Office for Planning and Management

Office for Planning and Management (OPM), headed by the University President, was established at the start of the University of Aizu as an internal research organization to carry out implementing the following assignments of the University:

- General investigative research concerning university functions
- Performing general program planning and design regarding university education and research
- International exchange
- Public relations and publications
- Legal affairs
- Local arrangement of international conference
- Other necessary matters concerning administrative management

As the University develops, the expectations for the OPM have been changing from time to time. After the corporatization, in 2008, dealing with the matters of special mission given by the regents of the University was added to its functions. However, collaborating with other organizations of the University for the advancement of its education and research always remain the most important mission of the OPM.
Centers

For education and collaboration with high schools and junior high schools as well as local community, the OPM is planning and arranging “Science Cafe”, a scientific talk session with a small number of general citizens (20 to 30 persons in most cases). Additionally, collaboration with several high schools, especially those which have SSH (Super Science High School) courses, has been carried out. These activities can be good opportunities for the University to increase its name recognition.

Kazuaki Yamauchi is assigned to serve as Director-General of Department for Student Affairs. His main work is to recruit prospective students by visiting high schools all over Japan and attending career counseling meetings for high school students held in major cities in Japan. In addition, he visits various IT-related companies in Tokyo metropolitan area to solicit jobs for graduating students and also invite those companies to the campus for their recruitment. He is responsible for management of entrance examinations and admissions of the university. His current research theme is “Research on admission methods to secure the superior new students in accordance with university admission policy”.

Tsutomu Hashida is mostly engaged in research of higher education policy including MEXT-funded projects and other tasks such as university evaluation and relations to the Japanese association of public universities (Kodaikyo). He gave a series of lectures on basic Japanese writing, too. He resigned at the end of August, 2014.

The main work of Kyoko Okudaira, concurrent assignment with CAIST, was personnel matters of fresh hiring and education collaboration with high schools and junior high schools. She was also involved in JSPS research application.

Junya Terazono, concurrent assignment with CAIST, worked for creating Annual Review and education linkage with high schools with Ms. Okudaira, and public affairs of the University using internet media such as Twitter and the website. Also he engaged CAIST-related business work from end of January 2015.

Yasuhiro Abe supports faculty and students to apply for external grants, especially international collaboration and research fellowship programs of the Japan Society for the Promotion of Science.

All members of OPM worked collaboratively and proactively for the realization of better University research and education.
Refereed Journal Papers


We present a comprehensive description of petrologic, chemical and spectroscopic features of thermally metamorphosed CI-like and CM (and CM-like) chondrites. Only two such CI chondrites have so far been discovered i.e. Y-86029 and Y-82162. Thermal metamorphism in these chondrites is apparent in their low contents of H2O, C and the most thermally labile trace elements, partial dehydration of matrix phyllosilicates and abundance of thermally decomposed CaMgFeMn carbonates, which apparently resulted from heating of MgFe carbonate precursors. The CM chondrites exhibit a wide range of aqueous and thermal alteration characteristics. This alteration was almost complete in Y-86720 and Y-86789, which also escaped alternating episodes of oxidation and sulfidization experienced by the others. Thermal metamorphism in the CM chondrites is apparent in loss of thermally labile trace elements and also in partial to almost complete dehydration of matrix phyllosilicates: heating was less uniform in them than in CI chondrites. This dehydration is also evident in strength and shapes of integrated intensities of the 3 μm bands except in PCA 91008, which experienced extensive terrestrial weathering. Tochilinite is absent in all but Y-793321 probably due to heating. Textural evidence for thermal metamorphism is conspicuous in blurring or integration/fusion of chondrules with matrix in the more extensively heated (600 ≥ C) CM chondrites like PCA 91008 and B-7904. TEM and XRD analyses reveal that phyllosilicate transformation to anhydrous phases proceeds via poorly crystalline, highly desiccated and disordered ‘intermediate’ phases in the least and moderately heated (400600 ° C) carbonaceous chondrites like WIS 91600, PCA 91008 and Y-86029. These findings are significant in that they confirm that these phases occur in meteorites as well as terrestrial samples. Thermal alteration in these meteorites can be used to identify other carbonaceous chondrites that were thermally metamorphosed in their parent bodies. Combining RNAA trace element data for experimentally heated Murchison CM2 samples with petrographic and spectroscopic data, these thermally metamorphosed carbonaceous chondrites can be ordered by severity of open system heating as 400 ° C Y-793321 > WIS91600 = EET90043 = A881655 > PCA91008 > B-7904 > Y-86029 > Y-82162 > Y-86720
Summary of Achievement

Nearly all heated carbonaceous chondrites discovered so far have been found in Antarctica, which is known to have sampled the flux of near-Earth material for much longer than exemplified by current falls.


