

THE AGE AND ISOTOPE CONSTRAINTS ON GENESIS OF RARE-METAL-FLUORITE MINERALIZATION (VOZNESENKA ORE-FIELD, FAR EAST, RUSSIA).

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The Voznesenka ore field is situated in the SE part of the Khanka Lake folding system and composed by Lower Cambrian carbonate-terrigenous rocks. Four magmatic associations in the field are recognized within the magmatic rocks: gabbro-pyroxenite association with diabase porphyrite dykes; early Paleozoic association of biotite granites (Yaroslavsky, Pervomaisky, and Chikheza River massifs); middle Paleozoic diorite-monzonite-syenite association (Lipovaya hill); early-middle Paleozoic rare-metal Li-F granite association (Pogranichny, Voznesenka, Lagerny massifs). Postmagmatic mineralization is represented by rare-metal-fluorite and tantalum deposits, which are connected spatially with rare-metal granites. Tin-ore occurrences diverse the following genetic types – tin-bearing greisens, tin ore-deposits of cassiterite-quartz, cassiterite-silicate and cassiterite-sulfide formations. The subalkaline basaltic and picrodolerite dykes accompany rare-metal granites. On the basis of isotope dating (Sm-Nd, Rb-Sr, U-Pb) the age of biotite granites intruded Precambrian sedimentary-metamorphic rocks is 450 Ma (Pervomaisky, Yaroslavsky, Chikheza River massifs). Formation of Li-F granites (450 Ma) coincides in time with formation of biotite granite massifs and, taking into consideration their geochemical similarity and specific structural position, evidence to their common magmatic source, but with prominent participation of mantle component. Formation of rare-metal-fluorite ores took place after cessation of the main stage of granitoid formation within the ore-field 380-420 m.y. ago, which is also proved by the age of intramineral subalkaline basaltic and picrodolerite dykes. The last magmatic stage is connected with the late alkaline basic dyke series – 350 m.y. ago superposed on the whole granite-greisen complex. Formation of fluorite ores is not connected with the rest granitoid fluid directly but with the source similar to the diorite-monzonite one.