AONSA

Newsletter From AONSA

The Asia-Oceania Neutron Scattering Association

Volume 8, No.1 (July, 2016)

The 16th AONSA EC Meeting in Dongguan China, May 31, 2016,

Index

President's message

By Prof. Sung-Min Choi
(Department of Nuclear and Quantum Engineering KAIST)

Looking for What AONSA Can Do Better or More

AONSA has been very successful over the last 8 years, providing an excellent platform for discussions and activities for promoting neutron science and technology in the Asia-Oceania region, and working with our counterparts in Europe (ENSA) and North America (NSSA) for worldwide cooperation. We sincerely thank all former Presidents, Prof. M.W. Kim, Prof. J.W. White, Prof. Y. Fujii, and Prof. W.H. Li, and all AONSA colleagues for their great leadership, enthusiastic participations, and devoting contributions to make all these happen.

Recently, AONSA welcomed the Indonesian Neutron Scattering Society as a regular member, making the total number of regular member societies 7, and the China Mianyang Research Reactor as a formal observer. All AONSA colleagues are very much delighted to see this very good sign that the neutron community and facilities in our region is growing very well. AONSA will continue to work on promoting the neutron science and technology in our region and actively outreaching further to include more communities. In the next year, we will have an AONSA Executive Committee (EC) Meeting in Thailand for the first time.

Last May, we had the 16th AONSA EC and the 11th Facility Directors' meetings at the China Spallation Neutron Source, Dongguan, China, during which all participants were impressed by the progress made since AONSA's last visit in 2013. The 8th AONSA Neutron School, which has been one of the key activities from the very beginning of AONSA, is scheduled to be held in November this year at BARC, Mumbai, India. The Selection Committees for the 4th AONSA Prize and the 3rd group of AONSA Young Research Fellows, chaired by Vice-President K. Yamada, are in progress. Next year, the ICNS2017 which is the biggest international event to share recent progress in neutron scattering science and technology will be held in our region, Daejeon, Korea. The 3rd AOCNS, our quadrennial regional conference, is being prepared by TWNSS to be held in Kenting, 2019. We are full of various exciting activities, but still looking for what AONSA can do better or more.

We look forward to working with you all and having your ideas and suggestions for AONSA.

[Professor Sung-Min Choi]

Prof. Choi studied at Seoul National University for his BS and MS, and received his PhD at MIT in 1998. His career and activities include: SANS instrument scientist at the NIST Center for Neutron Research (1998-2001); Professor of Nuclear and Quantum Engineering (NQE), KAIST (2001-current); Acting Head of NQE, KAIST (2010-2011); Joint Professor of KAIST

Institute of NanoCentury (2007-current) and Physics (2010-current) at KAIST; Visiting Professor of NSE at MIT (2014); Director of the BAERI (2005-2011); Director of Advanced Center for Nuclear Excellence (2012-current); Secretary (2003-2009) and President (2014-current) of KNBUA; Secretary (2010-2013) and Vice-President (2014-2015) of AONSA, Secretary of Korean Nuclear Society (2011-2013); Member of HANARO Steering Committee (2006-current); PI of 40m SANS Development at HANARO (2003-2010); Chair of the 1st AONSA Neutron School held at KAIST (2008); Co-Chair of the Organizing Committee for ICNS2017 (current).

His research interests have been focused on the molecular self-assembling phenomena in soft matter to develop new nanostructured functional materials including nanoparticle superlattices for catalytic, plasmonic, and molecular sensing applications, for which SANS, Neutron Spin Echo, SAXS, and GISAXS techniques are used as main tools together with others.

Vice President's message

By Prof. Kazu Yamada

(Director, Institute of materials Structure Science, KEK)

Every quantum beam is good beam

I understand that the most important role of the vice president (VP) of AONSA in this term (2016-2017) is to support the new presidency led by Prof. Sung Min Choi and to develop the activity of AONSA. The VP will chair the Selection Committee for the 4th AONSA Prize and the AONSA Young Research Fellowship 2017. For the former, the VP will also chair the Prize Ceremony, which will take place during the ICNS-2017, Daejeon, Korea.

In the beginning era of spallation pulsed neutron source, the late Prof. Ishikawa (supervisor for my doctor thesis) said that every neutron is good neutron. Nowadays, we can utilize more easily both steady-state neutron beam from reactor-based sources and pulsed neutron beam from accelerator-based sources. We can also utilize and develop many different types of spectrometers in both sources. Furthermore, it should be emphasized that in addition to neutron beam we can complementary and symphonically use different types of quantum beams such as synchrotron X-ray, Laser and muon beams etc. Therefore, I believe one of important future activities of AONSA is to search for a new direction of neutron beam among other beams.

1978	Doctor Thesis (Science), Faculty of Science, Tohoku University
1980 – 1994	Research Associate, Graduate School of Science and Faculty of Science, Tohoku University
1994 – 1998	Associate Professor, Graduate School of Science and Faculty of Science, Tohoku University
1998 – 2003	Professor, Institute for Chemical Research, Kyoto University
2003 – 2007	Professor, Institute for Materials Research, Tohoku University
2007 – 2012	Professor, Advanced Institute for Materials Research, Tohoku University
2012 –	Director, Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan

Research Fields**:**

Solid State Physics studied by quantum beam probes

Recent research interests have been focused on strongly correlated electron systems such as high-Tc superconductors and novel magnetism which is strongly coupled with electronic transport properties.

