## Секция «Геология»

### Geological investigation of ironstone and bauxite deposits in Hussainiyat area ( Western Iraq)

***Alobaidi Mutadhid Hamed***
*Аспирант*
*Белорусский государственный университет, Географический факультет, Минск, Беларусь*
*E-mail: mutadhid@yahoo.com*

The present study is concerned with the economically important Ironstone, kaoilntic and bauxitic deposits of the Hussainiyat area of the Western Desert of Iraq. Hussainiyat area is located about 90 Km north of Rutba town lies between longitudes 40° 33̕ – 41° 15̕ E and latitudes 32° 47̕ - 33° 37' N. covering an area of about 4500 $kms^2$.

The results of the present investigation were obtained by mineralogical and geochemical analysis for 20 bore holes which show that kaolinite is the dominant clay mineral in the studied area.The bauxite minerals of Nuwaifa Formation is dominated by boehmite with minor amount of gibbsite. Iron minerals of the Hussainiyat ironstone member are primary geothite and hematite. Goethite shows original microtexture features suggesting its formation by precipitation from a colloidal "gel-like" solution, and in-situ separation from kaolinite. Hematite shows characteristic features suggesting conversion from goethite during lithofacation and diagenesis. The prominent texture of ironstones are pisolitic-oolitic, fragmentary and colloform textures. Detrital quartz is found in most of the samples and varies considerably from a dominant component of sandstone, to minor and accessory component in the ironstones and claystone lithofacies. The principle chemical constituents of the bauxite are the $Al_20_3$, $Fe_20_3$ and $Si0_2$bound as kaolinte and the hydrated minerals gibbsite and boehmite. These oxides account for 80% of the bauxite of the Nuwaifa Formation. Enrichment and depletion of major and trace elements during the bauxitzation process may be

attributed to changes in pH-values and Eh-conditions as well as the mobility of these element [1] , [2]. The chemical composition of iron ore is characterized by a relatively high $Fe_20_3$ , $Al_2O_3$, $Si0_2$ ,$TiO_2$ content and by a low content of CaO , MgO, $K_20$ and $S0_3$. The enrichment of $Al_20_3$ is ascribed to the presence of kaolinite , chemical difference of the studied iron ores from the kaolintic rocks as postulated sources

rock may be explained by the deficiency of some elements in the source area and by specific conditions at the site of deposition. The enrichment of iron in Hussainiyat member results from disaggregation of Al-Si minerals and of partial leaching of Si, since is unstable at pH $<$ 7 which cause the precipitation or enrichment of iron. On the basis of mineralogy , texture, chemical and physical properties, the bauxite deposits of Nuwaifa Formation contain many attributes, which indicate that weathered deposits of the Lower Hussainiyat Formation are the source rocks from which the bauxite were derived. The evidence include the presence of Lower Hussainiyat kaolinite extraclasts scattered within the flint clay and bauxite deposits of the Nuwaifa Formation. and the parent materials for the studied sediments are acidic rocks. A considerable amount of material must have been eroded from granitic and metamorphic complexes of the Arabian Shield as well as from pre-Jurassic reworked sediments.

**Литература**

1. 1- BARDOSSY G.Y. Karst bauxite . Bauxite deposits on carbonate rocks / Developments in economic geology , Elsevier , Amsterdam ,1982. - P. 441.
2. 2- BARDOSSY G.Y. and JUHA Z.E. Application of sedimentological methods to karst bauxites evaluations in the Halimba –Szo area , Hungary //Acta Geologica Hungarica. -1991- Vol. 34,№3. - P. 241-252 .