
Scanning Electron Microscopic and X-ray Powder Diffraction Study of Manganiferous Bauxite, Kincsesbánya, Hungary

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Abstract: Manganiferous karst bauxites are rare on a worldwide scale. One such body, recently mined at Kincsesbánya, Hungary, has been studied by chemical, petrographic, X-ray powder diffraction, scanning electron microscopic, and energy dispersive X-ray analytical techniques. The bauxite deposits of Kincsesbánya are of Paleocene to Lower Eocene age; however, the enrichment of manganese in them was a much later, epigenetic process. Lithiophorite is the main Mn mineral in this bauxite and occurs chiefly in dusts of < 1- μ m size crystallites. Well-developed crystallites, however, 5– 10 μ m in size, line the walls of many microfissures and voids.

The oxidation of pyritic bauxite and lignitic clays in the overlying beds apparently mobilized finely disseminated Mn and Fe. Downward-migrating acidic solutions were gradually neutralized, and Mn and Fe minerals precipitated. The manganiferous bauxite was found only along the eastern rim of heavily eroded Middle Eocene sedimentary rocks. Here, epigenetic oxidation and mobilization were optimum. Farther to the east, pyrite-rich overburden and bauxite were apparently eroded away before Fe and Mn could be mobilized.

Key Words: Aluminum • Bauxite • Lithiophorite • Manganese • Scanning electron microscopy • X-ray powder diffraction

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