

## **SHEAR CONTROLLED FE-MINERALIZATION FROM PARTS OF SOUTH PURULIA SHEAR ZONE**

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### **Abstract**

South Purulia Shear Zone (SPSZ) of the East Indian shield area separates two Palaeoproterozoic terrains—the high grade Chotanagpur Granite Gneiss Complex (CGGC) in the north and the low-grade (greenschist-amphibolite facies) North Singhbhum Fold Belt (NSFB) in the south. In the SPSZ, the major rock types include alkaline–carbonatite rocks (Carbonatite, apatite deposits, ultramafic rock-Nephiline syenite, and alkali granite), quartzite and acid tuffs with minor mafic dykes. These rocks are folded and sheared in both ductile (early phase) and brittle (late phase) regimes. Brittle shearing is manifested by brecciation of the ductile deformed quartzite and apatite deposits. Extensive alteration of carbonatite, ultramafic rocks and granite has produced the thick kaolinite deposits that occur as vertical sheets. Along the brecciated zones in apatite deposits and quartz veins, massive goethite forms veins and network around apatite and quartz clasts respectively. Within the massive goethite deposits, angular clasts of apatite and quartz are replaced by goethite. Interpreting the information from field and petrography it has been demonstrated that the massive goethite deposits were formed by a low temperature (below 200°C), acidic, circulating hydrothermal fluid. Fluid migration was facilitated by brittle fractures.

Keywords: SPSZ, Goethite deposit, Hydrothermal, Breccia, Meteoric water.