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## **Characterization of host rock and associated mineralization of VMS type Zn-Pb-Cu prospect at Muariya, Betul belt, India.**

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Proterozoic Betul belt is an integral part of central Indian tectonic zone and hosts number of VMS type base metal deposits [1]. Zn-Pb-Cu mineralization in Muariya is mainly disseminated to massive type associated with bimodal metavolcanics comprising of pillowed metabasalt and massive rhyolite. Both metabasalt and rhyolite host rocks have been altered and metamorphosed up to amphibolite facies leading to formation of staurolite-sillimanite bearing quartz-mica schist and garnite-garnet-biotite-anthophyllite schist. Presence of relict chilled margins and Y-junctions in altered rock are clear indication of alteration of pillowed metabasalt. Alteration is mainly of Fe-Ca-Al type followed by Mg alteration. Sphalerite-galena-chalcopyrite-pyrite-pyrrhotite forms the bulk of sulphide minerals along with minor bismuthinite and molybdenite.

Two stage mineralization modes is suggested based on the petrographic studies viz., 1) Zn-Pb-Cu primary mineralization related to bimodal volcanism and 2) Bi-Cu-Pb± Mo secondary hydrothermal activity. Sulfur isotopic ratios ( $\delta^{34}\text{S}$ ) of 4.75 to 10.85‰ indicate variable mixing of magmatic sulphur leached from volcanics emplaced in arc environment with those derived from sea-water sulphate [2]. In the carbonate vein associated with sulphide zones,  $\delta^{18}\text{O}$  (PDB) value of -14.15 ‰ is similar to those reported for the marine carbonates of Paleoproterozoic age.

### *References:*

- [1] Ghosh and Praveen, (2008) Jour Earth Sys. Sci. **117**:521-536.
- [2] Ueda, A., and Sakai, S., (1984) Geoch. Cosmo. Acta **48**:1873-1846.

