IRANIAN SOCIETY of CRYSTALLOGRAPHY and MINERALOGY

Vol. 11, No. 2, 1382/2003 Fall

IRANIAN JOURNAL of CRYSTALLOGRAPHY and MINERALOGY

Geochemistry and Mineralogy of Qopi Bauxitized Horizon in west of Miandoab, West-Azarbaidjan, Iran

A.A. Calagari[1, 2], A. Abedini[1], M. Moazzen[1, 2]

1- Department of Geology, Natural Science Faculty, Tabriz Univ., Tabriz 51664, Iran.
E-mail: calagari@tabrizu.ac.ir
2- Research Institute for Fundamental Sciences (RIFS), Tabriz 51664, Iran.

(received: 16/6/2003, received in revised form: 18/10/2003)

Abstract: The Qopi bauxitic horizon is located west of Miandoab, in West-Azarbaidjan province, NW of Iran. It lies along the boundary of Ruteh (middle-upper Permian) and Elika (lower Triassic) Formations. This horizon includes four distinct lithologic facies such as (1) bauxitic iron ore, (2) ferruginous bauxite, (3) Fe-rich bauxite, and (4) Fe-rich clayey bauxite. Microscopic examinations showed various textures including pelitomorphic, fluidal, colloform, pseudo-breccia, and pseudo-porphyry within the horizon, suggesting an authigenic origin. Based upon field evidence and geochemical data, the fine-grained diabase in the area may be the probable parent rock from which the bauxite layers developed. The results of calculations of mass changes showed that elements such as Na, K, Mg, P, Si, and Ca were depleted, and Fe, Al, and Ti were enriched during bauxitization processes. According to field observations, microscopic examinations, and geochemical investigations, Eh variations (from reducing to oxidizing) and suitable pH (6-8) of descending meteoric waters were the prime factors controlling the formation of Qopi bauxite layers. In addition, the enrichment pattern of immobile elements and field evidence indicate that the Qopi bauxitic horizon may be classified as Mediterranean karst bauxite.

Keywords: *Bauxite geochemistry, Pelitomorphic texture, Bauxitization process, Mediterranean karst bauxite, Immobile elements.*