

Metamorphism of the Banded Iron Formations and Associated Rocks along Kamakshyanagar - Pallahara Sector, Dhenkanal District, Orissa, India

RAY, P. Dept. of Geology, Utkal University, Bhubaneswar, India

Supracrustal sequence including the Banded Iron Formation (BIF) and the associated rocks occupy a prominent place in the Pre-Cambrians along the periphery of North Orissa Craton, Eastern India. The oldest of these Archaean schist belts- BIF-I and the associated metapelites and metabasites belongs to Gorumahisani Group. The banded assemblage affected by polyphase deformations with pervasive penetrative foliations show high grade metamorphism with the development of almandine, staurolite, kyanite and sillimanite zones which show sympathetic folding along with the metasediments.

The mineral assemblages show kyanite-sillimanite grade of metamorphism of rocks of this region. Metamorphism in this sector started with almandine isograd since the milieu was not favourable for the formation of chlorite/biotite. Break down of chloritoid to staurolite shows metamorphism below 700°C above 7 kbs. Co-existence of kyanite and sillimanite indicates metamorphism above 5.5 kb and 600°C. Interwoven of kyanite and sillimanite suggests that the temperature/pressure conditions must have been hovering near the kyanite-sillimanite boundary. Breakdown of muscovite has not taken place. Epidote, blue-green hornblende and plagioclase <An 30 in the metabasites of the almandine zone suggest Epidote-Amphibolite facies conditions, whereas the metabasites of the higher zones contain plagioclase >An 30 along with green-brown-hornblende that indicate Almandine-Amphibolite facies conditions. Kyanite-sillimanite type of metamorphism shows medium pressure baric type.