

Composition and morphology of metal microparticles in paleozoic sediments of caspian depression

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Abstract

© Research India Publications 2015. Using the microprobe analysis 18 samples of metallic micro-particles were studied (spheres, plates, coils, wire) from Paleozoic deposits of the Caspian basin. The morphology of the microparticles and their chemical composition showed that the microparticles have different origins. The formation of spiral and wire type forms is associated with volcanic activity, and magnetite microspheres were formed in the Earth atmosphere during the flight and meteorite ablation. It is determined that Mn (0.8-2%), rarely Cr is uniformly distributed in magnetite microspheres. In the interstices of magnetite tablets the releases of native nickel, nickel oxides, the awaruite of Ni₃Fe are met rarely. Among the spiral formations the intermetallic compositions of Fe-Cr-Mn and Fe-Cr-Ni are met and the mechanism of their formation in the development of subvolcanic chamber is proposed. The diagrams lg (Cr/Ni) - lg (Cr/Mn) and lg (Fe/Cr) - lg (Fe/Ni) allow to reveal the geochemical differences of metallic microparticles of volcanic and cosmic origin. The metallic microparticles discovered in sedimentary rocks, may be an additional tool for regional parallelization of multipartite cuts, may lead to the revision of biotic process models, the assessment of terrestrial and cosmic processes impact on them, help in the search for hydrocarbon deposits and stratified deposits of solid minerals.

Keywords

Intermetallic compounds, Microspheres, Sedimentary rocks, Spiral formations, The Caspian basin