

auroral particle precipitations and/or Joule heatings in contrast to the 8- μ m thermal emission. This finding indicates that the 10- μ m hydrocarbon brightening is confined to low altitudes below the 1- μ bar level eliminating the long-suggested possibility of direct auroral bombardments while opening a new possibility of dynamical origin for the 10- μ m brightening.

[7 SS-02] A Monitoring Observation of Comet 17P/Holmes during 2014 Apparition

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We performed a monitoring campaign of a Jupiter-Family comet 17P/Holmes, which underwent the dramatic outburst on 23.3 October 2007 at $r_h=2.44$ AU, to investigate the secular change in activity and subsequent physical properties of the inner dust coma before and after the 2014 perihelion passage. The monitoring observation was carried out over two years: from May to July 2013, from July to November 2014, and January 2015 with \sim weekly cadence. We conducted photometry monitoring in Rc band using four ground-based telescopes, which are the Ishigakijima Astronomical Observatory 105cm telescope, the Okayama Astrophysical Observatory 50cm telescope, the Nishi-Harima Astronomical Observatory 2m telescope, and the T30 51cm i-telescope, respectively. In order to examine the dust production rate, we put a constraint upon the physical distance from the center of the nucleus as $\rho=2500$ km and conducted aperture photometry. We found that the average absolute Rc magnitude over the period between July to November 2014 was $mR(1,1,0)\sim 12.29$, which was approximately 1.5 magnitudes fainter than those of 2013 data. Accordingly, comet 17P/Holmes seemed to become dormant, although a minor eruption was detected on January 26, 2015. In this presentation, we will

introduce our ongoing project for 17P/Holmes and discuss why the nucleus becomes dormant within one orbital period.

[7 SS-03] Multiple Outbursts of a Short-Periodic Comet 15P/Finlay

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15P/Finlay is one of the Jupiter-Family Comets that has long been known since the late 19 century. The comet maintains the perihelion around 1.0 AU over a century, without showing any prominent activities (i.e. fragmentation or eruption) since the discovery. According to reports in unpublished observations, the comet exhibited an outburst in the middle of 2014 December. We conducted a imaging observation of 15P/Finlay just after the report, from 2014 December 23 to 2015 February 18 using three telescopes (the Okayama Astrophysical Observatory 50-cm telescope, the Ishigakijima Astronomical Observatory 105-cm telescope, and the Nishi-Harima Astronomical Observatory 2-m telescope), which constitute a portion of the OISTER (an inter-university observation network in the optical and infrared wavelengths). As a result of the frequent observations, we witnessed the second outburst around UT 2015 January 16.

Such cometary outbursts draw the attention to researchers on ground that they could offer insight into the internal structure of comets, following a historical outburst occurred at 17P/Holmes on 2007 October 23. Although cometary outbursts have been often reported mostly in unpublished observations or unreviewed reports, it should be emphasized that there are not a sufficient number of astrophysical research which characterizes the physical properties by observing the aftermaths. This presentation provides a new observational result of 15P/Finlay outburst. Based on the morphological development of the dust cloud as well as the near-nuclear magnitude, we will derive the kinetic energy of the outburst. Finally we plan to compare the results of 15P/Finlay with those of analogical events at 17P/Holmes and P/2010 V1 (Ikeya-Murakami).

[7 SS-04] The phase angle dependences of

Reflectance on Asteroid (25143) Itokawa from the Hayabusa Spacecraft Multi-band Imaging Camera(AMICA)

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Remote-sensing observation is one of the observation methods that provide valuable information, such as composition and surface physical conditions of solar system objects. The Hayabusa spacecraft succeeded in the first sample returning from a near-Earth asteroid, (25143) Itokawa. It has established a ground truth technique to connect between ordinary chondrite meteorites and S-type asteroids. One of the scientific observation instruments that Hayabusa carried, Asteroid Multi-band Imaging Camera(AMICA) has seven optical-near infrared filters (ul, b, v, w, x, p, and zs), taking more than 1400 images of Itokawa during the rendezvous phase.

The reflectance of planetary body can provide valuable information of the surface properties, such as the optical aspect of asteroid surface at near zero phase angle (i.e. Sun-asteroid-observer's angle is nearly zero), light scattering on the surface, and surface roughness. However, only little information of the phase angle dependences of the reflectance of the asteroid is known so far.

In this study, we investigated the phase angle dependences of Itokawa's surface to understand the surface properties in the solar phase angle of $0^\circ - 40^\circ$ using AMICA images. About 700 images at the Hayabusa rendezvous phase were used for this study. In addition, we compared our result with those of several photometry models, Minnaert model, Lommel-Seeliger model, and Hapke model. At this conference, we focus on the AMICA's v-band data to compare with previous ground-based observation researches.

[7 SS-05] Color Ratios of Parallel-Component Polarization as a Maturity Indicator for the Lunar Regolith

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Polarization of the light reflected off the Moon provides information on the size and composition of the particles in the lunar regolith. The mean

particle size of the regolith can be estimated from the combination of the albedo and degree of polarization, while the color ratio of the parallel-component polarization (CP) has been suggested to be related to the amount of nanophase metallic iron ($npFe^0$) inside the regolith particles. Both the mean size and $npFe^0$ abundance of the particles have been used as maturity indicators of the regolith since sustained impacts of high energy particles and micro-meteoroids cause comminution of particles and production of $npFe^0$. Based on our multispectral polarimetric observations of the whole near side of the Moon in the U, B, V, R, and I bands, we compare the maps of the mean particle size, CP, and the optical maturity (OM). We find that the mean particle size map is sensitive to the most immature (~ 0.1 Gyr) soil, the OP map to the intermediate immaturity (a few 0.1 Gyr) soil, and the CP map to the least immature (~ 1 Gyr) soil.

[7 SS-06] Development of a Prototype System for the Optical-Video-Detection and Characterisation of Meteors/Fireballs in South Korea

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(Talk by Hinse, Jeong & Lee)

During a six-month period (autumn 2014 within the framework of a research & education project) we have constructed a professional double-station video-meteor detection network at the SOAO and BOAO mountain summits. Meteor detection is achieved by pixel-to-pixel motion-detection trigger. Each station is nearly autonomous and has three cameras with fixed viewing angles monitoring part of the night-sky over Korea. Various field of views are in use for testing purpose and captured video-meteor data is automatically transferred to a central FTP server on a nightly basis. Data is publicly available. The network has been operational since September 2014 and could serve as a prototype system for a more extended national network for meteor/fireball monitoring and detection in Korean airspace. We will report on the network construction, technical setup and present first results of detected meteors and fireballs. Further information: Meteors@KASI: