

Centers

**Research Center for Advanced Information Science and  
Technology**



Haruo Terasaka  
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Assistant Professor



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## Refereed Journal Papers

[saji-01:2012] J. Y. Lee B. Wang N. H. Saji K. J. Ha, J. E. Chu and M. Watanabe. What caused the cool summer over northern Central Asia, East Asia and central North America during 2009? *Environmental Research Letters*, 7:044015, 2012.

What does note mean?

[saji-02:2012] N. H. Saji Chu, J. E. and K. J. Ha. Non-linear intraseasonal phases of the East Asian summer monsoon: extraction and analysis using self-organizing maps. *J. Climate*, 25:doi:<http://dx.doi.org/10.1175/JCLI-D-11-00512.1>, 2012.

What does note mean?

[tdpham-01:2012] T.D. Pham, C.T. Truong, M. Oyama-Higa, and M. Sugiyama. Mental-disorder detection using chaos and nonlinear dynamical analysis of photoplethysmographic signals. *Chaos, Solitons and Fractals*, pages 64–74, 2013.

SCI (major) journal

[tdpham-02:2012] T.D. Pham Y. Chen. Entropy and regularity dimension in complexity analysis of cortical surface structure in early Alzheimer’s disease and aging. *J. Neuroscience Methods*, 215:210–217, 2013.

SCI (major) journal

[tdpham-03:2012] T.D. Pham R. Su, C. Sun. Junction detection for linear structures based on Hessian, correlation and shape information. *Pattern Recognition*, 45:3695–3706, 2012.

SCI (major) journal

[tdpham-04:2012] T.D. Pham. Regularity dimension of sequences and its application to phylogenetic tree reconstruction. *Chaos, Solitons & Fractals*, 45:879887, 2012.

SCI (major) journal.

[tdpham-05:2012] T.D. Pham C. Zhang, C. Sun. Segmentation of clustered nuclei based on concave curve expansion. *Journal of Microscopy*, 25:57–67, 2013.

SCI (major) journal

## Summary of Achievement

[tdpham-06:2012] T.D. Pham. Possibilistic nonlinear dynamical analysis for pattern recognition. *Pattern Recognition*, 46:808816, 2013.

SCI (major) journal

[yoshiko-01:2012] R.; Matsunaga T.; Ogawa Y.; Ishihara Y.; Morota T.; Hirata N.; Ohtake M.; Hiroi T.; Yokota Y.; Haruyama J. Yamamoto, S.; Nakamura. Massive layer of pure anorthosite on the Moon. *Geophys. Res. Lett.*, 39:doi: 10.1029/2012GL052098, September 2012.

We present a new global survey of the purest anorthosite (PAN) rock using the Spectral Profiler onboard Kaguya. We found that PAN rocks are widely distributed over the Moon, including the Feldspathic Highland Terrain and the south and north polar regions. All PAN sites are associated with huge impact structures with diameters larger than 100 km. Based on the global distributions of PAN and olivine-rich sites, we propose the existence of a massive PAN layer with a thickness of 50 km below an uppermost mafic-rich mixed layer with a thickness of 10 km. Below the PAN layer, a lower crustal layer with olivine-rich materials may be present on the nearside, but not on the far side of the Moon. The existence of a PAN layer with a thickness of 50 km suggests an Al<sub>2</sub>O<sub>3</sub> abundance of 33 to 34 wt.in the lunar crust, which is higher than previous estimates of ~32 wt.data indicate the massive production event of PAN during the early stage of the formation of the Moon, supporting the lunar magma ocean scenario.

[yoshiko-02:2012] Hiroshi; Matsunaga Tsuneo; Yokota Yasuhiro; Haruyama Junichi; Morota Tomokatsu; Yamamoto Satoru; Ogawa Yoshiko; Hiroi Takahiro; Karouji Yuzuru; Saiki Kazuto; Lucey Paul G. Ohtake, Makiko; Takeda. Asymmetric crustal growth on the Moon indicated by primitive farside highland materials. *Nature Geoscience*, 5:384–388, doi: 10.1038/ngeo1458, June 2012.

