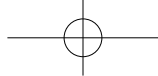


Kyoto University
International Symposium /
5th Southeast Asia Network Forum /
23rd Southeast Asia Forum

February 4th, 2017
Bangkok, Thailand



Kyoto University International Symposium
5th Southeast Asia Network Forum / 23rd Southeast Asia Forum

4 February 2017 (Saturday)

Venue: Hotel Pullman Bangkok Grande Sukhumvit Asoke

8:30-9:00 Registration

9:05-9:10 Opening Address and briefing on KU's international effort
Juichi Yamagiwa, President of Kyoto University

Session 1: Sustaining a Global Mindset to Research

9:15-9:35 **Prof. Susumu Kitagawa**, Director of iCeMS, Kyoto University
Present and Future Research of WPI-iCeMS as a Core Institute in Kyoto University Institute for Advanced Study (KUIAS)

9:35-9:40 Discussion

9:40-10:00 **Dr. Pailin Chuchottaworn**, VISTEC Council Chair
Evolution of Tertiary Education and the Creation of VISTEC by PTT Group

10:00-10:05 Discussion

10:05-10:10 Group Photo Shooting

10:10-10:20 Coffee Break

Session 2: Sustaining the Translation of Research to Society

10:20-10:40 **Prof. Easan Sivaniah**, PI Board Chair of iCeMS, Kyoto University
How a Sheet with Holes Helps Clean the Environment

10:40-10:45 Discussion

10:45-11:05 **Prof. Pimchai Chaiken**, Department of Biochemistry, Mahidol University
From Lab to Market: Contribution from Enzyme Research

11:05-11:10 Discussion

11:10-11:30 **Mr. Toshihiro Nakamura**, Kopernik Co-founder & CEO
Identifying Affordable Technologies that Works for the Poor

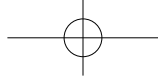
11:30-11:35 Discussion

11:35-11:55 **Juichi Yamagiwa**, President of Kyoto University
Special Lecture

11:55-12:00 Discussion

12:00-12:05 Closing Remarks for the morning sessions
Prof. Easan Sivaniah

12:05-13:00 Lunch



13:00-13:05 Opening Address
Kayo Inaba, Executive Vice-President for Gender Equality, International Affairs,
and Public Relations, Kyoto University

Session 3: Sustainable Aging Society

13:05-13:30 **Prof. Ryoichiro Kageyama**, Deputy Director of iCeMS, Kyoto University
How to Rejuvenate Your Brain

13:30-13:35 Discussion

13:35-14:00 **Assoc. Prof. Anchaleeporn Waritswat Lothongkum**, Department of Chemical
Engineering, King Mongkut's Institute of Technology Ladkrabang
Sufficiency Concepts for Social Sustainability

14:00-14:05 Discussion

14:05-14:30 **Prof. Yuichi Imanaka**, Graduate School of Medicine, Kyoto University
*Visualization and Reform of Health and Social Care Systems in a Super-Aging
Society*

14:30-14:35 Discussion

14:35-14:55 Coffee Break

Session 4: Sustainable Aging Society

14:55-15:20 **Dr. Rutchanee Gullayanon**, Assis. Dean for Research and Innovation,
Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang
Technology for Aging Society: Potentials and Barriers

15:20-15:25 Discussion

15:25-15:50 **Prof. Sadahiko Itoh**, Graduate School of Engineering, Kyoto University
*Reestablishment of Water Supply System in a Depopulation Society and Research
Needs*

15:50-15:55 Discussion

Session 5: Sustainable Aging Society

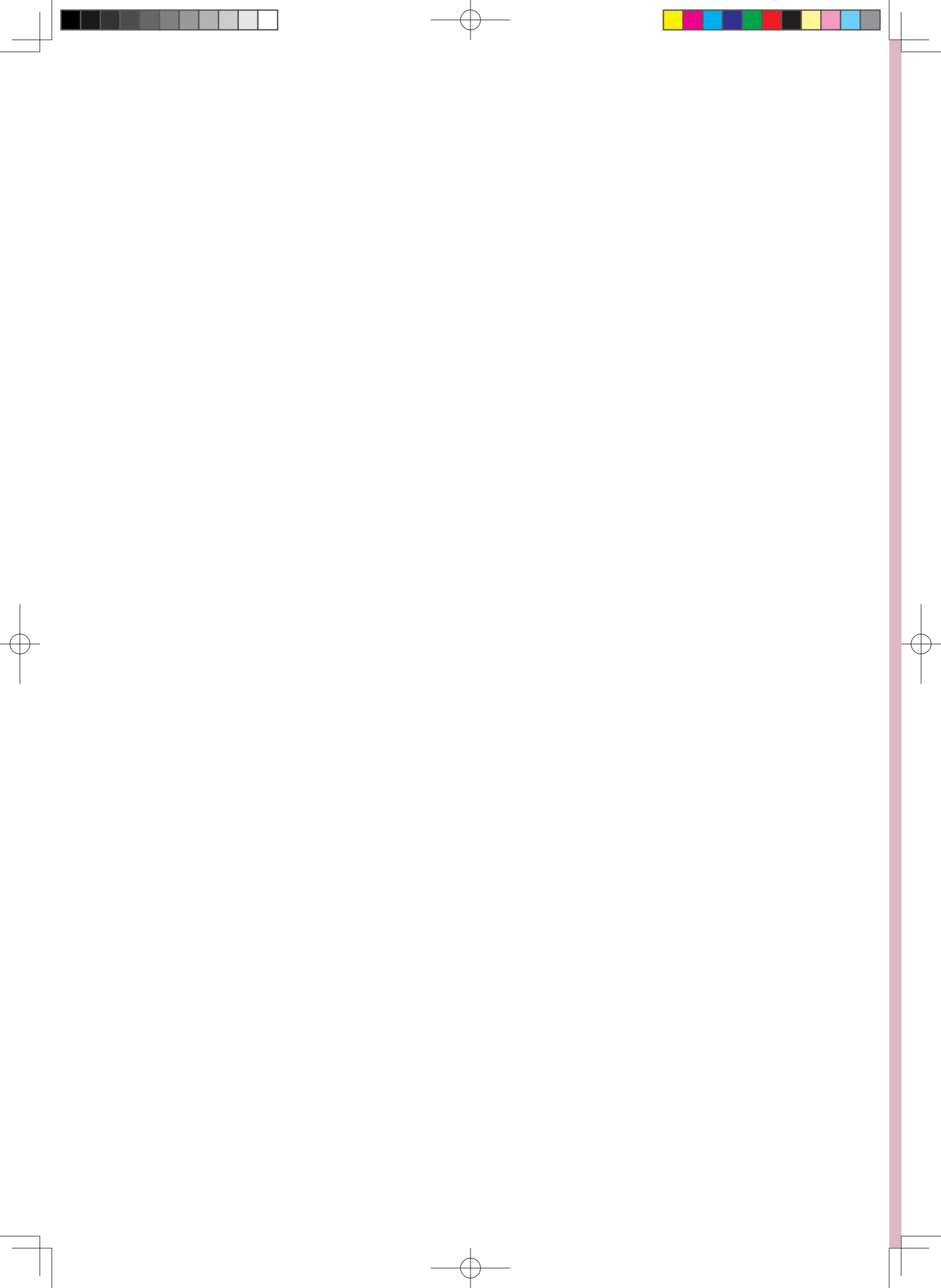
15:55-16:20 **Assoc. Prof. Kwanchit Sasiwongsaroj**, Research Institute for Languages and
Cultures of Asia, Mahidol University
Filial piety and sustainability of family care for the elderly in Thai society

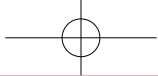
16:20-16:25 Discussion

16:25-16:50 **Assoc. Prof. Ryota Sakamoto**, Center for Southeast Asian Studies, Kyoto
University
Creating a community-based health checkup system for the elderly