Activity in related communities:

2007-2011 President of the Japanese Society for Neutron Science

2012-2014 A Council Member of the Japanese Society for Synchrotron Radiation Research

Report on the 16th AONSA Executive Committee Meeting

The 16th AONSA Executive Committee Meeting was held on Tuesday May 31, 2016, at the China Spallation Neutron Source (CSNS) in Dongguan, China. Eighteen participants travelled to Dongguan for the meeting, consisting of nine Executive Committee (EC) members and nine observers representing neutron facilities in the Asia-Oceania region. Significantly, this was the first EC meeting to include the Indonesian Neutron Scattering Society (INSS) as a formal member of AONSA. In welcoming participants to the meeting, AONSA President Sung-Min Choi and thanked the organisers in Dongguan, and extended a particular welcome Darminto, representing INSS.

This was also the first EC meeting since the passing of Prof Sutiarso, referred to elsewhere in this Newsletter. President Choi spoke for all at the meeting when he said that Sutiarso would be greatly missed by the AONSA community, and extended his condolences to Sutiarso's family and friends. Prof Darminto also spoke of the loss to the Indonesian community in particular, and noted that he was himself a classmate of Sutiarso. An *in memoriam* prepared by Edy Giri Rachman Putra was presented at the meeting.

AONSA Secretary Chris Ling noted a change in the AONSA Office, whereby Chiyoko Yanada would now work alongside Chikako Doda – but also continuity, whereby Hideki Seto would continue to act in a liaison role between the Office and the EC. Toshiji Kanaya was thanked for continuing to facilitate the operation of the AONSA Office to operate at J-PARC.

A number of technical and process matters were dealt with at the meeting. This included defining the Duties of Members-at-Large on the AONSA Board, and changing the Rule for the AONSA Prize and YRF in response to the increased number of member societies of AONSA. All changes are reflected in the official information found on the AONSA website.

Reports were received actions taken concerning the AONSA budget and financial plan, AONSA Prize, and AONSA Young Research Fellow program. Participants were briefed on and discussed the state of preparations for the 8th AONSA school to be held in India in November 2016, the International Conference on Neutron Scattering (ICNS2017) to be held in Korea in July 2017, and the 3rd Asia-Oceania Conference on Neutron Scattering (AOCNS-2019) to be held in Taiwan in November 2019. Yuntao Liu, Chair of the AONSA Facility Directors Meeting held the previous day in Dongguan, updated EC members and observers on the status of neutron facilities in the region, and reports were presented by representatives of all the AONSA member societies on local activities and developments in their home countries.

Concerning activities related to South-East Asia and other non-member countries, President Sung-Min Choi noted that the Thai community was still intending to host a AONSA EC and FDM in 2017.

It was also undertaken to reinvigorate interactions with the Singapore community. Finally, Sung-Min Choi noted that one application for the YRF in 2016 was received from Vietnam, although this applicant was unfortunately not eligible due to not having a PhD.

The 17th, 18th and 19th EC Meetings will be held in India, Korea and Thailand respectively.

Chris Ling
Secretary of AONSA

Report on the forthcoming 8th AONSA Neutron School (15-19 November 2016), BARC, India

Bhabha Atomic Research Centre (BARC) operates a National Facility for Neutron Beam Research at the Dhruva reactor. The facility is regularly utilized by BARC scientists as well as nearly 200 users from various universities and other academic institutions in India. During last five years, over 300 research papers have been published in peer-reviewed international journals. BARC has been regularly organizing schools on neutron scattering which involve lectures on basic principles of neutron scattering and its various applications; often including hands-on experiments using the neutron scattering facilities at Dhruva.

The 8th Asia-Oceania Neutron Scattering Association (AONSA) Neutron School will be held at BARC, Mumbai during November 15-19, 2016. The school will be organized by BARC in cooperation with the Neutron Scattering Society of India (NSSI) and the International Atomic Energy Agency (IAEA). The convener of the School is Dr. S. M. Yusuf. The previous AONSA Neutron Schools were held in Japan (2015), Indonesia (2014), China (2012), Australia (2011), India (2010), Australia (2009), and Korea (2008). It may be mentioned that the 3rd AONSA School, organized by BARC in 2010, was highly appreciated. The present school will comprise theoretical lectures as well as hands-on experiments spread over five days. The school is aimed at young researchers (Ph.D. students, postdocs, and young faculties) working in the area of neutron scattering, preferably from the AONSA region. The maximum number of participants will be limited to forty. The financial support for the school is likely to come from the Board of Research in Nuclear Sciences (BRNS)-DAE-INDIA, NSSI, AONSA, and IAEA.

The AONSA executive committee meeting and the facility directors meeting will be held at BARC on 17-18 November 2016.

