

## 「かぐや」搭載ガンマ線分光計による月表層の鉄とチタンの分布調査 Examination for Iron and Titanium Distributions on the Moon Observed by Kaguya Gamma-Ray Spectrometer

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The Kaguya Gamma-Ray Spectrometer (KGRS) was designed with a high-energy resolution to determine the lunar subsurface composition by observing gamma rays emitted from the Moon [1]. The absolute concentration maps of radioactive elements such as potassium, thorium and uranium were reported by successive KGRS data analysis [2, 3]. Preliminary results of iron and titanium maps have already been reported [e.g. 4]. Here, we report the progress made along the last year.

The iron and titanium maps were made by procedures similar to those in Lawrence et al. [5]. These maps are in good agreement with the Lunar Prospector maps reported by Prettyman et al. [6]. The relative concentration of iron in maria becomes lower in the order corresponding to Procellarum, Imbrium, Serenitatis, Fecunditatis, Nubium, Tranquillitatis, Crisium, South Pole-Aitken Terrane, Australe and Smythii. The titanium distribution is slightly different from that of iron. The titanium signature of Mare Tranquillitatis is higher than that of Procellarum and Imbrium. And, the relative concentrations of titanium in maria Fecunditatis, Crisium, South Pole-Aitken Terrane, Australe and Smythii are as low as that of highland regions.

[1] Hasebe et al., *Earth, Planets, and Space*, 60, 299-312 (2008).

[2] Kobayashi et al., *Space Science Reviews*, 154, 193-218 (2010).

[3] Yamashita et al., *Geophys. Res. Lett.* 37, L10201 (2010).

[4] Karouji et al., *Japan Geoscience Union Meeting*, PPS003-09 (2010).

[5] Lawrence et al., *J. Geophys. Res.*, 107, 5130 (2002).

[6] Prettyman et al., *J. Geophys. Res.*, 111, E12007 (2006).

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