

TECHNOLOGIES OF NON-BARRIER BIOGEOCHEMICAL EXPLORATION AND PROSPECTING FOR ORE DEPOSITS -- METHODS OF THE 21-st CENTURY

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The non-barrier biogeochemical exploration and prospecting are investigations using rare bioobjects of plants, non-barrier in relation to appropriate ore elements. The possibility of their practical application is caused by the development of the definition techniques of the quantitative barrier characteristics for any bioobjects and the publication of the table of the grouping of 100-500 bioobjects of plants with these characteristics for 24 ore elements. The non-barrier biogeochemical studies were conducted in the USSR in 1970-1980-s at all stages of the research works. In Buryatiya the large Zharchikha molybdenum and Khalyuta strontium deposits, 11 perspective ore-occurrences of Ag and 5 new types of Pt mineralization were revealed. At the end of 1980-s a start was made on the elaboration and in 1990-s – the application of detailed non-barrier biogeochemical studies at the stages of evaluation and prospecting works in scales 1:2000-1:200. These works, named by us the non-barrier biogeochemical prospecting, are at the stage of experience-methodical usage. They basically concern veined ore deposits of U, W, Be, CaF_2 , Au, Ag, Pt. Non-barrier biogeochemical prospecting is a new, rather perspective direction in prospecting geochemical works. They allow to reveal and contour outputs of ore bodies under shielding loose covers by thickness from 1-10 to 20-30 m thick, to evaluate their geological resources and to reveal geological structures of ore fields. Major advantage of the non-barrier biogeochemical exploration and prospecting over soil-geochemical exploration is their depth, and over deepened geological prospecting with the use of drill holes – for ten times less cost.