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## U-Th radioactive disequilibrium dating of hydrothermal minerals on the seafloor

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Duration of seafloor hydrothermal activity is an important factor in controlling size of ore deposits. Recently the influence of the duration to evolution of chemoautotrophic community has been attracting increasing attention.

U-Th radioactive disequilibrium method using several radioactive isotopes in the decay chains of U and Th have been applied to dating of sulphide minerals including sphalerite from hydrothermal systems near mid-oceanic ridge. Barite from Okinawa trough has been dated with the method as well. Many of previous studies used radioactivity measurements, however, recent studies utilized mass spectrometers.

This study aims at 1) comparing (<sup>230</sup>Th/<sup>234</sup>U) radioactive disequilibrium age of sphalerite with ESR age of barite, 2) comparing Sr and Pb isotope compositions of sphalerite and barite to determine if the two minerals precipitated from same brine.

Some barite have been reported to contain Ra and used for radioactive disequilibrium dating with radioactivity measurement analysis. We will test the feasibility that short life radioactive nuclides can be determined with mass spectrometry.

Preliminary data on sphalerite #903-R7-1 from Archaean site, Mariana, gives (<sup>230</sup>Th/<sup>234</sup>U) disequilibrium age of around 2000 years. We will compare the radioactive disequilibrium age with ESR age of barite.

Keywords: seafloor hydrothermal deposit, radioactive disequilibrium dating, sphalerite, barite