S. M. Yusuf

Bhabha Atomic Research Centre, Mumbai

11th Asia-Oceania Neutron Facility Directors Meeting

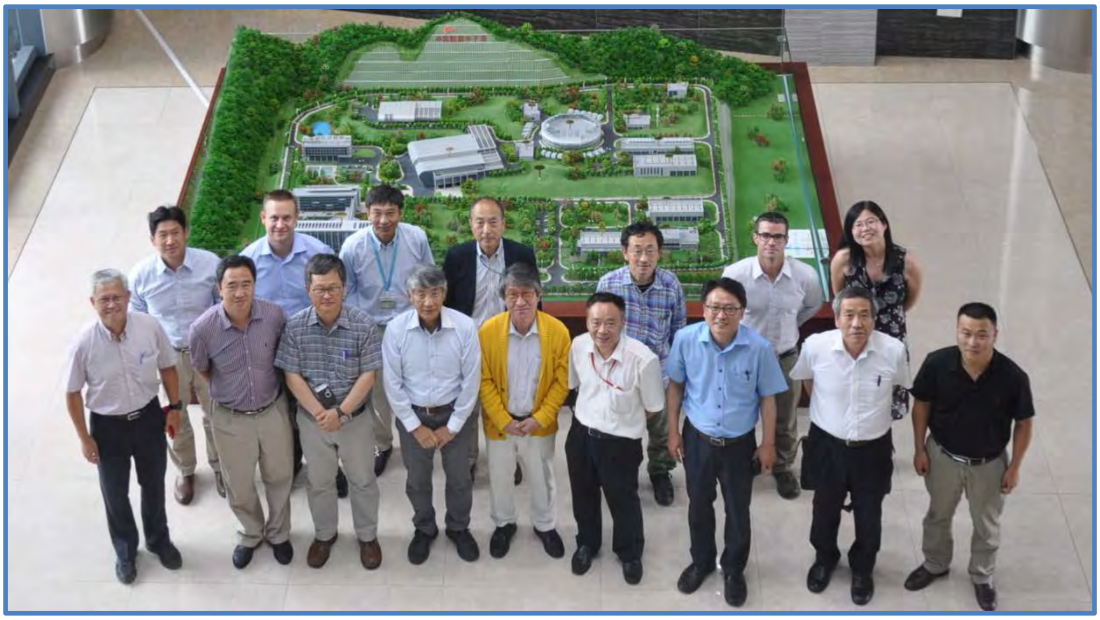
On May 30th, 2016 the 11th Asia-Oceania Neutron Facility Directors Meeting (AONFDM) was held at China Spallation Neutron Source Campus, Guangdong, China. The participants were Mitsuhiro Shibayama (JRR-3), Chang-Hee Lee (HANARO), Jamie Schulz (OPAL), Yuanbo Chen and Fangwei Fang (CSNS), Toshiji Kanaya (J-PARC), GuangAi Sun (CMRR) and Yuntao Liu (CARR). Furthermore, Sung-Min Choi (AONSA President), Kazuyoshi Yamada (AONSA Vice President), Dongfeng Chen (AONSA Treasure), Chris Ling (AONSA Secretary), Hsiung Chou (AONSA Public Relations Officer), Hideki Seto (J-PARC) and Yoshiaki Kiyanagi (JSNS/ Nagoya U) attend this meeting as observers.

The meeting was chaired by Yuntao Liu from CARR , and Jamie Schulz from OPAL was as the secretary. At the beginning Mitsuhiro Shibayam, who chaired 10th AONFDM, gave a summary of last meeting. And then, representatives from every facilities gave a report about their facility. (1) HANARO: Chang-Hee Lee reported that building reinforcement work will be finished in August and the reactor is expected to restart in September this year. During the reactor was shut down, 22 experiments carried abroad in 2015 and 10 experiments were carried out till now in 2016, thermal and Cold neutron TAS were reconstructed, SAXS & XRR were built in X-ray Lab. (2) Shibayama reported that JRR-3 was expected to restart in 2016, Quantum Beam Science Directorate was reorganized, 34 proposals were supported oversea in FY2015 through transferring program, and scientific highlights done by JAEA and ISSP were introduced. (3) Kanaya reported that troubles on targets happened when the power was increased and 200kW beam power was kept to have stable operation in order to fit the requirements from users. A target was redesigned and a review meeting was held. 1st Australia-Japan Workshop on Neutron Science was held in March. Furthermore, activities related to neutron instruments at MLF were also introduced. (4) Fangwei reported that Civil construction was finished, utility installation went well. The first neutron beam was expected by September 2017 and open to users by Spring 2018. Great efforts were done to promote the user community and prepare the day-one experiments. And proposal of Phase II was under discussion. (5) Jamie reported that ANSTO Nuclear Science & Technology was restructured recently, Bragg Institute splited into Australian Centre for Neutron Scattering and National Deuteration Facility. BioRef from HZB would be relocated to ANSTO this year and a new cold source was designed to gain more flux. Moreover, scientific highlights produced in OPAL were also mentioned. (6) GuangAi reported that CMRR ran about 100 days in 2015, more than 40% beam time was for outer users. And 120 days beam time in 2016 and 150 days in 2017 were scheduled. Workshops related to SANS, REF and diffraction were organized. Second phase instruments (2016-2019) were approved. Scientific highlights at CMRR were also introduced. (7) Liu reported that the operation license for CARR was delay and the reason was also explained. In order to speed up this license issue procedure many activities were done and it was expected to be issued at the end of 2017. Cold source installation would start at the end of 2016 and the construction of 2nd phase instruments was on schedule. The 8th international meeting on Neutron Radiography would be held in September in Beijing.

