

**CHEMISTRY OF THE CUPRIFEROUS ORE FLUID (COF) AT
MALANJKHAND COPPER DEPOSIT, CENTRAL INDIA:
CONSTRAINTS FROM ION CHROMATOGRAPHY
OF FLUID INCLUSION LEACHATES**

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Abstract

Ion chromatography of fluid inclusion leachates extracted from samples of quartz from mineralized reef and veins/stringers from Malanjkhand copper deposit has furnished important clues on the chemistry of the ore fluid. Identical chemistry of the fluid from the two broadly different ore regimes favors the proposition of a single phase of productive fluid activity resulting in the mineralized reef and stringers within the host granitoid. Na⁺ and Cl⁻ dominate the cations and anions respectively in the fluid. Further, Ca-rich nature, indicated from earlier fluid inclusion freezing studies, also is revealed from chemistry of the leachates. Malanjkhand ore fluid is much more briny compared to fluids in most live geothermal systems especially those in granitic terrains. The copper concentration is also comparatively much higher. The chemical signatures obtained are further suggestive of contribution from magmatic as well as meteoric sources and corroborate many of the earlier propositions on the ore fluid such as mode of transport of copper.

Keywords: Copper deposit, Ore fluid, Fluid inclusions, Magmatic-meteoric source.