The Moon's nearside and farside differ in topography, crustal thickness, mare volcanic activity and elemental concentrations. The origin of this dichotomy is still unclear. It is also unknown whether the characteristics of the oldest crust, the anorthositic lunar highlands, reflect a different magmatic evolution of nearside and farside crust. Based on analyses of nearside highland rocks, it has been suggested that nearside crustal growth occurred from an evolved, iron-rich magma ocean, but information from the farside highlands is lacking. Here we apply an empirical algorithm to lunar reflectance spectra from the Kaguya Spectral Profiler and report that magnesium contents

relative to iron of primitive crustal highland rocks on the farside are higher than on the nearside. Our findings indicate that the farside crust consists of rocks that crystallized from less-evolved magma than the nearside crust. We conclude that the lunar dichotomy is directly linked to crystallization of the magma ocean and suggest that the composition of the magma ocean was more primitive at the time of crustal growth than previously estimated.

### Refereed Proceeding Papers

[kitazato-01:2012] K. Kitazato, S. Abe, M. Ishiguro, Y. Ishibashi, and M. Abe. Measuring the YORP Effect of Asteroid 4660 Nereus. In *American Astronomical Society, DPS meeting #44*, number #210.20, October 2012.

[kitazato-02:2012] T. Iwata, K. Kitazato, M. Abe, M. Ohtake, S. Matsuura, K. Tsumura, N. Hirata, C. Honda, Y. Takagi, Y. Nakauchi, T. Hiroi, H. Senshu, T. Arai, T. Nakamura, T. Matsunaga, M. Komatsu, N. Takato, and S. Watanabe. Results of the Critical Design for NIRS3: The Near Infrared Spectrometer on Hayabusa-2. In *44th Lunar and Planetary Science Conference*, number 1719, page 1908, March 2013.

[tdpham-07:2012] X. Sirault-R. Furbank T.D. Pham X. Tan, C. Sun. Feature correspondence with even distribution. In *Digital Image Computing: Techniques and Applications*, page 7 pages. IEEE, 2012.

IEEE sponsored conference

[tdpham-08:2012] M. Oyama-Higa H.X. Nguyen H. Saji M. Sugiyama T.D. Pham, T.C. Thang. Chaos and nonlinear time-series analysis of finger pulse waves for depression detection. In *Biosignals 2013*, pages 298–301. SCITEPRESS, 2013.

Proceedings volume is submitted for indexation by Thomson Reuters Conference Proceedings Citation Index (ISI), INSPEC, DBLP, EI (Elsevier Index) and Scopus.

[tdpham-09:2012] J. Xu-D.T. Nguyen R.G. Martindale C.W. Deveney T.D. Pham, D.T.P. Le. Personalized hernia mesh identification. In *8th International Seminar on Medical Information Processing and Analysis*, pages 31–39. Fondo Editorial UNET, 2012.

ISBN: 978-980-6300-72-9

## Summary of Achievement

[tdpham-10:2012] X. Sirault-R. Furbank T.D. Pham X. Tan, C. Sun. Cross image inference scheme for stereo matching. In *11th Asian Conference on Computer Vision*, pages 217–230, 2013.

LNCS paper

[tdpham-11:2012] T.D. Pham Y. Chen. Analysis of MRI-based cortical surface structure complexity in dementia by sample entropy. In *IEEE Symposium Series on Computational Intelligence*, pages 189–192, 2013.

IEEE paper

[tdpham-12:2012] X. Sirault-R. Furbank T.D. Pham X. Tan, C. Sun. Tree structural watershed for stereo matching. In *27th International Conference on Image and Vision Computing New Zealand*, pages 340–345. ACM Digital Library, 2012.

ACM paper

[tdpham-13:2012] T.D. Pham. Kriging-based possibilistic entropy of biosignals. In *EUSIPCO-2012*, pages 1816–1820, 2012.

