Construction of the age model for stalagmite from central and eastern Java, Indonesia

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Paleoclimate/paleoenvironment studies using speleothems have been carried out in the areas of middle to high latitude, such as Asia, Europe and Middle East, etc. In these studies, they conducted oxygen/carbon isotope measurements and trace element analysis along growth bands, then used these results as paleoclimate/paleoenvironment proxies.

In the 21st Century COE program of Kyoto University, the research has been conducted with focusing on speleothems in western, central and eastern Java as the paleoclimatic proxy in Asian equatorial region. Such studies using speleothems has not being much investigated in this region. In this project, we collected stalagmite samples four times in three different locations; western, central and eastern Java, Indonesia from March 2006 to September 2007.

In this study, we used two stalagmite samples, which were named as PET02a and BRI01a, from central and eastern Java, to discuss whether or not growth bands are annual products, by comparing the number of growth bands and U-Th ages. We made thin sections of the samples and observed them by a stereoscopic microscope. As a result, BRI01a sample has clear bands. This enables us to do precise counting of growth bands. It is expected that there is little contamination of detritus by judging from its color. Therefore, we will probably be able to perform precise analysis for U-Th dating. About PET02a sample, growth bands were not so much clear, yet countable, as BRI01a sample, possibly with more contamination of detritus. Then we cannot expect more precise analysis for U-Th dating than BRI01a sample. Nevertheless, we will carry out the study with two samples in the same procedure.

Currently, we are conducting following researches: (1) Further observation with a fluorescence microscope, a stereoscopic microscope and a polarization microscope to analyze growth bands. (2) Counting the number of growth bands using WinDENDRO program. (3) Uranium series disequiblium dating (U-Th dating).

In this presentation, we will show results of the observations and analyses, and discuss whether growth bands are annual or not.