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Petro-Mineralogical Studies of Phosphorite Deposit of Sallopat Block of Banswara District, Rajasthan, India

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Abstract : The Paleoproterozoic phosphorite deposit of Sallopat block of Banswara district of Rajasthan belongs to kalinjara formation of lunavada group of Aravalli Super Group. The phosphorites are found to occur as massive, brecciated, laminated and stromatolitic associated with calcareous quartzite, interbedded dolomite and multi coloured chert. The phosphorites are showing alternate brown and grey coloured concentric rims which are composed of phosphate, calcite and quartz minerals. Petro-mineralogical studies of phosphorite samples using petrological microscope, XRD, FEG- SEM and EDX reveal that apatite-(CaF) and apatite-(CaOH) are phosphate minerals which are intermixed with minor amount of carbonate materials. Sporadic findings of the uniform tiny granules of partially anisotropic apatite-(CaF) along with dolomite, calcite, quartz, muscovite, zeolite and other gangue minerals have been observed with the replacement of phosphate material by quartz and carbonate. The presence of microbial filaments of organic matter and alternate concentric rims of stromatolitic structure may suggest that the deposition of the phosphate took place in shallow marine oxidizing environmental conditions leading to the formation of phosphorite layers as primary biogenic precipitates by bacterial or algal activities. Different forms and texture of phosphate minerals may be due to environmental vicissitudes at the time of deposition followed by some replacement processes and biogenic activities.

Keywords : apatite, petro-mineralogy, phosphorites, sallopat, stromatolites
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