alkaline tholeiitic nature. The Al, Fe<sup>(0)</sup> + Ti and Mg cation triangular plots also suggest the MDs to be of tholeiitic basalt-type, which is further supported by the presence of iron oxide. Differentiation of major oxides points out fractionation of major mineral constituents including plagioclase and crystallization of accessory minerals like apatite and titanite at later stages. Discrimination diagrams suggest Mid-Oceanic Ridge Basalt-type tectonic setting for the genesis of the investigated MDs.

*Keywords:* Petrology, Geochemistry, Mafic dykes, Tectonic setting, Kawadgaon, Bastar Craton, Central India.