

HGM005-P09

Room: Convention Hall

Time: May 25 17:15-18:45

## Weathering model of fluvial chert gravels and its chronological implications

Kentaro Kimoto<sup>1\*</sup>, Toshihiko Sugai<sup>2</sup>

<sup>1</sup>Natural environment, Univ. of Tokyo, <sup>2</sup>Natural environment, Univ. of Tokyo

This study focuses on the weathering of fluvial gravels forming river terraces and hills to assess long term weathering processes and their implication for relative dating methods. By the analysis of changes in rock properties of gravels, it is possible to know the duration of weathering, that is the age of terraces.

We measured rock properties of chert gravels obtained from series of fluvial terrace deposits with different ages, and compared them in order to model the long-term weathering processes. From the analysis of chert gravels in river terraces, it was found out that specific gravity and  $\text{SiO}_2$ (%) decrease as gravels get older. Strong positive correlation in the relation between  $\text{SiO}_2$  and the specific gravity suggests that  $\text{SiO}_2$  is the most likely cause of decrease of specific gravity and that decrease of specific gravity is caused by  $\text{SiO}_2$  leaching. Furthermore, it was found out that  $\text{Al}_2\text{O}_3$  (%) and  $\text{Fe}_2\text{O}_3$  (%) increase as gravels get older, suggesting the deposition of  $\text{Al}_2\text{O}_3$  and  $\text{Fe}_2\text{O}_3$ . We conclude that chert gravels have great potential for relative dating of Quaternary fluvial landforms. Integrated weathering research of the combination with the specific gravity, the elementary composition and hue is necessary for other kinds of gravel.

Keywords: Pleistocene, weathering of gravel, terrace deposit, specific gravity, process of weathering, chert