European Signal Processing Conference, IEEE Technical Co-Sponsor.

[tdpham-14:2012] C. Sun-T.D. Pham C. Zhang, R. Su. Segmentation of clustered nuclei based on curvature weighting. In *27th International Conference on Image and Vision Computing New Zealand*, pages 49–54. ACM Digital Library, 2012.

ACM paper

[tdpham-15:2012] T.C. Thang K. Ichikawa T.D. Pham, N. Nguyen-Thanh. Chaotic behavior in intracellular space: an implication for simulation and modeling of cancer. In *European Modelling Symposium 2012*, pages 135–139. IEEE Computer Society, 2012.

IEEE paper

[tdpham-16:2012] M. Oyama-Higa T.D. Pham, T.C. Thang. Toward the development of a cost-effective e-depression detection system. In *Int. Conf. Computerized Healthcare*, pages 23–28. IEEE Computer Society, 2012.

IEEE paper

- [tdpham-17:2012] T.D. Pham. Regularity dimension of medical images. In *Advances in Knowledge-Based and Intelligent Information and Engineering Systems*, pages 314–323. IOS Press, 2012.  
16th Inter. Conf. Knowledge-Based and Intelligent Information & Engineering Systems
- [tdpham-18:2012] T.D. Pham J. Xu. Robust impulse-noise filtering for biomedical images using numerical interpolation. In *ICIAR 2012*, pages 146–155, 2012.  
LNCS paper
- [tdpham-19:2012] K. Ichikawa N. Nguyen-Thanh, T.D. Pham. Segmentation of mitochondria in intracellular space. In *IEEE Symposium Series on Computational Intelligence*, pages 218–221. IEEE, 2013.  
IEEE paper
- [tdpham-20:2012] T.D. Pham. Image texture analysis using geostatistical information entropy. In *IEEE-IS'2012*, pages 353–356, 2012.  
IEEE conference
- [tdpham-21:2012] N. Nguyen-Thanh T.C. Thang K. Ichikawa T.D. Pham, D. Vo. How complex is cancer intracellular signaling space in FIB-SEM Images? In *European Modelling Symposium 2012*, pages 131–134. IEEE Computer Society, 2012.  
IEEE paper
- [tdpham-22:2012] T.D. Pham R. Su, C. Sun. Dendritic spines detection based on directional morphological filter and shortest path. In *34th IEEE EMBS Conf. Engineering in Medicine and Biology*, pages 5343–5346, 2012.  
IEEE conference
- [tdpham-23:2012] C. Sun-T.D. Pham R. Su, C. Zhang. Linear feature enhancement based on morphological operation and Gabor function. In *27th International Conference on Image and Vision Computing New Zealand*, pages 91–96. ACM Digital Library, 2012.  
ACM paper
- [yoshiko-03:2012] Axel; Imamura Takeshi; Helbert Jorn; Wada Takehiko; Hasegawa Sunao; Taguchi Makoto; Matsunaga Tsuneo; Ogawa Yoshiko;

## Summary of Achievement

Kitazato Kohei; Fukuhara Tetsuya; Tanaka Satoshi; Nakamura Ryosuke; Sekiguchi Tomohiko; Arai Takehiko; Mueller Thomas Okada, Tatsuaki; Hagermann. Physical properties of Asteroid 1999JU3 by thermal infrared imager TIR on Hayabusa2. In *39th COSPAR Scientific Assembly*, page 1397, September 2012.