Furthermore, Jamie Schulz from OPAL was appointed as the next chair and Chang-Hee Lee from HANARO was appointed as the next secretary. After the meeting a tour at CSNS was organized.

Yuntao Liu

CARR



Report from Japanese Society for Neutron Science, JSNS

1. Special issue of HAMON in memory of Prof. Watanabe

In February 2016, JSNS journal 'HAMON' ran a special feature to honor memory of Late Professor Noboru Watanabe who was known as an excellent person in the field of pulsed neutron science. Contributions were totally 13, and 2 of them were from abroad, Dr. J. Carpenter and Dr. F. Mezei.

2. Present status of JSNS

(1) New board members

Half of the board members were re-elected. New board members in 2016FY are listed below.

President: Yoshiaki Kiyanagi (Nagoya University) 2015-2016FY

Board members:

(2015-2016 FY)

Yoshie Otake (RIKEN)
Toshiaya Otomo (KEK)
Toshiji Kanaya (KEK)
Takusi Kume (Kao Co. Ltd)
Taku Sato(Tohoku Univ.)
Masaaki Sugiyama (Kyoto Univ.)
Hideki Seto (KEK)
Michihiro Furusaka (Hokkaido Univ.)

(2016-2017 FY)

Toru Ishigaki (Ibaraki Univ.)
Kenji Oyama (Ibaraki Univ.)
Kazuhisa Kakurai (Cross)
Michinobu Kawakita (J-PARC)
Mitsuhiro Shibayama (Univ. Tokyo)
Junichi Suzuki(Cross)
Hazuki Furukawa (Ochanomizu Univ.)
Osamu Yamamuro (Univ. Tokyo)

(2) Membership

The number of member is 592 (including 35 students), and the supporting members are 37.

3. 36th Regular Council Meeting

The council meeting was held on 16 May 2016, and the followings are discussions in the meeting.

1) We decided to introduce a discount system for senior members over 65 old. A bylaw for this is now being drawing.
2) We approved to revise the web site of JSNS to include science articles, twitter, and so on.
3) The Budget in 2016FY was adopted.
   Budget for JFY 2016, Income: ~9.1M yen/year
   Budgetary condition has become better. We got out of the red.
4) The public lecture after the annual meeting in 2016 and the annual meeting in 2017 were approved.
5) The new neutron school (The neutron and muon school) was approved.
   We merged two different schools for neutrons, the MLF School and the neutron school at JRR3. It becomes a very unique school including pulsed and steady neutron sources as well as a muon source, and will strengthen collaboration between J-PARC and JRR3.

(Organizing Committee)

Yoshiaki Kiyanagi (JSNS, Chair), Toshiji Kanaya (J-PARC), Tomotsugu Sawai (Nuclear Human Resource Development Center of JAEA), Makoto Hayashi (Industrial User Society for Neutron Application and Ibaraki Pref.), Mitsuhiro Shibayama (ISSP, Univ. Tokyo), Hideaki Yokomizo (CROSS-Tokai), Jun Sugiyama (Society for Muon and Meson Science of Japan), Hideki Seto (IMSS, KEK)

(Secretary)

Yukinobu Kawakita (J-PARC), Toyotaka Osakabe (JAEA), Wataru Higemoto (JAEA), Takenao Shinohara (J-PARC), Koji Yoshida (Fukuoka University)

(Working Committee)

Takenao Shinohara (J-PARC), Mitsutaka Nakamura (Neutron, J-PARC), Kenji Kojima (Muon, KEK), Keiichi Sakagami (UO, J-PARC), Hiroshi Kato (NHRDC, JAEA), Makoto Hayashi (IUSNA), Kiyotaka Izawa (Ibaraki Pref.), Junichi Suzuki (CROSS), Takatsugu Masuda (ISSP), Kenya Kubo (SMMSJ), Yuichi Komuro (JAEA), Yoko Hayashi (KEK)

4. 16th JSNS Annual Meeting

The annual meeting will be held during Dec. 1-2, 2016 at Nagoya University

Toyota Hall at Nagoya University

Sponsorship: JSNS, Fac. Science at Nagoya University

Organizing committee chair: Y. Kiyanagi

Vice chair: A. Uritani, H. M. Shimizu

Incidental Business by JSNS

Industrial Use Consultant Desk

Public Lecture (Dec. 3)

Activity of neutron science: K. Suzuki

BNCT: T. Yamamoto

Fundamental physics: H. M. Shimizu

5. Present status of neutron sources in Japan

There are compact accelerator driven neutron sources and high power sources in Japan. The sources are shown in the figure.

