

THE ORE-FORMING MATTER SOURCE OF KUROKO-TYPE DEPOSITS: OS-HE ISOTOPE OF UWAMUKI KUROKO DEPOSIT EVIDENCE

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A systematic Os-He isotope study has been made on the host rock and sulfide orebody of Uwamuki deposit in Kosaka mine, Japan. We get three conclusions according to the study: 1) The $^3\text{He}/^4\text{He}$ ratio of the ore-bearing rhyolite from Uwamuki Kuroko deposit varies from 1.3 to 1.6. R/RA ratios (0.93-1.14) are much lower than those (6.7-8.7) of the modern seafloor ore-bearing rhyolite from Okinawa Trough. These indicate that the magma of rhyolite comes mainly from the remelting crust with some mantle materials and mantle fluids. 2) The $^{187}\text{Os}/^{188}\text{Os}$ ratios of the ores from Uwamuki Kuroko deposit can be divided into two groups: $^{187}\text{Os}/^{188}\text{Os}$ -rich ores (2.246-7.608) whose Os could come from crustal sediment or basement of the ore district; $^{187}\text{Os}/^{188}\text{Os}$ -poor ores (0.4230-0.7930) whose Os might have two sources: crustal (11-43%) and mantle (89-57%). 3) Based on the Os-He isotope data and Pb-S-Xe isotope information done by others, We put forward that the ore-forming fluids of pyrite and yellow ores are derived from the magma fluid and the matter is from rhyolite magma chamber and mantle (fluid), whereas the ore-forming fluids of the Kuroko-type deposits dominated by heating circled seawater. The underlying sedimentary rocks and rhyolite magma or rock is the sources of the ore-forming matter.