

APATITE GEOCHEMISTRY AS A METASOMATIC INDICATOR FROM MAGNETITE DEPOSIT OF MAHENDRAGARH, HARYANA

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Abstract

The Iron deposit in Mahendragarh district occurs as massive magnetite ore bodies along with an appreciable amount of apatite. The analysis of these apatite crystals by EPMA and LA-ICP-MS classify them in the fluorapatite category. Under BSE images, fluorapatite displays a variety of textures with monazite as an inclusion and/or as rim grains. All the fluorapatite are characterised by a high concentration of LREE's and low concentration of HREE's, SiO₂ and Na₂O. This indicates that the apatite has experienced fluid-induced alteration which involves the leaching of (Y+REE) + Na+Si+Cl. The release of REE's is considered responsible for the nucleation of monazite as inclusions or as rim grain within apatite. The texture, geochemistry and field observation points to the role of alkali bearich F- and Cl- rich fluid in the alteration of apatite and nucleation of monazite.

Keywords: Magnetite, Apatite, Monazite, REE, Mahendragarh