(Compact sources)

Now all compact neutron sources, HUNS, RANS, KUANS and KURRI (Kyoto University Research Reactor Institute)-LINAC are providing the neutron beam for neutron science use. SHIEI (Sumitomo Heavy Industry Examination and Inspection) has been used for imaging as commercial use. iBNCT in Ibaraki prefecture and NUANS at Nagoya University are under construction. Aomori prefecture has started to build a compact neutron source for multi-purpose use.

(High power sources)

J-PARC/MLF is operating steadily after the troubles on the target although the power is 200kW. This target will be used till next year summer shutdown. As a medium power reactor source KURR has gotten approval to restart the reactor from the Nuclear Regulatory Agency (NRA). However, there still exist issues to be improved to adapt to the regulation.

Restart of JRR3 is desired strongly. Negotiation with the NRA is still underway.

6. Summary of future events

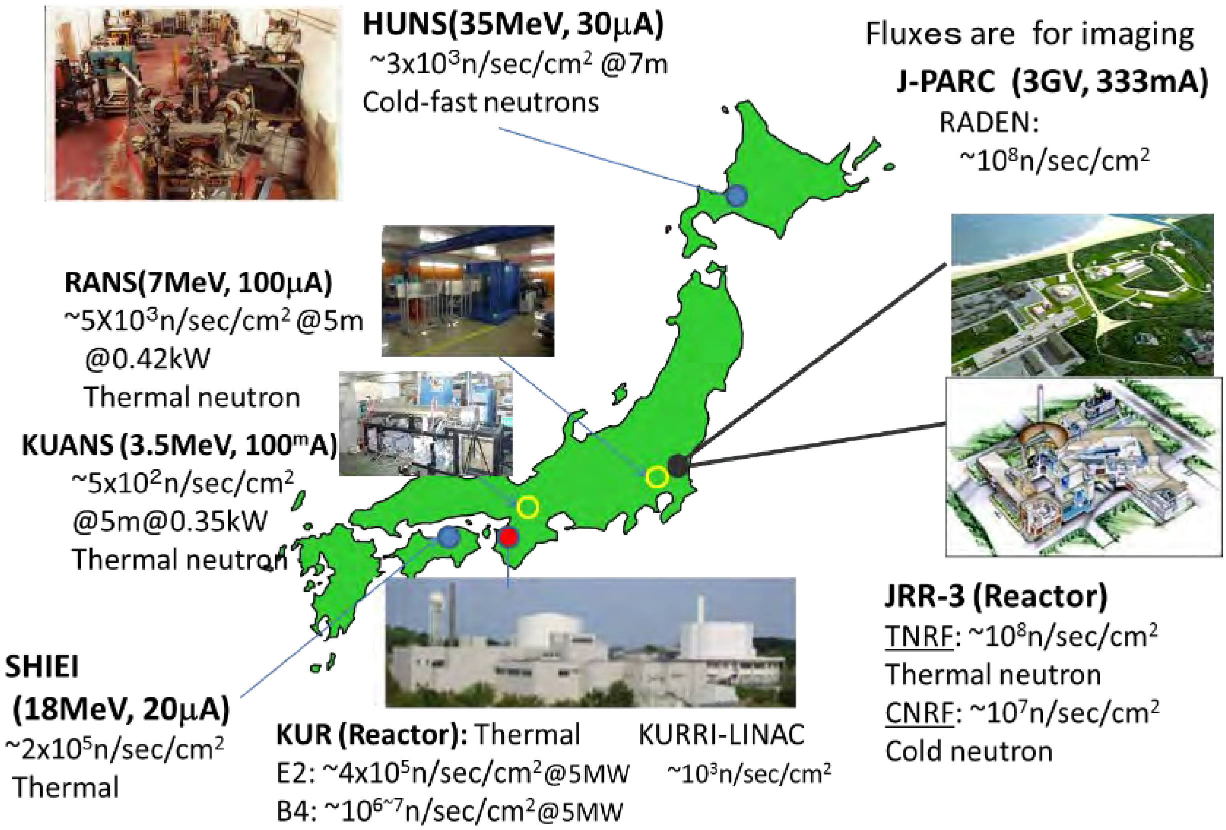
1) The Neutron-Muon School will be held in Tokai from 22 to 26 November.

2) 16th JSNS Annual Meeting will be held on December 1st-2nd, 2016 at Nagoya University in Nagoya city.
(Chair: Y. Kiyanagi)

3) 6th Public Lecture of Neutron Science will be held on December 3rd, 2016 in Nagoya after the annual meeting.

