

Dating of sedimentary rock in Labrador, Canada

katsutaka sudo¹, Takanori Kagoshima¹, Naoto Takahata¹, *Yuji Sano¹, Yusuke Sawaki², Tsuyoshi Komiya², David Bekaert³, Michael Broadley³, Bernard Marty³

1. Atmosphere and Ocean Research Institute, University of Tokyo, 2. Graduate School of Arts and Science, University of Tokyo, 3. Le Centre de Recherches Pétrographiques et Géochimiques, Université de Lorraine

The vestiges of life in Eoarchean rocks have the potential to elucidate the origin of life. We have reported carbon isotopes of graphite and carbonate in the oldest metasedimentary rocks from northern Labrador [1]. Based on the difference of $\delta^{13}\text{C}$ values up to 25 permil, we claimed the oldest evidence of organisms greater than 3.95 Ga in the pelitic rock. The oldest age was estimated by geological field observation in the region [2]. The absolute age of the sample which contained biogenic graphite has not yet been determined. We present here results of conventional age determination of the pelitic rock using ion microprobe U-Pb dating of apatite and K-Ar dating of whole rock. In addition, we carry out xenon isotope dating of whole rock by a method recently developed by research group in CRPG, Nancy [3]. These ages are not concordant each other because their closure temperatures are different, which may give a constraint on thermal and metamorphic history of the sample [4].

[1] Tashiro et al., 2017, *Nature* 549, 516-518. [2] Komiya et al., 2015, *Tectonophysics* 662, 40-66. [3] Bekaert et al., 2018, *Sci. Adv.* 4, eaar2019 [4] Sano et al., 1999, *Geochim. Cosmochim. Acta* 63, 899-905.

Keywords: U-Pb dating, K-Ar dating, Xenon isotope dating, Sedimentary rock, Labrador, Canada