

AUTHIGENIC MINERALS OF NICKEL AND RARE EARTH ELEMENTS IN KARSTIC BAUXITES AND KARSTIC NICKEL DEPOSITS IN YUGOSLAVIA AND GREECE

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The study of nickel and rare earth elements (REE) in karstic environment is important both from scientific and practical reasons. These elements play an important role in understanding of genesis of karstic bauxites and karstic nickel deposits. Practical reasons are exhibited in the existence of karstic nickel deposits, which may attain the highest nickel content of all nickel deposits of exogenic origin. Rare earth elements (Y, La-Lu), could be well concentrated, as nickel, above footwall of bauxite deposits. In some cases these bauxites are a valuable raw material for chemical separation of REE. In most of the cases, the high enrichment of nickel and REE in karstic environment is connected with the occurrence of their authigenic minerals.

Deposition of authigenic minerals of nickel and REE in karstic deposits is dependent of two factors:

- a) concentration of elements in the initial material, and
- b) intensity of the bauxitisation process.

In bauxites of excellent quality, formed *in situ*, enrichment coefficient of "mobile" trace elements could be very high. That is the case of concentration of REE in the form of hydroxylbastnaesite in the large bauxite deposits of Montenegro. For the formation of authigenic REE minerals, the average total REE content in bauxites should be greater than 0.1%.

In the case of high drainage, nickel occurs in the form of authigenic minerals even with 0.05% of Ni the average bauxite mass. That is the case of takovite in the Les Codouls deposit in South France. With the increase of nickel in the initial material, higher concentrations of authigenic nickel minerals occur above the footwall, and karstic bauxites pass gradually into karstic nickel deposits.