

On the Occurrence of Rocks of Lamproitic Affinity in Singhbhum Granite, near Rajnagar-Tiring Area, District East Singhbhum, Jharkhand

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Abstract: This note records the occurrence of a lamproitic body traversing the Archaean greenstone belt in Singhbhum craton near Rajnagar-Tiring area in east Singhbhum district of Jharkhand. This discovery opens up new vistas of search for similar rocks in this region.

Keywords: Lamproites, Singhbhum granite, Rajnagar Tiring area, Jharkhand.

Introduction

Lamproites are gaining much significance for their importance in diamond exploration. In India, though lamproites are reported from calc-alkaline granitoid-gneiss terrain, rift related Gondwana sequences, alkaline complexes of southern and western India, orogenic belts of Himalayan region and Deccan volcanic province (Rock and Paul, 1989; Madhavan et al. 1998) the lamproites are so far known either

from Gondwana sequences (Rock and Paul, 1989) or from peninsular gneissic regions of south India (Krishna lamproite field, Reddy et al. 2000). Despite its vast aerial extent, either lamprophyres or lamproites are not reported so far from the Precambrian Singhbhum granitoid-gneiss complexes. The only example known is the vogesite from near Pat in Lohardaga district of Bihar (Pathak, 1984) which is now being questioned on petrochemical grounds (Rock and Paul,

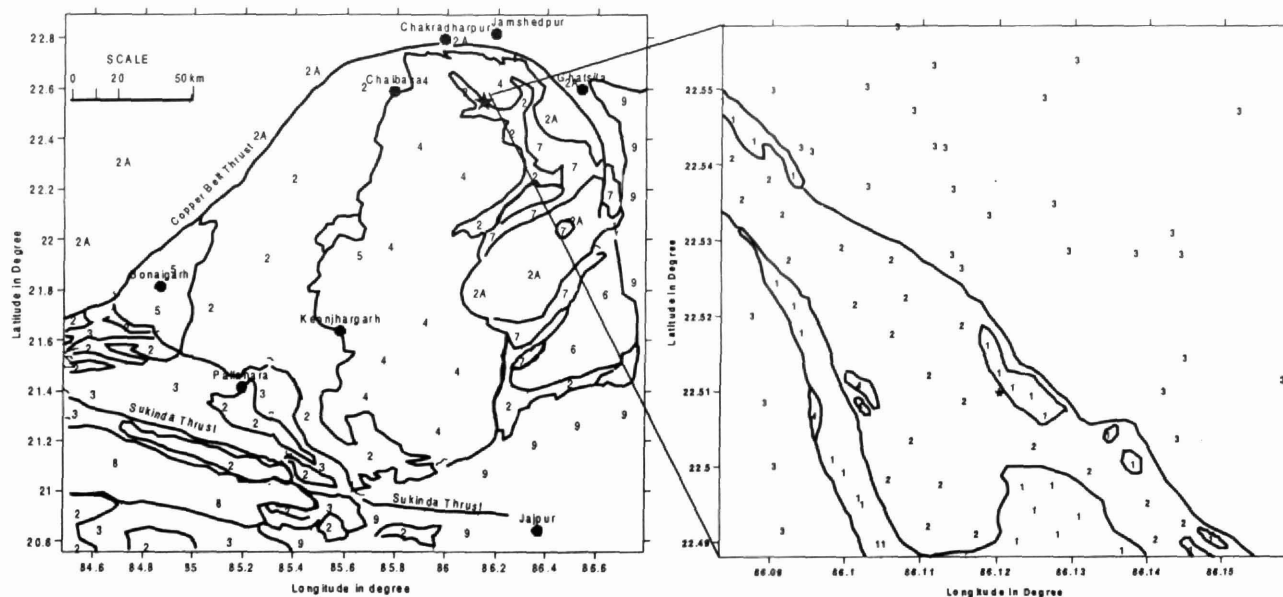


Fig.1. (a) Regional geological map of Singhbhum-Orissa Iron ore craton (after Saha et al. 1984). 1 - Older metamorphic group; 2 - Supracrustal rocks of iron ore group and eastern ghat belt; 2A - Proterozoic supracrustals; 3 - Unclassified gneisses; 4 - Singhbhum granite complex including the older metamorphic tonalite gneiss; 5 - Bonai granite; 6 - Nilgiri granite; 7 - Mayurbhanj granite; 8 - Gondwana; 9 - Tertiary and Quaternary. * indicates the location of the rock of lamproitic affinity. (b) Detailed geology of the area. The star indicates the location of the sample. 1 - Epidiorite schist, talc schist, chlorite schist, lava schist; 2 - Phyllite; 3 - Granite; 4 - Laterite (after Dunn and Dey, 1942). Newer dolerites excluded.

1989) This note records the occurrence of lamproitic rock from within the northern fringe of the Singhbhum granite

Location and Local Geology

The Rajnagar-Tiring area forms the northern part of the Singhbhum craton. In this area, a narrow NW-SE trending greenstone belt of Archaean age, is confined within the Singhbhum granites (Fig.1a). This belt is characterized by schistose rocks of ultramafic composition (comprising spinifex textured and massive peridotites, serpentinites, talc-tremolite and chlorite schist with amphibolites) towards northwest and fairly thick sequence of phyllites towards southeast. Lenses and patches of ultramafic schists also occur in the phyllites of the southeastern parts. The lamproitic body occurs near the village of Bogabadih (22°30'48"N, 86° 07'10"E). It occurs close to the eastern margin of the schist belt along the contact of the ultramafic schist with the phyllites.

The Lamproitic Body

The lamproitic body is an intrusive into the andalusite bearing phyllites of the schist belt (Fig.1b). It possesses fragments and boulders of different sizes, shapes and composition of the country rocks. Majority of the fragments are oval in shape with their major axis measuring about 10 cm and the minor axis measuring 5-7 cm. Smaller size fragments of size of about 1 cm are also not uncommon. The fragments impart an apparent look of agglomerate to the lamproitic body.

Under the microscope, the rock exhibits an overall inequigranular texture defined by the presence of macrocrysts set in an essentially microporphyritic groundmass. The macrocrysts belong almost exclusively to a suite of anhedral cryptogenic ferromagnesian minerals, which include phlogopite, olivine, chlorite and serpentine,

plenty of dusty opaque ore minerals, some feldspars and rare suspected leucite in a glassy and cryptocrystalline groundmass. The phlogopite mica occurs both as phenocryst and as xenocryst and is highly altered, generally to chlorite occurring in a devitrified groundmass of glass with quench texture. Many of the xenocrysts of phlogopite show relic impression of original zoning. Some of these having originally perhaps Mg rich core now altered to chlorite. Olivine macrocryst is completely pseudomorphed by serpentine with minor carbonate and talc. One of the autoliths shows coarse grained, hypidiomorphic texture comprising clinopyroxene and opaques with little of carbonates. The pyroxenes are altered to amphiboles and exhibit feeble zoning. A coarse grained xenolith of garnetiferous peridotite comprising serpentinised olivine and highly altered clinopyroxene with tiny euhedral grains of garnet occur in the rock.

Conclusion

Report of this lamproitic body near the village Bogabadih (22°30'48" N, 86°07'10"E) in close proximity to the eastern margin of the schist belt along the contact of ultramafic schist with the phyllites in the Singhbhum granite-gneiss complex opens up new vistas for the search of similar rock types in this area.

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