16:50-16:55 Discussion

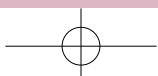
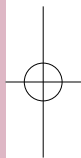
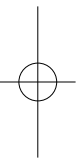
16:55-17:00 Closing Remarks
Prof. Susumu Kitagawa, Director of iCeMS, Kyoto University

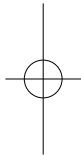
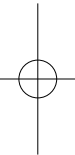


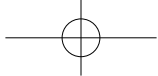


Morning Session

Session 1: Sustaining a Global Mindset to Research
Session 2: Sustaining the Translation of Research to Society







Present and future research of WPI-iCeMS as a core institute in Kyoto University Institute for Advanced Study (KUIAS)

Susumu Kitagawa

Director of Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University

Ushinomiya-cho, Yoshida, Kyoto 605-8501, JAPAN

Kitagawa-g@icems.kyoto-u.ac.jp



Susumu Kitagawa

Susumu Kitagawa received his Ph. D. at Kyoto University in 1979. He became Assistant Professor (1979), Lecturer (1983), and Associate Professor (1988) at Kinki University. He was promoted to Professor of Inorganic Chemistry at Tokyo Metropolitan University in 1992, and moved to Kyoto University as Professor of Functional Chemistry in 1998. He is now Director of Institute for Integrated Cell-Material Sciences (WPI-iCeMS) at Kyoto University launched by Japanese Government (2007). His main research fields are coordination chemistry, in particular, chemistry of coordination space, and his current research interests are centered on synthesis and properties of porous coordination polymers/metal-organic frameworks.

He received the Japan Society of Coordination Chemistry Award, (2007), Humboldt Research Award (2008), The Chemical Society of Japan Award (2009), Thomson Reuters Citation Laureate (2010), The Medal with Purple Ribbon, Japanese Government (2011), The RSC de Gennes Prize (2013), The 10th Leo Esaki Prize (2013), Japan Academy Award (2016) and ACS Fred Basolo Medal (2016).

Presentation Abstract:

iCeMS has always set out to establish a unique place in science, at the interface of fundamental cell biology and materials science. Cell biology is the study of an evolved state with a complexity that we attempt to unravel to understand the human condition. Material science is an evolving state that develops by small rational steps and inspired leaps of imagination. At iCeMS, we gathered an exceptional collection of internationally known cell biologist, materials scientists and chemical biologists from Kyoto University, from Japan and from around the globe. These eminent researchers were given the freedom to define, through their collaborations, the framework of what such a new interdisciplinary movement would like. This resulted bring focus to the natural process of developing iCeMS identity as “**Materials for Cell Elucidation and Control**” and “**Cell-inspired Materials**”.

By April 2016 Kyoto University had successfully established the Institute for Advanced Study (KUIAS). iCeMS will be include as its flagship institute in KUIAS and also will continue to pursue its world-class, front-line research through collaboration with domestic and overseas research centers. One of the most important research areas in iCeMS is going to use smart materials, inspired by cellular function, to target specific global issues. These issues fall into the category of Medicine, Environment, Energy and Natural Resources. For example we can use cell inspired materials to make water cleaner in more efficient ways. Or we can be inspired by glucose production, to turn CO₂ in a useful chemical. Both gases (especially air) and water (in the form of rain, fresh, and salt water) are ubiquitous. They contain the fundamental elements necessary for fuel and chemical products, even living systems. Given the world population has been predicted to reach 12 billion in 2100, we must develop and use science and technology to allow future generations to continue to live with a sense of security.

<http://www.icems.kyoto-u.ac.jp/en/>

<http://kuias.kyoto-u.ac.jp/>

Evolution of Tertiary Education and the Creation of VISTEC by PTT Group

Pailin Chuchottaworn

Chairperson of the Board of Vidyasirimedhi Institute of Science and Technology

Wangchan, Rayong 21210, THAILAND

pailin.c@pttplc.com



Pailin Chuchottaworn

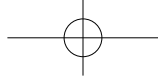
Dr. Pailin recently completed his term of President and CEO of PTT Plc., the national oil and gas company in Thailand on Sep 9th, 2015. He acquired both Master and Doctorate degree in chemical engineering from Tokyo Institute of Technology Japan with Japanese Government scholarship support. After graduating, he started his career as a technical and marketing senior executive at the National Petrochemical Plc. in 1985 and earned the highest position as the President of IRPC Public Company Limited in 2009 and in 2011 he was selected President & Chief Executive Officer of PTT Group.

Presentation Abstract:

Innovation has become one of the most important driving forces for social and economic development in many countries. But innovation will not happen without accommodating a knowledge base and advanced technology. Most importantly, there must be excellent professionals who utilize knowledge and technology to create innovations. Education in science and technology is, thus, crucial for Thailand to enhance its competitiveness in the world arena. Realising the importance of science and technology as a catalyst for the country's innovation, PTT Group is strongly resolved to develop the Science and Technology Institute Project in Rayong – Vidyasirimedhi Institute of Science and Technology (VISTEC) – in celebration of the auspicious occasion of Her Royal Highness Princess Maha Chakri Sirindhorn's 60th Birthday Anniversary in 2015. As a result of this endeavour, VISTEC, a university dedicated to Frontier Research of very high quality and graduate education in Molecular Sciences and Engineering Sciences, has been founded.

Professional Achievements:

- Thailand Business Leader of the Year from CNBC - 12th ABLA Asia Business Leaders Awards (ABLA) 2013
- Outstanding Entrepreneurship Award from Asia Pacific Entrepreneurship Awards (APEA) 2013: Oil & Gas, Mining and Energy Sector
- Doctor of Philosophy in Social Innovation Management from Suan Sunandha Rajabhat University, 2013
- Asian Corporate Director Recognition Awards 2013 from 9th Corporate Governance Asia Annual Recognition Awards 2013 by Corporate Governance Asia Magazine
- The Leadership Achievement Award for the Asia Pacific region 2012 from The Asian Banker Magazine
- Doctor of Philosophy in Sustainable Energy and Environment from Rattanakosin College for Sustainable Energy and Environment Rajamangala University of Technology Rattanakosin, 2012
- Asia's Best CEO 2012 from Corporate Governance Asia Magazine
- Best CEO 2012 from Finance Asia Magazine
- Outstanding Chula Engineer 2011 by the Chulalongkorn University's Faculty of Engineering Alumni Association
- Asia Talent Management Award from CNBC Asia Business Leaders Awards 2011
- FACS Award for Distinguished Contribution to Economic Advancement 2011 from Federation of ASEAN Chemical Societies
- Personal Research Paper Award, "Algae – The New Renewable Energy For National Security", Honorable Mention, National Defense College
- QCC Promoter Award for Top Management by Technology Promotion Association (Thailand-Japan)
- CST Award for Distinguished Contribution to Economic Advancement 2010 from Chemical Society of Thailand



How a sheet with holes helps clean the environment

Easan Sivaniah

Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University

Kyotodaigaku-katsura, Nishikyo-ku, Kyoto 615-8510, JAPAN

esivaniah@icems.kyoto-u.ac.jp



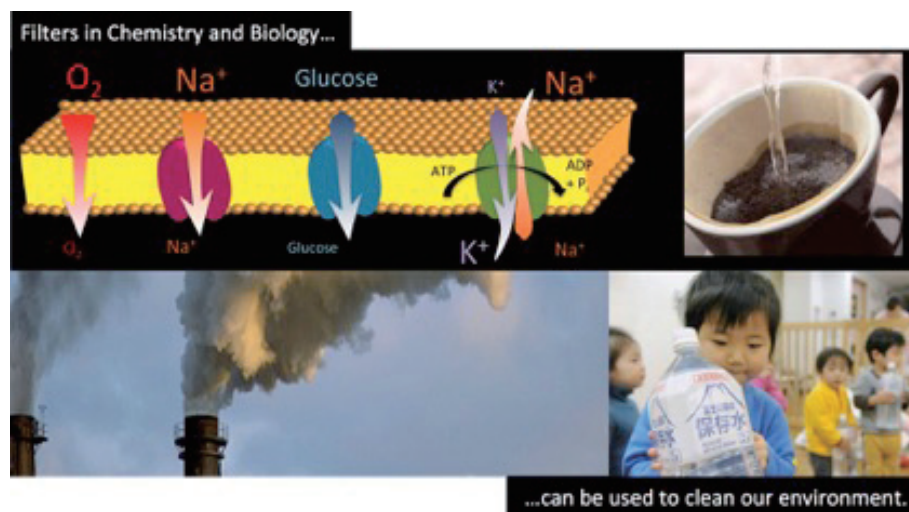
Easan Sivaniah

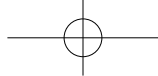
Professor Sivaniah is a graduate of the Universities of Cambridge and Imperial college, working in the area of materials technology. His particular interest is in developing materials for use in addressing some of the global environmental and health issues. These include targets in clean air and clean water.

