FLUID REGIME AS A CRITERION OF SPECIALIZATION OF ORE-BEARING GRANITOIDAL SYSTEMS

[1]MOISEENKO, V.G., [2]SAKHNO, V.G. 1Complex Institute, Blagoveshchensk, Russia; 2Far East Geological Institute, Vladivostok, Russia.

Relation of ore mineralization with granites is supported by geochemical study. Experiments showed that fluid generated oxidation-reduction conditions providing dispersion or extraction, transportation, and concentration of ore matter. Such complex-generators are chlorine, sulfur, and fluorine at a certain fluid (H2O,H2,CO,CO2,CH4) regime in melts and hydrothermal solutions. Study of ore-bearing granite systems of the Far East showed that most productive are the ore-magmatic systems with deep roots (discompaction zones) coming to mantle (60-100 km), long-term development (60-100 m.y.), evolution from ultrabasic to acid melts, and high saturation with fluids, the volume of which increases when the system evolves. Analysis of data on gas (H2,CO2,H2O,CH4,N4) and especially halogens in inclusions of minerals in granite ore-bearing and ore-free massifs of the Far East has revealed the interrelation between of granitoidal melts and fluid regime. It has been established that: a) there is petrologo-geochemical and fluidal specialization of a system; b) F/Cl ratio and gas oxidation degree in system evolution control both a petrochemical type of magma and ore specialization (fluorine-type - Sn, Sn-W; chlorine type (sulfur) - Au, Au-Ag; etc.); c) there is the succession of fluid composition and oxidation-reduction degree at magmatic to hydrothermal stages of a system. All these parameters are controlled by deep mantle flow of fluids. Fluid (especially halogens) regime together with geologo-petrological data allows prognosis of mineralization type and its perspectives.