4) 17th JSNS Annual Meeting will be held on December 2nd-3rd, 2017 at Fukuoka University in Fukuoka city.
(Chair: T. Yamaguchi)

Y. Kiyanagi
Nagoya Unversity



Neutron sources in Japan

Report from KNBUA

KNBUA General Assembly 2016

The 2016 General Assembly of the Korea Neutron Beam Users Association (KNBUA) was held on May 26th in Daejeon, South Korea. This general gathering of the KNBUA members was scheduled on the day of the HANARO Symposium at Korea Atomic Energy Research Institute (KAERI), which is the annual conference for HANARO facility users. One of the most important agendas in this time was the appointment of the next KNBUA executive committee. It was unanimously determined that the incumbent President, Sung-Min Choi (KAIST), will serve the second term, so that the on-going efforts for ICNS 2017 should continue without interruption. As approved by the General Assembly, he will serve his term until April of 2018. Jae-Ho Chung (Korea Univ.) was appointed to take the Secretary role, and is also going to continue his role as the International Relations Manager representing the KNBUA at AONSA executive committee. The former Secretary, Kwan-Woo Shin (Sogang Univ.), will change his responsibility to be the Editing Manager overseeing the newsletter publications and webpage management. Majority of the remaining positions will be unchanged for the next term.

Another event at the General Assembly worth mentioning is the Student Awards for Outstanding Research. The Academic Subgroup, headed by Sungil Park (KAERI) selected two recipients this year for their research papers based on neutron scattering works at HANARO facilities. Kee Hwan Lee (Dept. of Physics, Korea Univ.) was awarded for his diffraction work using High Resolution Powder Diffractometer, which he reported in Phys. Rev. B 91, 064404 (2015) by the title "*Diluted orbital degeneracy and large orthorhombic distortions in ferrimagnetic spinel* $CuxMn_{3-x}O_4$." The other award went to Seyong Kim (Dept. of Chem. & Bio. Engineering, Korea Univ.) for his works using Small-Angle Neutron Scattering instruments. He published his works in ACS Macro Lett. 4, 417 (2015) by the title "*Nanoscale Phase Behavior of Mixed Polymer Ligands on a Gold Nanoparticle Surface*."

The Steering Committee Meetings

The KNBUA executive committee will meet four times a year in Daejeon for the Steering Committee Meetings. The last two meetings were held in December 18th of last year and March 29th of this year, respectively. The committee is using these meetings not only as the places for discussing executive matters but also as opportunities for introducing young scientists to the KNBUA and encouraging them to join the neutron scattering community. During the last two Steering Committee meetings, So-Yeon Kim, Associate Professor of UNIST, and Jung-Hwa Kim, of Samsung Advanced Institute of Technology presented their works. Since the primary workforce of the KNBUA is currently focused on the ICNS preparation efforts, majority of the board members in fact get to meet each other approximately once every month.

Sung-Min Choi, the President of KNBUA, is giving an opening remark at the KNBUA General Assembly 2016.

Other Activities

The HANARO Symposium 2016 was held in Daejeon on May 26th, 2016, organized by the KAERI. In this annual conference for HANARO facility users, 35 oral talks and 61 posters were presented in the subject areas including: Neutron Beam Applications, Industrial Applications, Neutron Activation Analysis, Radioisotopes, Irradiation Tests and Research Reactors. In the Neutron Beam Applications session, Professor Yasuo Endoh from KEK, Japan, was invited to give a talk titled "*The materials science with three axis spectrometer*" and Dr. Keisuke Tomiyasu from Tohoku University also gave a talk on this recent work "*Molecular spin excitations in frustrated spinel oxides.*"

In addition to the annual HANARO user training courses offered in summer, the Winter School for Advanced Neutron Diffraction Data Analysis was organized by the Neutron Science Division of the KAERI. In this special course offered between February 22nd and 28th in 2016, Dr. Juan Rodriguez-Carvajal was invited to lecture on the advanced used of the FullProf Suite, which he authored himself. Seongsoo Lee of KAERI also played the crucial role as the organizer and the second lecturer. 38 students participated in the course and learned the advanced methods for neutron diffraction data analysis. The KAERI is planning to offer a similar course during the upcoming winter with more emphasis on magnetic structure analysis.

The group photo at the 2016 HANARO Winter School for Advanced Neutron Diffraction Data Analysis.

Jae-Ho Chung

Korea University

Report from Taiwan Neutron Science Society (TWNSS)

The TWNSS Annual Meetings

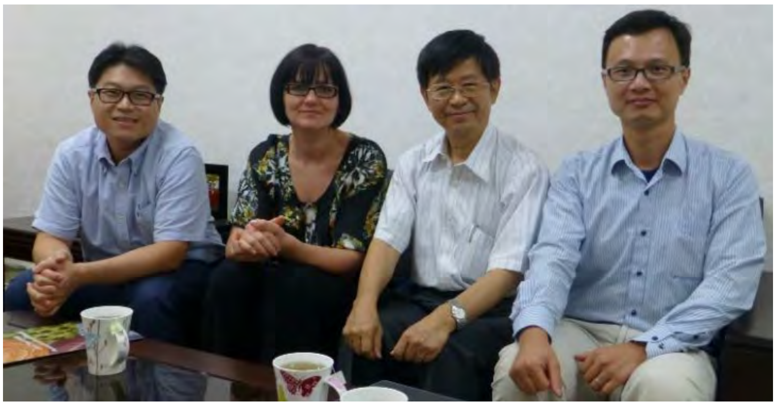
The 2016 TWNSS Annual Meeting and Workshop for neutron science and application were held at the Herser Forest Resort on October 23rd-25th, organized by Professor Jauyn Grace Lin at National Taiwan University. For the 2016 TWNSS Annual Meeting and Workshop, there were 109 participants and 20 invited oral presentations. The meeting included three different sections: neutron power diffraction and inelastic scattering, small angle scattering and emergent materials. To improve the communications between students, the presentation awards were organized to have two minutes oral presentation before the poster presentations.