Presentation Abstract:

In these days of relative global calm, our priorities are focused on the pressing relationships between energy, water and the environment, as it becomes increasingly clear that there are penalties suffered by environment that associated with our choices of energy sources or how we choose to use a vital but remarkably limited resource, water.

Science and technology can play a role in addressing nearly all of these problems, to a large or small extent. Our own research is related to the use of filters that use the property of holes to separate and clean distinct objects, whether it is urea from diabetic patients or salts from sea water or greenhouse gases from pwer stations. In this lecture, we will discuss how such technology can work to address the three global issues of energy, environment and health.





From Lab to Market: Contribution from Enzyme Research

Pimchai Chaiken

Department of Biochemistry and Center for Excellence in Protein and Enzyme Technology

Faculty of Science, Mahidol University, THAILAND

pimchai.cha@mahidol.ac.th



Pimchai Chaiken

Dr. Chaiken is Professor of Biochemistry at Faculty of Science, Mahidol University. Her research interests are in the areas of enzyme catalysis and engineering for applications in biocatalysis, biorefinery, bioreporter and drug discovery.

One of the most accomplished biochemists in Thailand, Dr. Chaiken has received numerous awards including the L'Oréal-UNESCO Fellowship, Young Scientist Award, Young Biochemist and Molecular Biologist Award, Taguchi Prize for Outstanding Research Achievement in Biotechnology, TRF-CHE-Scopus Researcher Award from The Thailand Research Fund, Outstanding Researcher Award from the National Research Council of Thailand, and Outstanding Scientist of Thailand, the country's highest honor in science. She serves as an editorial board member and referee for many high profile international journals, and as a reviewer in many national and international granting agencies. She was the chairperson of the organizing committee of IUBMB 18th International Symposium on Flavins and Flavoproteins (2014). She also gave a TEDx talk in 2015.

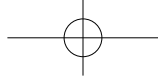
Presentation Abstract:

My areas of expertise are enzyme catalysis and applications. We have investigated more than 30 enzymes over the past 19 years. These have industrial applications in biocatalysis (using enzymes in green technology to synthesize high-value compounds), biorefinery (turning agricultural waste into valuable compounds and energy), bioreporter (using enzymes for specific detection), and in drug discovery (finding inhibitors against enzymes). Recently, some of our discoveries have made their way to commercialization. Our first product is protein markers. Protein markers are common reagents used in life science and biomedicine laboratories. Scientists use these to estimate the size of proteins of interest. Currently, all protein markers used in Thailand are imported. Our group has a competitive knowledge and technology to make this product to the highest international specifications but priced very competitively. We want to help lower the cost and procurement time of laboratory reagents for researchers in Thailand. Another innovation project in the pipeline is bacterial luciferase. Bacterial luciferase is a light-emitting enzyme that can be used for detection and diagnostic applications. This invention won a special award from Leave A Nest Co. (Japan) and invitation to Tech Planter Final Grand Prix in Tokyo.

In 2016, with my former students, we set up Enzmart Biotech (www.enzmart.com), a start-up for producing and selling protein markers. We received support from The Thailand Research Fund for feasibility study on protein markers. We also received grant support from National Innovation Agency (NIA), Thailand for business plan development and to turn our biomarkers invention into a viable business.

Selected Publications:

1. Dhammaraj T, Pinthong C, Visitsatthawong S, Tongsook C, Surawatanawong P, Chaiken P. A Single-site Mutation at Ser146 Expands the Reactivity of the Oxygenase Component of p-Hydroxyphenylacetate 3-Hydroxylase. *ACS Chem Biol.* 2016; 11(10): 2889-2896.
2. Tinikul R and Chaiken P. Structure, Mechanism, and Mutation of Bacterial Luciferase In: *Advances in Biochemical Engineering/Technology* (Springer-Verlag Berlin Heidelberg) 2016; 154:47-74.
3. Dhammaraj T, Phintha A, Pinthong C, Medhanavyn D, Tinikul R, Chenprakhon P, Sucharitakul J, Vardhanabhuti N, Jiarpinittun C, and Chaiken P. p-Hydroxyphenylacetate 3-hydroxylase as a biocatalyst for the synthesis of trihydroxyphenolic acids. *ACS Catalysis* 2015; 5:4492-4502.
4. Wongnate T, Surawatanawong P, Visitsatthawong S, Sucharitakul J, Scrutton NS, Chaiken P. Proton-coupled Electron Transfer and Adduct Configuration are Important for C4a-Hydroperoxyflavin Formation and Stabilization in a Flavoenzyme. *J. Am. Chem. Soc.* 2014; 136 (1): 241-253.



Identifying Affordable Technologies that Works for the Poor

Toshi Nakamura

Kopernik

Jalan Raya Pengosekan, Ubud, Gianyar 80571, Bali, Indonesia

Toshihiro.nakamura@kopernik.info



Toshi Nakamura

Toshi co-founded Kopernik in 2010 to connect simple, life-changing technology with people in the last mile. Prior to Kopernik, Toshi dealt with governance reform, peace building processes and post-disaster reconstruction during his tenure at the United Nations (UN) in Timor-Leste, Indonesia, Sierra Leone, the United States and Switzerland. Prior to joining the UN, Toshi was a management consultant for McKinsey and Company in Tokyo. He holds an LLB from Kyoto University and MSc Comparative Politics from the London School of Economics and Political Science, and is a Guest Associate Professor at Osaka School of International Public Policy, Osaka University. In 2014, Toshi was Advisor to Unicef Indonesia's Innovation Lab team.

Toshi was selected as a World Economic Forum (WEF) Young Global Leader in 2012, and was a member of the WEF Global Agenda Council on Sustainable Development 2014-2016.

