

## Attempt to date zircon by alpha recoil track observation

\*Noriko Hasebe<sup>1</sup>, Rei Hayasaka<sup>2</sup>, Ayumi Kozaka<sup>2</sup>, Atsushi Matsuki<sup>1</sup>

1. Institute of Nature and Environmental Technology, Kanazawa University, 2. Department of Earth Sciences, Kanazawa University

The alpha decay of heavy nuclei leaves damage in crystal by the retreat of heavy nuclei (alpha recoil tracks: ART). Observation of ART was applied to date layered silicates so far, but ART in zircon, which has higher uranium and thorium concentrations in general, thus has a potential to date samples whose ages are in order of thousand years old or older, never been observed before.

We observed zircon with known age after chemical etching with atomic force microscope and measured the dimension (depth and diameter) of ART and counted the number of ARTs. The size of ART became enlarged through stepwise etching, and its behavior revealed that the diameter of ART is enlarged first and followed by the depth deepening. The depth and diameter shows linear relationship, but the slope on depth-diameter plot seems to be different among samples. When ages were calculated based on the number of tracks and measured U and Th concentrations, the order of ages is consistent with reference ages, but not identical. Further researches on etching and counting criteria are necessary to understand ART behavior in zircon.

Keywords: zircon, alpha recoil track, step etching