Group photograph of the 2016 TWNSS meeting and workshop

The 2017 TWNSS Annual Meeting and Workshop will be held in October, hosted by Professor Ko-Wei Lin in Hei-Sun Forest, Nantou County in central Taiwan. The meeting and workshop will keep promoting the development of neutron scattering science in Taiwan and providing TWNSS members a platform for sharing their experiences in neutron scattering science.

Promotion on Industrial Application-- ANSTO Measurements for Taiwan Machine Tools

The machine tool industry is a multi-billion dollar business in Taiwan. For example, the statistics shows that the production of machine tool from January to April in Taiwan this year is $35 billion NTD (http://www.tmtf.org.tw/english/#). To pursue for better quality, the Metal Industries Research & Development Centre (MIRDC) of Taiwan (http://www.mirdc.org.tw/english/) works with Prof. E-Wen Huang of National Chiao Tung University and Dr. Shi-Wei Chen of National Synchrotron Radiation Research Center to apply KOWARI of Australian Nuclear Science and Technology Organisation (ANSTO) to examine the residual stress distribution of different types of the machine tools. The collaborations for better machine tools are conducted by Dr. Anna Paradowska, Industrial Liaison of ANSTO and Dr. Sung-Mao Chiu of MIRDC.



Dr. Anna Paradowska (second from the left), Industrial Liaison of ANSTO, visited Taiwan to bridge the collaborations in 2014.

Hsiung Chou
President, TWNSS

The National Facility for Neutron Beam Research (India)

The National Facility for Neutron Beam Research (NFNBR), operated by Solid State Physics Division, Bhabha Atomic Research Centre, has wide spread user community from various Indian universities and research institutions. The facility has large number of instruments which are used for studying the structure and dynamics of solids. Among variety of instruments, there are two small angle neutron scattering (SANS) facilities located at the guide tube laboratory. The first one is a slit collimation based (SANS-I) and the second one is a double crystal based (SANS-II), medium resolution SANS facility (MSANS). SANS-I facility has been employed to study self-assembly in multi-component soft matter systems, evolution of structure and interaction in protein solutions and structure-property correlation of polymer membranes, SANS-II facility is being used for characterization of technologically relevant materials including advanced ceramics, cement composites, self assembled micro-granules. The results of two studies, one using SANS-I and the other using SANS-II, are described below.

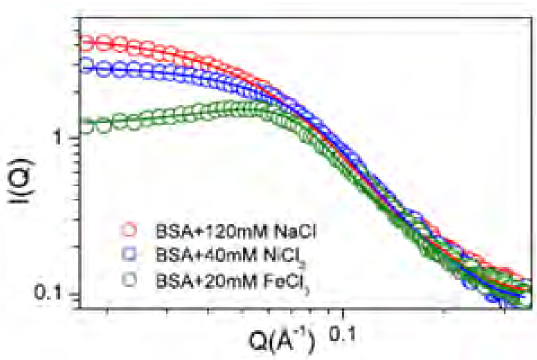
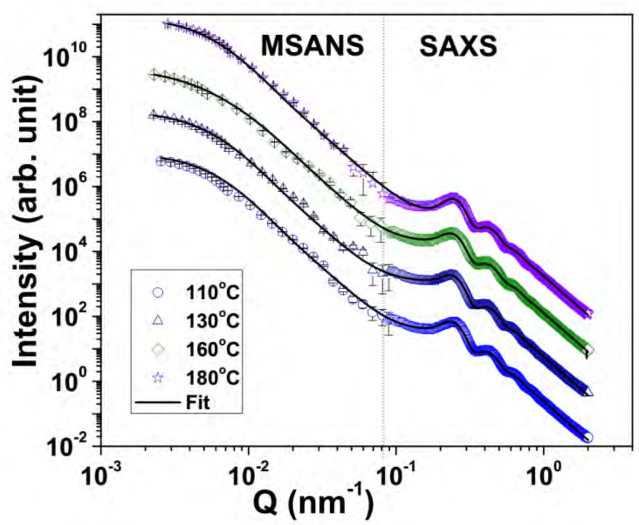


Fig. 1 SANS data of 10 wt% BSA protein at pH 4, below its iso-electric point (4.7) in presence of different electrolytes having equal ionic strength.