Presentation Abstract:

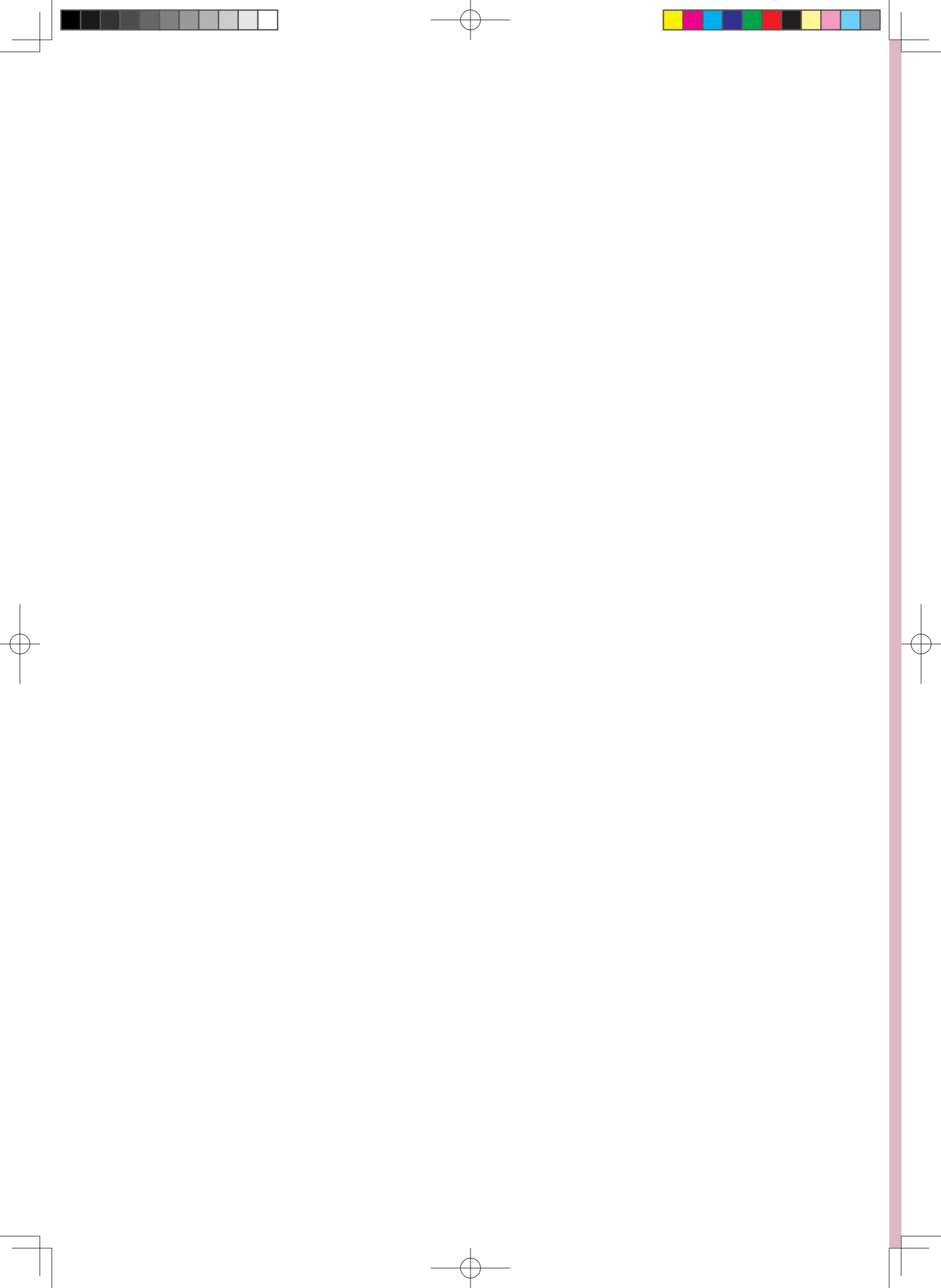
Kopernik was founded to bring simple technologies to the poor communities to reduce poverty. Since its foundation, Kopernik has reached 400,000 people in 26 countries with life-changing technologies with over 80 staff members, and also worked with a number of global corporations and universities in developing and testing new technologies for the poor.

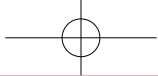
Lessons from developing and testing various technologies, ranging from fish smoker, off-grid fridges, solar dryer to mobile application to combat communicable diseases will be shared, including the need to conduct more rapid experimentation and evidence driven approach in poverty reduction and development assistance in general.

The process of building up the organization to achieve social mission has not been without challenges. In this regard, personal reflection on the challenges and opportunities in building social enterprise based in Indonesia will also be presented.

Recent Publications:

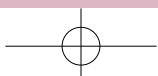
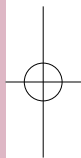
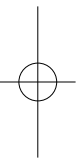
1. 'Subsidizing Impact', Stanford Social Innovation Review, Winter issue 2014, with Tomohiro Hamakawa and Ewa Wojkowska. November 2013
2. 'Entrepreneurship, Technology and Innovation in Poverty Reduction', Japan Social Innovation Journal, Hyogo University, Japan, January 2011
3. 'UNDP's Initial Response to Tsunami in Indonesia', UNDP, April 2005
4. 'Reflections on the State Institution Building Support in Timor-Leste: Capacity Development, Integrating Mission and Financial Challenges', Oslo Governance Centre, UNDP, February 2005

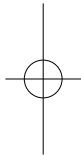
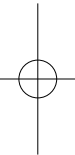


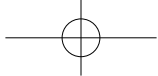


Afternoon Session

Session 3-5: Sustainable Aging Society







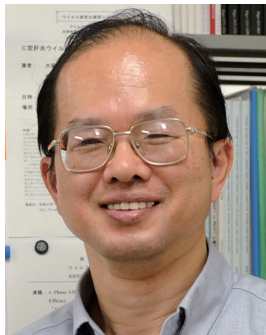
How to Rejuvenate Your Brain

Ryoichiro Kageyama

Deputy Director of Institute for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University

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Ryoichiro Kageyama

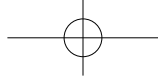
He received MD in 1982 and PhD in 1986 from Kyoto University. After spending 3.5 years as a postdoctoral fellow at National Cancer Institute in USA, he returned to Japan as Assistant Professor in 1989 and was later promoted to Associate Professor in 1991 in the Faculty of Medicine of Kyoto University. He then moved to Institute for Virus Research, Kyoto University to assume a full professorship in 1997. In April 2006, he was appointed Director of the same institute (until March 2010). From February 2013, he was appointed Deputy Director of WPI-iCeMS Kyoto University.

Presentation Abstract:

People with brain disorders such as cerebral infarction and Alzheimer's disease are increasing now in highly aging societies like USA and Japan. However, there is no cure for such brain disorders despite intensive studies. It has been long believed that once the brain is damaged or diseased, losing many neurons, such lost neurons can be never recovered, suggesting that brain disorders are irreversible. However, it has been recently shown that even in the adult brain there are some neural stem cells, which have a potential to give rise to new neurons, raising the hope that lost neurons can be recovered from such neural stem cells. Unfortunately, neural stem cells in the adult brain are mostly dormant and cannot generate enough neurons to recover the damaged or diseased brain functions, unlike embryonic neural stem cells, which produce the whole brain from scratch. Our research group has been trying hard to understand the mechanism of how embryonic neural stem cells actively proliferate and produce many neurons. We found that neurogenic factors are expressed in an oscillatory manner in proliferating neural stem cells, whereas they are expressed in a sustained manner during neuronal differentiation, and that these different expression patterns exert such different activities. By using the recently developed light technology, we succeeded in controlling the expression patterns (oscillatory versus sustained) of neurogenic factors and thereby regulating the proliferation of neural stem cells and differentiation into neurons. We now plan to apply this technology to endogenous neural stem cells in the adult brain in the hope to contribute to cure for many brain disorders.

Recent Publications:

1. Shimojo et al. (2016) Oscillatory control of Delta-like1 in cell interactions regulates dynamic gene expression and tissue morphogenesis. **Genes & Dev.** 30, 102-116.
2. Imayoshi and Kageyama (2014) bHLH factors in self-renewal, multipotency, and fate choice of neural progenitor cells. **Neuron** 82, 9-23.
3. Imayoshi et al. (2013) Oscillatory control of factors determining multipotency and fate in mouse neural progenitors. **Science** 342, 1203-1208.
4. Kobayashi et al. (2009) The cyclic gene *Hes1* contributes to diverse differentiation responses of embryonic stem cells. **Genes & Dev.** 23, 1870-1875.
5. Imayoshi et al. (2008) Roles of continuous neurogenesis in the structural and functional integrity of the adult forebrain. **Nature Neurosci.** 11, 1153-1161.
6. Kageyama et al. (2008) Dynamic Notch signaling in neural progenitor cells and a revised view of lateral inhibition. **Nature Neurosci.** 11, 1247-1251.
7. Shimojo et al. (2008) Oscillations in Notch signaling regulate maintenance of neural progenitors. **Neuron** 58, 52-64.