A thermal infrared (TIR) imager is being prepared in Hayabusa2 to investigate physical properties of surface of C-class Near-Earth Asteroid 1999JU3. Hayabusa2 is the follow-on mission after the Japanese asteroid explorer Hayabusa. Since the target body is a C-class asteroid, optimal set of instruments is different from that of Hayabusa: telescopic (multi-band) imagers, laser ranger, near-infrared spectrometer to identify 3 micron absorption band, and a thermal infrared imager. TIR is based on the LIR on Akatsuki which has been developed for mapping Venus clouds at the temperature range of 220-250K. The instrument is applicable to mid-infrared imaging to investigate thermal inertia of asteroid surface. The instrument adopts a non-cooled bolometer array as its detector. The instrument has a field of view of 16 x 12 degree, detector of 320 x 240 effective pixels, and its targeted detection temperature range of 250 to 400K. The total mass is about 3.3 kg including the detector unit, hood, and electronics. The main scientific objectives of TIR are to map the surface physical properties. Surface physical properties are determined in 10 m spatial resolution from the Home Position, 20km sunward from the asteroid surface. Higher resolved images are taken at lower altitude during the descent operation for sample collection. Thermal properties reflect the condition of materials, i.e. porosity of regolith or rocks, or particle size of soils. It will help understand the surface sedimentation processes under microgravity. Condition of large boulders or inner wall of huge craters informs the internal condition and alteration processes of parent body or current asteroid, respectively. Yarkovsky or YORP effects will be also investigated by thermal imaging with long-term observation of its trajectory and rotation rate. TIR is also expected to measure the properties of surface geologic features, crater ejecta, surrounding moons, or floating dusts if they exist. TIR will also play an important role for giving information on sampling site selection by its surface physical condition as well as for assessing the spacecraft safety operation for touchdown regarding the thermal emission or temperature of asteroid.

[yoshiko-04:2012] Yoshiko Ogawa; Junichi Haruyama; Tsuneo Matsunaga; Ryosuke Nakamura; Takahiro Hiroi; Yasuhiro Yokota; Satoru Yamamoto; Makiko Ohtake; Junya Terazono; Yuuki Hayashi; Sho Sasaki.

Mapping of the VIS-NIR spectral features observed around the lunar swirls and implications for the origin of the albedo structure. In *American Geophysical Union Fall Meeting 2012*, pages P53A–2047, December 2012.

ENE/Kaguya to investigate the optical properties of the various kinds of the so-called lunar swirls. We searched for any systematic relationship between the albedo and the maturity, which should be exhibited by the reflectance at 0.75 micron and the reddening parameters such as the depth of the absorption bands. We mapped the detected features of the observed spectra of the swirls on the Moon, including the results of the Modified Gaussian Model. Based on our data analyses, we try to approach the origin of the enigmatic albedo contrasts of the lunar swirls.

[yoshiko-05:2012] M. Ohtake, H. Takeda, T. Matsunaga, Y. Yokota, J. Haruyama, T. Morota, Y. Yamamoto, S. and Ogawa, T. Hiroi, Y. Karouji, K. Saiki, and H. Otake. Negative Correlation Between Primitive Farside Highland Materials and Mafic Silicate Abundance on the Moon. In *44th Lunar and Planetary Science Conference*, page 1850, March 2013.

The mafic silicate abundance to Mg number of the lunar farside are negatively correlated suggesting a continuous Mg-Fe differentiation mechanism.

[yoshiko-06:2012] T.; Ohtake M.; Haruyama J.; Nakamura R.; Yamamoto S.; Sasaki S.; Hiroi T.; Ogawa Y.; Honda C.; Morota T.; Ishihara Y. Yokota, Y.; Matsunaga. Vis-NIR Spectral Continuum Slope of Lunar High Latitude Regions Observed by SELENE Spectral Profiler. In *44th Lunar and Planetary Science Conference*, page 3025, March 2013.

Relationship between the low Vis-NIR spectral continuum slope area in the lunar high-latitude region and topography is investigated.

[yoshiko-07:2012] H.; Morota T.; Ishihara Y.; Matsunaga T.; Yokota Y.; Yamamoto S.; Haruyama J.; Ogawa Y.; Hiroi T.; Karouji Y.; Saiki K. Ohtake, M.; Takeda. Compositional Variation of the Lunar Highland Crust. In *Second Conference on the Lunar Highlands Crust*, pages 47–48, September 2012.

his study investigated spatial and vertical composition (modal abundance) of highland anorthosite rock over the entire lunar surface. Our result indicates decreased mafic mineral abundance with depth in both the upper and lower crusts.