We have proposed an experiment (the Tanpopo mission) to capture microbes on the Japan Experimental Module of the International Space Station. An ultra low-density silica aerogel will be exposed to space for more than 1 year. After retrieving the aerogel, particle tracks and particles found in it will be visualized by fluorescence microscopy after staining it with a DNA-specific fluorescence dye. In preparation for this study, we simulated particle trapping in an aerogel so that methods could be developed to visualize the particles and their tracks. During the Tanpopo mission, particles that have an orbital velocity of 8 km/s are expected to collide with the aerogel. To simulate these collisions, we shot Deinococcus radiodurans-containing Lucentite particles into the aerogel from a two-stage light-gas gun (acceleration 4.2 km/s). The shapes of the captured particles, and their tracks and entrance holes were recorded with a microscope/camera system for further analysis. The size distribution of the captured particles was smaller than the original distribution, suggesting that the particles had fragmented. We were able to distinguish between microbial DNA and inorganic compounds after staining the aerogel with the DNA-specific fluorescence dye SYBR green I as the fluorescence of the stained DNA and the autofluorescence of the inorganic particles decay at different rates. The developed methods are suitable to determine if microbes exist at the International Space Station altitude.


Lunar and Planetary exploration uses huge amount of tax and this fact shows that the result must be resolved to the citizens. In this viewpoint, we established a website called “The Moon Station” in 1998, with primary purpose
of promotion of Japanese lunar exploration program “SELENE” (later named “Kaguya”). After 16 years since the foundation, the website still effuses vast amount of lunar and planetary exploration information, both domestic and overseas. During this period, we experienced “Apollo Hoax” problem and inclusion of planetary exploration in contents, and independence of management from JAXA. This paper describes the history of the website from the birth to current prosperity, and denotes knowledge and lessons obtained through management and enforcement of the web contents. Also, the paper describes the remaining tasks and future direction of the website and outreach in lunar and planetary exploration domain. Paper in Japanese.

Refereed Proceeding Papers


The Tanpopo astrobiology experiment will conduct microbe and bio-organics exposure and organic-bearing micrometeoroid capture on ISS for three years from 2014 to 2015.


WISE-CAPS (Web-based Integrated Secure Environment for Collaborative Environment in Planetary Science) is a Web-GIS based environment for collaboration and communication promoting lunar (and planetary) science and analysis of exploration data, developed by the members and located in The University of Aizu. Since the start of development in 2008, the system evolved merging several unique and essential functions required for analysis of lunar exploration data and communication between researchers. The thought underlying this system is “researcher-centric”, “web-centric” and “all-in-one”. We show here the
Summary of Achievement

recent implementations of new functions for WISE-CAPS: advanced data registration system through the web browser, multi-layer controlling window and voice and video chat system integrated with GIS.


Importance of determining topographic boundary from image data obtained by lunar and planetary data is increasing due to rapidly increase of resolution of imagers. In past days, the boundary of topographic features can be easily determined by human (visual) decision. However, we have extremely precise data, 50 cm in maximum, and it makes difficult to determine simple boundary of topographic features. In this paper, we provide possibility that we can recognize the boundary of crater by image processing technology without human subject and prejudice. The preliminary application of our original algorithm is applied to Tycho Crater on the Moon, using image and altitude data obtained by Kaguya, Japanese lunar explorer. The result is that crater boundary has very complex shape, rather than circular one that most of us has been thought. This algorithm can be applied for determination of lunar topography boundary in other cases such as Mare (Sea), Mons (Mountains) and Craters.

Unrefereed Papers


Summary of Achievement

This paper describes detailed access analysis of the website access log (The Moon Station, Japan’s most popular website on lunar and planetary exploration) and users’ tendency of interest from astronomical event such as autumn moon viewing and total lunar eclipse.


This paper describes research on the most recent international movement of asteroid mining particularly in US, both governmental and private entities.


This paper shows importance of investigation of space mining from the viewpoint of terrestrial resource survey and expected deficit of resources.

Books


Academic Activities


Vice Chairperson, Program Editor, Education and Outreach session, International Symposium on Space Technology and Science


Program Committee, International Symposium on Space Technology and Science
Summary of Achievement

Committee member of the Space Utilization Committee, JSASS (the 47th period)

Steering Committee (Tohoku Branch)

Chairperson of Tohoku Branch committee

Ph.D and Others Theses

Thesis Advisor: H. Demura and K. Okudaira

Thesis Advisor: J. Terazono

Thesis Advisor: J. Terazono

Thesis Advisor: J. Terazono

Thesis Advisor: S. Bhalla and A. Vazhenin with support of J. Terazono

Thesis Advisor: S. Bhalla and A. Vazhenin with support of J. Terazono

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Thesis Advisor: J. Terazono