Sufficiency Concepts for Social Sustainability

Anchaleeporn Waritswat Lothongkum

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trfmag@gmail.com



Anchaleeporn Waritswat Lothongkum

(AMIChemE, and Charter Engineer, The Council of Engineer, Thailand)

Associate Prof. Dr. Anchaleeporn Waritswat Lothongkum received her BSc in Chemical Engineering in 1983, and MEng in Chemical Engineering in 1987 from Chulalongkorn University, Thailand by a scholarship from the Ministry of University Affairs, Thailand. She achieved her DEng in Hydrocarbon Chemistry: Catalyst Design Engineering at Kyoto University, Japan, in 1994, by a scholarship from the Hitachi Scholarship Foundation. She was a visiting Associate Professor at Kyoto University, and Technical Supporting Team for the Thai Ambassador, Tokyo, Japan from 2003-2004. She is now the President of Kyoto Union Club, Thailand. She has been

Associate Professor at King Mongkut's Institute of Technology Ladkrabang in Bangkok. She was the President of the Thai Institute of Chemical Engineering and Applied Chemistry 2013-2016, and has been serving as the Chairperson of Chemical Engineering and Petrochemicals, the Engineering Institute of Thailand under H.M. the King's Patronage (EIT) from 2014 to 2019. Her fields of interest are process safety, catalysis, clean technologies, alternative energy, sol gel technology, membrane technology, separation processes, environmental related, corrosion, wastewater treatment, adsorption engineering, electroplating, and powder technology.

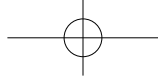
Presentation Abstract:

This work states the principles of sufficiency concepts involving moderation, reasonableness by using academic approaches, and self-immunity to build in resilience against risks from internal and external changes. In the efforts to move towards social sustainability in particular of the environment preferable and high human health standard, a strategy variously known as clean production (environmentally conscious manufacturing), eco-efficient production, or pollution prevention has been gaining prominence. Clean production is at the forefront of a key method for reconciling environment and economic development. The basic idea of clean production is to increase production efficiency while at the same time eliminate or avoid the generation of wastes and emissions at their sources or at least minimize them rather than traditional end-of pipe treatments. The 1A and 5R-practices (avoid, reduce, reuse, recycle, reserve and revisualization) lead to eco-efficiency and finally social sustainability. The insights of good practices into the 1A and 5R-practices are demonstrated herein, i.e., guidelines for industrial water management in terms of most effective methods in the pilot industries. In conclusion, the sufficiency concepts are science-based and economically driven approach to achieving the goals of environmental protection, high quality of life and sustainable development.

Recent Publications:

(3 Chapters in 3 Textbooks, 36 Publications in International Journals, 44 International Conferences, 79 National Publications and Conferences)

1. ANCHALEEPORN W. LOTHONGKUM., KORNWIKI WONGPARB., PINTHEP SETHAPOKIN AND SUTICHAJ CHAISITSAK. "Antibacterial activity and nanocomposite properties of monodispersed silver nanoparticles synthesized by the microwave method" *Materials Testing*, (IF = 0.335) June, 2016, Vol. 58, No. 6, pp. 553-560.
2. WONGKAEW K., WANNACHOD T., MOHDEE V., PANCHAROEN U., ARPORNWICHANOP A., LOTHONGKUM A.W. "Mass transfer resistance and response surface methodology for separation of platinum (IV) across hollow fiber supported liquid membrane" *Journal of Industrial and Engineering Chemistry*, (IF = 4.179) 42, 23-35, 2016.
3. LOTHONGKUM ANCHALEEPORN WARITSWAT, SETHAPOKIN PINTHEP, OURAIPIRYVAN PIYA, "Simulation of V_2O_5/TiO_2 catalyst activity by central composite design for optimal operating conditions and catalyst life in phthalic anhydride production", *Journal of Industrial and Engineering Chemistry*, (IF = 4.179) 25, 288-294, 2015.



Visualization and Reform of Health and Social Care Systems in a Super-Aging Society

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Yuichi Imanaka

He was trained in the University of Tokyo (M.D., DrMedSci) and the University of Michigan (MPH, Ph.D). Clinically trained in internal medicine, with certification for pathological autopsy practice. His main theme is to visualize and design the health and social care system and its future, particularly in super-aged societies. He is engaged in lots of national, wide-regional and international (incl. WHO, OECD etc) projects which include large-scale database analytics, system design and simulation, and multidimensional performance measurement and improvement of institutions and of regions. He has been active in international collaboration and has accepted graduate students from Thailand, Singapore, Korea, China and the United States.

Presentation Abstract:

Background and Aims: In the super-aged society with financial and resource constraints, the Japanese health and social care systems need to be effectively reformed for their sustainability and continuous improvement. On the other hand, the performance of regional health and social care systems is dependent on multiple regional factors including socioeconomic, demographic and resource variables. Visualization of regional performance variation and clarification of the mechanisms of its performance is the key to manage multifaceted, complicated and uncertain processes of reforming health and social care systems. Our studies aim to visualize performance of health and social care systems at each region, and to develop frameworks to link information creation to system re-designing process by large-scale administrative database analytics and multi-stakeholder collaboration.

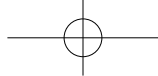
Methods: The databases used were administrative data of health care and social care (long-term care) of the national and regional levels in Japan. In addition, a database integrating socioeconomic, demographic and healthcare resource indicators of regions were constructed. Quality indicators were measured at each regional level, including process quality indicators and risk-adjusted outcome indicators. Their associations with social and resource indicators were also examined at regional levels.

Results and Discussion: Region's healthcare quality indicators were often correlated with resource intensity and inversely with the rurality of the regions. This relationship was quantitatively well illustrated in AMI care and ischemic stroke care in Japan. On the other hand, there are some cases when centralization and networking of professional resources were realized effectively. On the other hand, region's social-care quality Indicators were not inversely correlated with rurality. It can be very high or very low in rural areas. Some new towns with growing population did not show high social care quality. Some rural towns that have strong emphasis on community policies and activities including landscape conservation and dementia supporter caravan showed high social care performance. Health care quality indicators of regions are considered to be related to regional economic/demographic indicators, with substantial modification due to the resource deployment such as centralization and networking. Social-care quality indicators do not seem to be related, but can be linked to community's organized activities.

Conclusions and Implications: Quality of health and social care systems can be measured at regional levels and are found to be substantially varied. The variations are considered to be dependent at least on resources and their deployment. For effective and efficient regional healthcare and social care systems, although these two systems were inter-connected and partially overlapped, we should recognize that approach foci are considered different between the two systems, and that stakeholder collaboration is required among providers, governments and citizens based on the common understanding the visualized performance of regional systems.

Recent Publications:

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Technology for Aging Society: Potentials and Barriers

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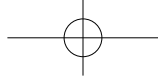
Dr. Rutchanee Gullayanon received her B.S. in Electrical and Computer Systems Engineering from Rensselaer Polytechnic Institute, U.S.A, in 2001 and her M.S. and Ph.D. in Electrical and Computer Engineering from Georgia Institute of Technology, U.S.A, in 2005 and 2012 respectively. She has been working as a faculty member of King Mongkut's Institute of Technology Ladkrabang (KMITL) in Bangkok, Thailand and currently serves as the Assistant Dean for Research and Innovation for the Faculty of Engineering. Prior to joining KMITL, she had worked for IBM as Computer Engineer. Her fields of research interests include autonomous robots, intelligent maintenance engineering and artificial intelligent.