## Summary of Achievement

[yoshiko-08:2012] R.; Matsunaga T.; Ogawa Y.; Ishihara Y.; Morota T.; Hirata N.; Ohtake M.; Hiroi T.; Yokota Y.; Haruyama J. Yamamoto, S.; Nakamura. Global Distribution of Mg-Spinel on the Moon Revealed by SELENE Spectral Profiler. In *44th Lunar and Planetary Science Conference*, page 1768, March 2013.

We report the global distribution of Mg-rich spinels on the Moon revealed by the Spectral Profiler onboard the Japanese lunar explorer SELENE (Kaguya).

[yoshiko-09:2012] T.; Tanaka S.; Taguchi M.; Nakamura R.; Sekiguchi T.; Hasegawa S.; Ogawa Y.; Kitazato K.; Matsunaga T.; Imamura T.; Wada T.; Arai T.; Yamamoto Y.; Takaki R.; Tachikawa S.; Helbert J.; Mueller T.; Hagermann A. Okada, T.; Fukuhara. Thermal-Infrared Imager TIR on Hayabusa-2: Thermal Properties of C-Class Asteroid 1999JU3. In *Asteroids, Comets, Meteors 2012*, pages No. 1667, id.6136, May 2012.

TIR is a remote instrument on Hayabusa2 for thermal mapping of a C-class NEA 1999JU3. TIR observation is not only for scientific investigation of asteroid physical properties but for assessment of landing site selection and safety descent operation.

[yoshiko-10:2012] T.; Tanaka S.; Taguchi M.; Imamura T.; Arai T.; Senshu H.; Ogawa Y.; Demura H.; Kitazato K.; Nakamura R.; Sekiguchi T.; Hasegawa S.; Matsunaga T.; Wada T.; Takita J.; Sakatani N.; Helbert J.; Mueller T.; Hagermann A.; Hayabusa2 TIR Team Okada, T.; Fukuhara. Thermal-Infrared Imager TIR on Hayabusa2: Science and Instrumentation. In *44th Lunar and Planetary Science Conference*, page 1954, March 2013.

Purposes of the TIR on Hayabusa 2 are to investigate the nature, origin, and evolution processes of C-class NEA 1999JU3 through thermophysical properties.

[yoshiko-11:2012] Yoshiko Ogawa Mitsuyoshi Usami, Kousuke Imaki. Re-estimation of the lithospheric thickness of the volcanic areas on Mars. In *Japan Geoscience Union Meeting 2012*, pages PPS03–P07, May 2012.

We re-estimated the potential range of the lithospheric thickness of Mars by re-considering the possible variety of the crustal density. We used the gravity data from MRO (Mars Reconnaissance Orbiter): jgmro 110b2 anom 095.img, and topographic data from MOLA (Mars Orbiter Laser Altimeter / Mars Global Surveyor): megt90n000cb.img. Both data are provided as grided- data with

spatial the resolution of 0,25-1 degrees. The density of the crust was assumed to vary from 2700 to 3100 kg/ m<sup>3</sup>. In this study, we focus on the lithospheric thickness of the volcanic areas on Mars to compare with the previous studies such as McKenzie et al. [2002].

[yoshiko-12:2012] Yoshiko Ogawa Noriaki Asada Ryosuke Kurahashi, Hirohide Demura. Slope analyses of massive landslides on Valles Marineris, Mars. In *Japan Geoscience Union Meeting 2012*, pages PPS03–P13, May 2012.

Valles Marineris (VM) is a system of large troughs in the equatorial region of Mars. Many processes have been hypothesized to explain the geometry and formation of the troughs, including tectonic, collapse, and erosional mechanisms. VM consists of a number of large-scaled troughs suggesting massive landslides. We focused on such features and conducted an analytical survey based on the altimetry data from Mars Orbiter Laser Altimeter (MOLA) onboard Mars Global Surveyor. We used the gridded data of MOLA with spacial resolution of 1/128 degree/pix and a software called GRIDVIEW developed by Roark et al. [2004]. We examined the slopes of individual troughs on the north wall and south wall of VM, respectively. The trough areas consist of multiple planes. We picked up the planes of  $\approx$  5km in representative scale considering the resolution of MOLA gridded data. We divided each landslide-like area into 3 sections; alcove (collapse or fall), channel (erosion) and talus (deposition), referring to the image map of Mars and also partly checking the image data from HiRISE. Then we measured each slope of the sections. We observed the slopes of the alcoves are almost same between both walls, which suggests no difference of material strength and fall mechanism between the north and south walls. We also found the upper limit of the slope of the talus and the lower limit of that of the alcove are both 20-25 degrees. This fact suggests that the angle of repose on Mars are likely more than 10 degrees lower than 34 degree indicated by Chojnacki et al. [2010], which could be explained by considering the involution of the ancient air at VM on Mars.

## Unrefereed Papers

[chonda-01:2012] S. Suzuki N. Hirata T. Morota H. Demura M. Ohtake J. Haruyama N. Asada C. Honda, A. Shojiyu. Retention time of crater ray materials on the Moon. In *European Planetary Science Congress 2012*, pages EPSC2012–806, September 2012.

## Summary of Achievement

- [chonda-02:2012] T. Matsunaga M. Ohtake J. Haruyama R. Nakamura S. Yamamoto S. Sasaki T. Hiroi Y. Ogawa C. Honda T. Morota Y. Ishihara Yokota, Y. Vis-NIR Spectral Continuum Slope of Lunar High Latitude Regions Observed by SELENE Spectral Profiler. In *44th Lunar and Planetary Science Conference*, page 3025, March 2013.
- [chonda-03:2012] S. Suzuki N. Hirata T. Morota H. Demura M. Ohtake J. Haruyama N. Asada Honda, C. Effect of FeO content to retention time of crater ray materials. In *American Geophysical Union, Fall Meeting 2012*, pages P53A–2049, December 2012.
- [chonda-04:2012] K. Kitazato M. Abe M. Ohtake S. Matsuura K. Tsumura N. Hirata C. Honda Y. Takagi Y. Nakauchi T. Hiroi H. Senshu T. Arai T. Nakamura T. Matsunaga M. Komatsu N. Takato S. Watanabe Iwata, T. Results of the Critical Design for NIRS3: The Near Infrared Spectrometer on Hayabusa-2. In *44th Lunar and Planetary Science Conference*, page 1908, March 2013.
- [chonda-05:2012] T. Morota S. Kameda R. Honda C. Honda Hayabusa-2 ONC Science Team Sugita, S. Science Observation Strategy for Hayabusa-2 Optical Navigation Cameras (ONC). In *44th Lunar and Planetary Science Conference*, page 3026, March 2013.
- [saji-03:2012] Saji N. Hameed J. E. Chu and K. J. Ha. Non-linear, intraseasonal phases of the East Asian Summer monsoon: extraction and analysis using self organizing maps. In *AGU-AOGS joint assembly*, 2012.
- [saji-04:2012] Saji Hameed. Aizu Weather - an adaptive community powered sensor network for local weather process studies. In *AGU-AOGS joint assembly*, 2012.
- [saji-05:2012] Saji Hameed. IOD-ENSO interactions: insights from 2006. In *International symposium on climate variations: from basic research to rich applications*, 2012.
- [saji-06:2012] Saji Hameed. Observed and modeled teleconnections along the equatorial waveguide during IOD-ENSO interactions. In *25th Conference on Climate Variability and Change*, 2013.

## Chapters in Book

[tdpham-24:2012] T.D. Pham. *The Hidden Markov Brains*, pages 195–214. Medical Advancements in Aging and Regenerative Technologies: Clinical Tools and Applications. IGI, 2013.