Presentation Abstract:

Increase in general elderly population in the aging society has potentially created new technology to sustain longer healthier living. Examples range from autonomous and artificial intelligent technology to assist safety in everyday activities to robotic remote surgery and gene therapy to cure incurable diseases. While new technologies can assist a better living, adopting these technologies can be somewhat challenging especially for the elderly population. The main barriers for adapting these new technologies are the attitudinal and cognitive barriers. Consequently, designing new technology for members of the aging society has to take into account the ease of technology adaptation from different generations. This presentation will look at several innovative technology designs for the aging society. One specific example is inspiration behind Thailand's own elderly assistant robot, Dinsow.

Recent Publications:

1. SIRITEERAKUL, Teera; GULLAYANON, Rutchanee. Robust tracking algorithm with designed marker for limited-power computer. In: *2016 8th International Conference on Knowledge and Smart Technology (KST)*. IEEE, 2016. p. 245-248.
2. SIRITEERAKUL, Teera; GULLAYANON, Rutchanee. Fast Tracking Algorithm for Designed Marker. In: *Recent Advances in Information and Communication Technology 2016*. Springer International Publishing, 2016. p. 293-299.
3. GULLAYANON, Rutchanee. Flipping an engineering mathematics classroom for a large undergraduate class. In: *Teaching, Assessment and Learning (TALE), 2014 International Conference on*. IEEE, 2014. p. 409-412.
4. GULLAYANON, Rutchanee; MICHAELS, Thomas E.; RUDAT, Martin A. Fluorochemical concentration and distribution analysis using portable XRF instrument in carpet industry. *X-Ray Spectrometry*, 2013, 42.4: 232-236.



Reestablishment of Water Supply System in a Depopulation Society and Research Needs

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Sadahiko Itoh

2002 – present: Professor, Kyoto University, 2008-2009: Visiting Researcher, KWR Watercycle Research Institute (The Netherlands) and University of Amsterdam, 2009: Visiting Researcher, World Health Organization (Switzerland), 1996 – 2002: Associate Professor, Kyoto University, 1994 – 1996: Associate Professor, The University of Tokushima, 1992 – 1994, Lecturer, The University of Tokushima, 1986 – 1991: Assistant Professor, Kyoto University, 1984-1986: M.Sc. (Sanitary Engineering), Kyoto University, 1980-1984: B.Sc. (Sanitary Engineering), Kyoto University.

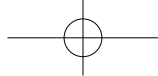
Research interests: 1. Re-establishing water supply system in a depopulation society, 2. Indirect water reuse system using soil aquifer treatment, 3. Advanced water treatment process for reducing chlorinous odor, 4. Quantitative microbial risk assessment of drinking water

Presentation Abstract:

The population in Japan has started to decrease since 2005. Re-designing water distribution system in a depopulation society should be needed in some developed countries in the future. The decrease of water demand in a supply area can cause the decrease of water velocity in distribution pipes and longer detention times in distribution networks. As a result, drinking water quality including concentrations of residual chlorine can be deteriorated. Therefore, control of the quality inside distribution pipes should be emphasized in the future. Management of particles in distribution networks should include a 3-stage approach; the first stage : control of input by water treatment, the second stage : control of hydraulics in distribution networks, and the third stage : pipe cleaning. We have conducted tests of adhesion of fine particles, manganese and bacteria on test pieces of ductile cast iron pipes and plastic pipes. Materials of ductile cast iron are epoxy coated steal and cement mortar lined iron. Materials of plastic pipes are polyethylene, hard polyvinyl chloride and high intensity polyvinyl chloride. In general, a flow velocity of higher than 0.4 m/sec contributes to a distribution pipe being kept clean. We have evaluated the self-cleaning function of distribution pipes and earthquake resilience for redesigning water distribution networks. An ultimate goal of this project is to derive a total solution including a water treatment process and a distribution network toward a depopulation society.

Recent Publications:

1. Nakanishi, T., Zhou, X., Nishioka, H., Tarui, K., Hashimoto, Y., Asada, Y., Echigo, S., Itoh, S., Fujii, H.: Adhesion of bacteria, manganese and micro-particles to water distribution pipe surface, Environmental and Sanitary Engineering Research, Vol. 30, No. 3, pp.133-136, 2016 (in Japanese).
2. Yamada, T., Hirayama, N., Echigo, S., Itoh, S.: Redesign of water distribution system for a depopulation society from the viewpoint of self-cleaning functions, Environmental and Sanitary Engineering Research, Vol. 30, No. 3, pp.137-140, 2016 (in Japanese).
3. Hirayama, N., Wada, M., Yamada, T., Itoh, S.: Evaluation of Self-cleaning Function and Earthquake Resilience for Redesigning Water Distribution System in a Depopulation Area, The 10th International Symposium on Water Supply Technology in Kobe Proceedings, pp.325-332, 2015.7.22, Kobe, Japan.



Filial piety and sustainability of family care for the elderly in Thai society

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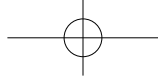
She is a director at Research Institute for Languages and Cultures of Asia, Mahidol University, Thailand. Her research interests involve cross cultural studies focusing on cultural differences between the majority and minority ethnic groups and its consequences on their health and wellness. Over past ten years, she conducted research among religious group (Buddhists and Muslims), hilltribes (Karen, Hmong, Lahu, Lisu, Mon, and Tai Lue), and migrants on cultural health, health inequality, and well-being. More recently, she has expanded her research interests to include a broader examination of cultural integration and cultural competency of immigrants in the host country and cultural capital for supporting aging society.

Presentation Abstract:

With the rapid rate of demographic transition, Thailand has been driven towards an aging society within only a short period and is categorized into a “second-wave” country of aging society. The progressive increase in survival in the old age group has led to a larger number and proportion of people living to a very old age in Thai society. Rising share of oldest old is one of the main challenges that Thailand will have to confront with a large portion of people becoming more susceptible to diseases and disabilities which need special and long-term care. There were approximately 140,000 Thai elders with high dependency in daily living in 2009 and this number is projected to almost double in the next 10 years. Long-term care is primarily depended on family in most societies, including Thailand. Practicing family care for aging parents among Thais is influenced by Buddhist beliefs basing on the concept of “karma” – the law of cause and effect – provides that good deeds bring good returns and bad deeds bring bad returns. Parents are perceived as great benefactors, sacrificing to raise their children. The children owe a debt of gratitude to parents and repay this debt through their care and support of their parents in old age. Although the elderly in Thai society are usually enjoy high status and are honored and regarded positively for their valuable contributions, according to consecutive national surveys, perceived value of the elderly among Thai people reveals a declining trend, particularly in urban areas. This raises the questions: “How has the cultural value of filial piety changed in urban family?” and “How does it affect long-term care for city-dwelling elderly?” The qualitative approach is obtained to clarify these questions focusing on a community in Bangkok Metropolitan Region.

Recent Publications:

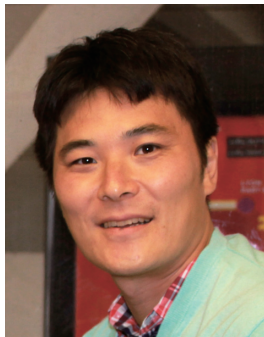
1. Sasiwongsaroj K, et al. Buddhist social networks and health in old age: a study in central Thailand. *Geriatrics & Gerontology International* 2015; 15: 1210-1218.
2. Sasiwongsaroj K, et al. Buddhist temple: the well-being space for the aged in Thailand. *Journal of Population and Social Studies* 2012; 20: 2-19.
3. Sasiwongsaroj K. Socioeconomic inequalities in child mortality: a comparison between Thai Buddhists and Thai Muslims. *Journal of Health Research* 2010; 24: 81-86.
4. Sasiwongsaroj K. Religion and health in the elderly. *Thammasat Medical Journal* 2010; 10: 1-8.
5. Sasiwongsaroj K. Colon Cleansing: An Alternative Therapy (การบำบัดโดยการสวนล้างลำไส้). *Journal of Bureau of Alternative Medicine* 2010; 3: 4-15.
6. Sasiwongsaroj K. Does the Role of Assimilation Matter in Child Mortality of Immigrant Minorities? (การผสมกลมกลืนทางวัฒนธรรมมีบทบาทต่อการตายของเด็กในกลุ่มน้อยที่เป็นผู้อพยพหรือไม่). *Journal of Nurses' Association of Thailand, North-Eastern Division* 2010; 28: 5-13
7. Sasiwongsaroj K, et al. Child mortality inequality between Thais and Hilltribes in Thailand: study from Population and Housing Census 2008. *Journal of Population and Social Studies* 2008; 16: 143-164.