Invited Chapter

## Grants

[tdpham-25:2012] T.D. Pham. Identifying brain imaging biomarker using regularity dimension, 2012- 2013.

[yoshiko-13:2012] Y. Ogawa. H23 年度 科研費若手 B 代表 『月探査機かぐや／S P スペクトルから鉱物情報を抽出・可視化した新しいデータの作成』(数物系科学/地球惑星科学/固体地球惑星物理学), 2012.

## Academic Activities

[sampe-01:2012] T. Sampe, 2012.

Reviewer for Journal of Meteorological Society of Japan, Scientific Online Letters on the Atmosphere

[sampe-02:2012] T. Sampe, 2012.

Reviewer for Journal of Climate

[tdpham-26:2012] T.D. Pham, 2012-2013.

Associate Editor, Conference Organizer, Reviewer.

[yoshiko-14:2012] Y. Ogawa, April 2012.

vice chairman of the committee of JpGU gender equality

[yoshiko-15:2012] Y. Ogawa, April 2012.

regular member

[yoshiko-16:2012] Y. Ogawa, April 2012.

regular member

## Ph.D and Others Theses

## Summary of Achievement

[sampe-03:2012] Kazuma Sato. Graduation Thesis: Mapping of natural energy abundance in Fukushima Prefecture, University of Aizu, 2013.

Thesis Advisor: T. Sampe

[sampe-04:2012] Satoshi Tanaka. Graduation Thesis: Improvement of web application of weather information for Fukushima Prefecture, University of Aizu, 2013.

Thesis Advisor: T. Sampe

[tdpham-27:2012] T.D. Pham. Masters Students: Taishi Abe (Research: Nonlinear dynamical analysis of brain MRI for studying mental disorders) Isabel Schwende (Research: Image analysis of intracellular space) Undergraduate Students: Satoshi Haga, 3rd year, Project: Analysis of biosignals. Tomofusa Hasegawa, 3rd year, Project: Analysis of bioimages. Wataru Matsui, Project: Analysis of biosignals. Shogo Suzuki, 3rd year, Project: Analysis of bioimages., ARC-Medical, CAIST, 2013.

## Others

[tdpham-28:2012] T.D. Pham. Invited Lecture, Identifying Brain Imaging Characteristics in Early Alzheimer's Disease and Aging using Chaos and Nonlinear Dynamical Analysis, 4th Annual Congress of NeuroTalk (NeuroTalk-2013, 23-25 May 2013, X'ian, China). Plenary Talk, Image and Signal Analysis for Personalized Modelling in Medicine and Mental Health, Summer School in Advanced Aspects of Theoretical Electrical Engineering (Sozopol 2012, 7-9 September 2012, Sozopol, Bulgaria). Keynote Talk, Personalized Modeling in Computational Life Science, 2012 Symposium on Information and Communication Technology 2012 (SoICT'2012, 23-24 August 2012, Halong City, Quang Ninh , Viet Nam). ACM (SoICT 2012), 2012.

[tdpham-29:2012] T.D. Pham. Special Issue on Recent Developments on Computational Biology and Medicine, *Current Bioinformatics*, 8:1 (2013) 2-34., 2013.

Guest Editor

[tdpham-30:2012] Mayumi Oyama-Higa T.D. Pham. Special Issue on Computational Life Science, *Int. J. Computer Aided Engineering and Technology*, 4:6 (2012) 497-579., 2012.

## Summary of Achievement

### Guest Editors

[yoshiko-17:2012] かぐやプロジェクト Co-I (LISM)

[yoshiko-18:2012] 他大学講義実績: 芝浦工業大学工学部非常勤講師 (応用化学科「応用物理学」)

[yoshiko-19:2012] JAXA/ISAS 理学班員

[yoshiko-20:2012] MELOS WG メンバ

[yoshiko-21:2012] はやぶさ 2 プリプロジェクト共同研究員 (TIR/運用計画)