Creating a community-based health checkup system for the elderly

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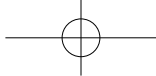
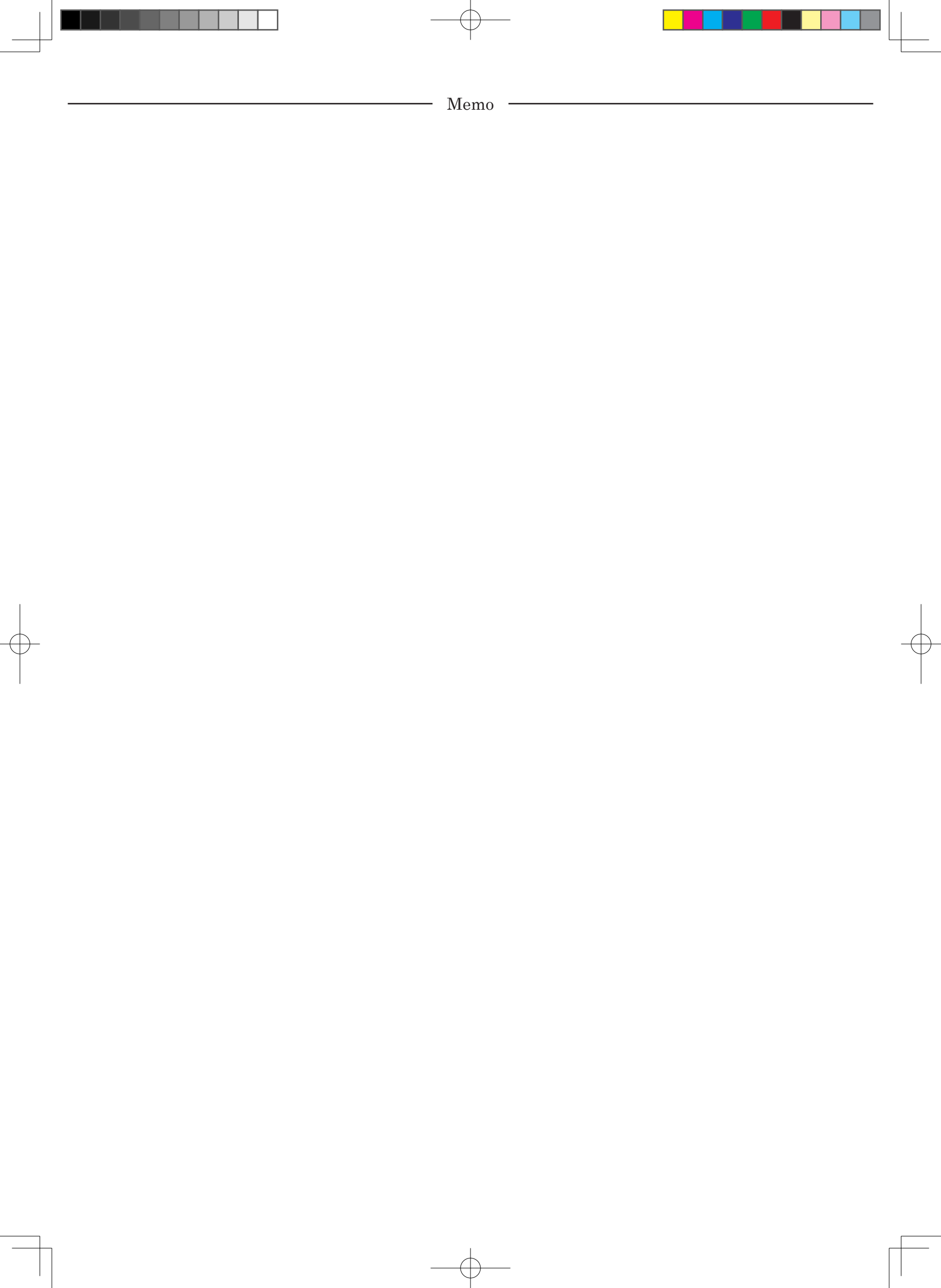
He received his medical degree at Tohoku University, followed by his doctorate at Kyoto University. He had been working in the Kingdom of Bhutan, a place he had longed to visit since his childhood. In Bhutan, he strove, in cooperation with local residents and the Ministry of Health, to improve the health of the community-dwelling elderly. He believes that ASEAN countries, Bhutan, and Japan can encourage and support and learn from each other to create a bright future. His research interests are on Field Medicine.

Presentation Abstract:

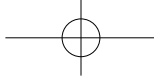
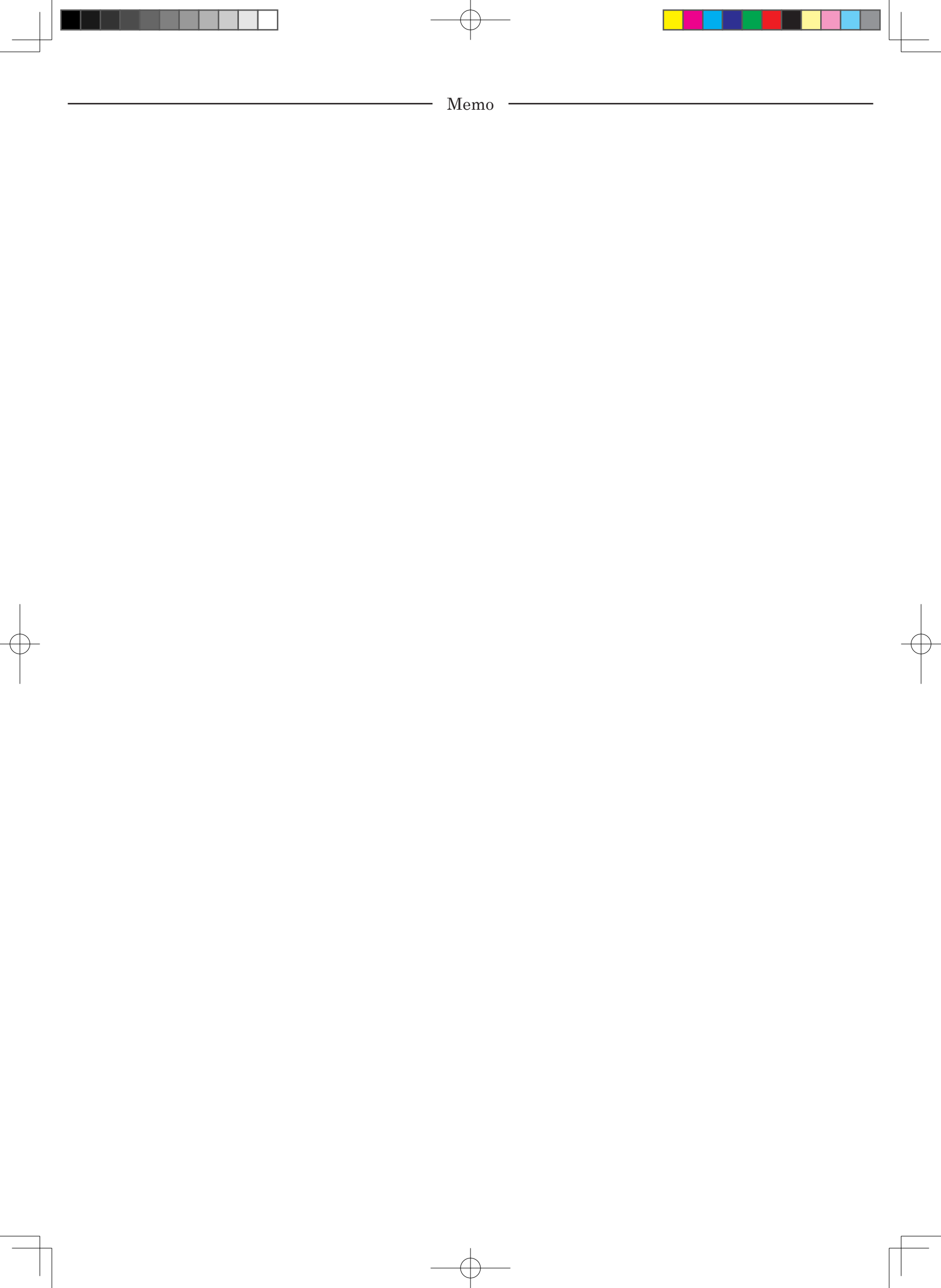
By 2050, 16 per cent of the world population is projected to be 65 year or over. How to care the elderly is one of the issues to be addressed by the international community. Adults surviving into late life suffer from high rates of chronic illness. Given the high prevalence and impact of chronic health problems among the elderly, effective and efficient care to address these problems is getting increasingly important to maximize both the quantity and quality of life for the elderly. We are creating a community-based health checkup system for the elderly in Japan and Bhutan because the health checkup is an important opportunity to grasp problems around the elderly and to prevent the elderly from future diseases, disabilities, and deaths. The items in health checkups should depend on the situation in each community. We have to follow both global evidences and local needs. The good method will change in each place at each time. In Bhutan, we discussed with people in Bhutan and now mainly focus on the following 13 items such as disability, dementia, depression, diabetes, dental problem, isolation, hypertension, addiction, visual problem, ear problem (we call them “5 Ds, I HAVE FUN” for short). To integrate the project to primary health care, understanding by medical staff and villagers are necessary. Our goal is “better health for all” which is the ultimate goal of primary health care. We include not only people who come to medical facilities but also people who do not come to the medical facilities because some elderly people cannot come even if they want to. There is a possibility that such people have severe diseases. We have to take care with special attention. Although there are issues of manpower, medical staff should visit the houses of the elderly if needed. We did not just wait for the patient in the hospital but went to the villages. The elderly program should trigger and help to maintain the bond and harmony in the communities.

Recent Publications:

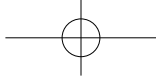
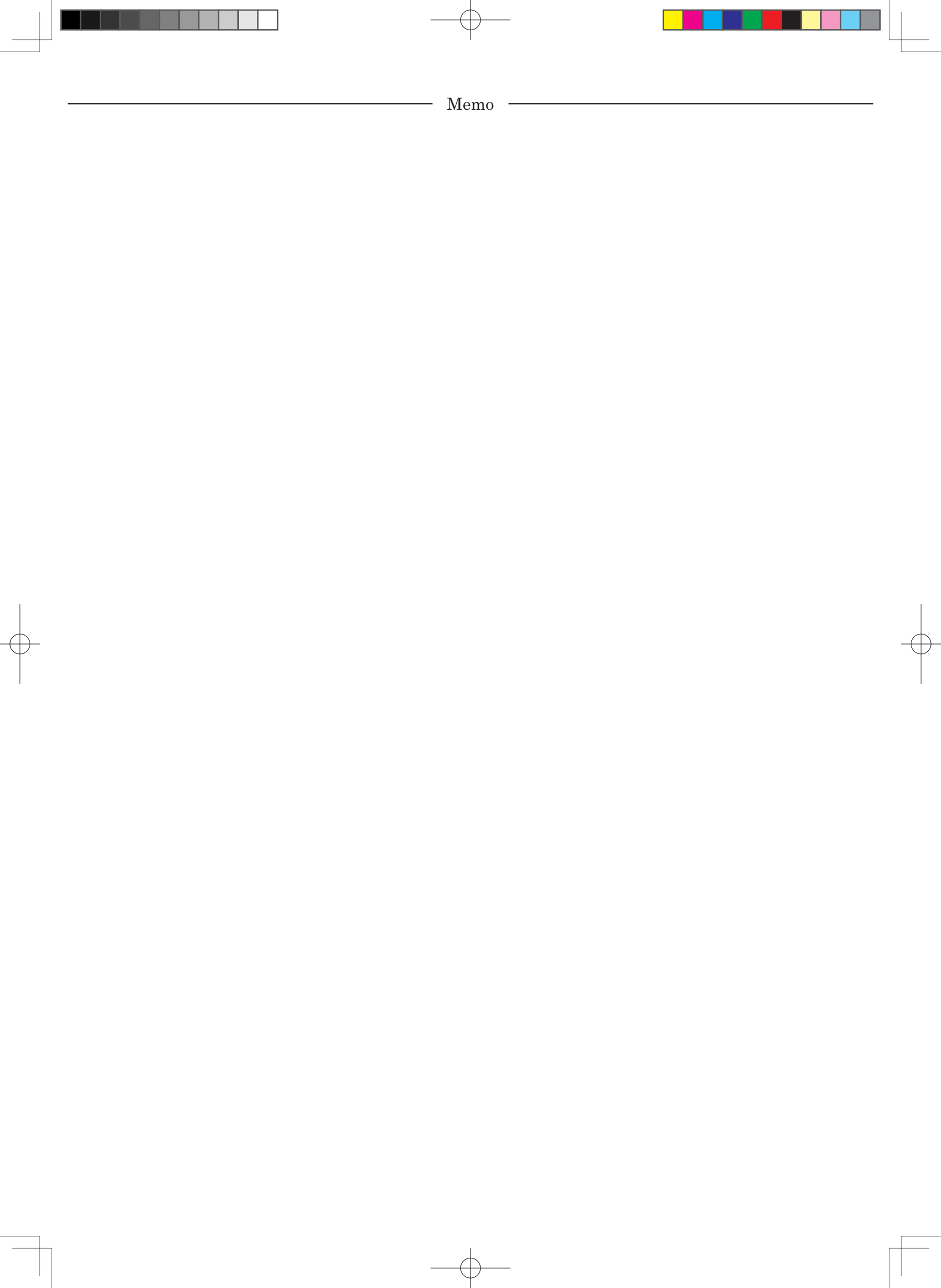
1. Sakamoto R, et al. Health and happiness among community-dwelling older adults in Domkhar valley, Ladakh, India. *Geriatrics & Gerontology International* 2016 (Epub ahead of print)
2. Sakamoto R, et al. Predictors of difficulty in carrying out basic activities of daily living among the old-old: a 2-year community-based cohort study. *Geriatrics & Gerontology International* 2016; 16: 214-222.
3. Sakamoto R, et al. Legionnaire's disease, weather and climate. *Bulletin of the World Health Organization* 2015; 93: 435-436.
4. Sakamoto R, et al. Oxidized low density lipoprotein among the elderly in Qinghai-Tibetan plateau. *Wilderness & Environmental Medicine* 2015; 26: 343-349.
5. Sakamoto R. 2014. *A small clinic in Bhutan*. Kyoto: Nakanishiya Shuppan Publisher. Kyoto. (in Japanese)
6. Sakamoto R, et al. *Legionella pneumophila* was isolated at high altitude in Tibetan plateau. *High Altitude Medicine & Biology* 2014; 15: 209-210.



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