The complex phenomena shown by the protein molecules in solution highly depend upon the interaction behaviour between the protein molecules. Protein concentration, solution pH, ions of different valency dissolved in the solution, etc. affect on protein-protein interactions. Phase separation, re-entrant condensation, crystallization, etc. can occur when attractive interaction is dominant among the protein molecules. Interaction behaviour using two-Yukawa potential among protein molecules below isoelectric point in the presence of three different salt solutions viz. NaCl, $NiCl_2$ and $FeCl_3$ have been studied (K. Das, S. Kundu, S. Mehan and V.K. Aswal, Chem. Phys. Letts. **645**, 127 (2016)) by SANS (Fig. 1). In the presence of NaCl and $NiCl_2$, interactions between proteins are nearly similar. In case of NaCl and $NiCl_2$, short-range attractive interaction increases and long-range repulsive interaction decreases with increasing salt concentration. However, in the presence of $FeCl_3$, both the attractive and repulsive interactions increase with increasing salt concentration but the relative strength of repulsion is more than the attraction and for that reason the intensity decreases at low Q region at higher salt concentration. For NaCl and $NiCl_2$, there is less affinity of Na^+ and Ni^{2+} ions, towards the negative part of the protein surface and as a result Cl^- screening is much more effective than Na^+ and Ni^{2+} ions. On the other hand, as the charge density of Fe^{3+} ions is more, it attaches to the negative part of the protein surface and protein becomes much more positive. As a result, the screening created by the Cl^- ions becomes less effective than the enhanced repulsive interaction due to the attachment of Fe^{3+} ions.

Self-assembly is a fascinating “bottom-up” approach in realizing organized nano-structures in larger length scales. Controlling direct and/or indirect interactions among the nano-particles, such assembling process can be tuned to attain desired morphology of 3D granules with correlated nano-structures. We have utilized evaporation induced assembly of nano-particles in micrometric spray droplets to synthesize correlated nano-structured micro-capsules. The shape, inter-particle correlation, hollowness etc. of the capsules may be tuned by controlling the governing physico-chemical parameters such as drying rate, viscosity, inter-particle interaction etc. A distinctive step by step transition, from sphere to doughnut morphology of the capsules with increase in drying temperature has been illustrated (P. Biswas, D. Sen, S. Mazumder, C. B. Basak and P. Doshi Langmuir **32**, 2464–2473 (2016)) and has been affirmed by simulation. It has also been shown that the local volume fraction of the jammed nano-particles in the granules remains nearly unaltered even though the external morphology varies drastically with temperature from sphere to doughnut. The hierarchical nature of such self assembled granules demands the accessibility of wide wave vector transfer (Q) (Fig. 2).

(a)



(b)

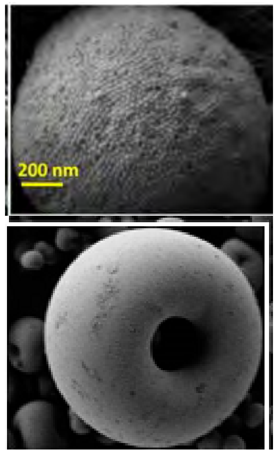


Fig. 2 (a) Combined SAXS and resolution corrected MSANS profiles over the whole accessible Q range after proper scaling by normalizing MSANS data to SAXS data at the common region. The combined MSANS-SAXS profile of each specimen is shifted vertically for clarity of presentation. (b) SEM micrograph of the spherical and doughnut shaped micro-capsules.

Indonesian Young Scientists in 4th ASEAN Synchrotron Science Camp – SLRI Thailand

The 4th ASEAN Synchrotron Science Camp is a continuant activity that was organised by the Synchrotron Light Research Institute (SLRI), Thailand on November 10th -14th, 2015. This program invited all young scientists (students) in South-East Asian countries. The Science Camp is aimed to continue enlarging cooperation on synchrotron technology among ASEAN countries, to encourage students to realize in the role of science and technology, especially synchrotron technology, to strengthen synchrotron user group and to increase number of ASEAN researchers and scientists in synchrotron technology.

After passing the administration selection, there were 22 Indonesian students and young scientists joined the camp at SLRI in Nakhon Ratchasima. It is a huge number of Indonesian students, the largest foreign students and they came from several universities, cities and disciplines:

Polytechnic Institute of Nuclear Technology, in Yogyakarta
Cipta Panghegar (Nuclear Chemistry)
Janice Nathania(Nuclear Chemistry)
Khusnia Normawati (Nuclear Chemistry)
Novita Wiwoho (Nuclear Chemistry)
Puji Astuti (Nuclear Chemistry)
Siti Hanna (Nuclear Chemistry)
Satrio Pradana (Nuclear Physics)

Institute Technology of Bandung (ITB) in Bandung
Anna Fitriana (Physics)
Kamal Dwi Jamoko (Physics)
Rivaldo Marimpul Pakpahan (Physics)

Bogor Agricultural University (IPB), in Bogor
Asmareta Panca Mariah (Physics)
Padjadjaran University, in Bandung
Nurdiani FadyliaSm (Chemistry)
VidiaAfina Nuraini (Chemistry)

Institute Technology of Sepuluh November (ITS), in Surabaya
Ananda Yogi Nugraheni (Physics)
Ratna Puspita Sari (Physics)
University of Indonesia, in Jakarta
Bunda Amalia (Material Science)
Susilawati (Material Science)

Pattimura University, in Ambon, Maluku
Ikhsan Taipabu (Chemistry)
Nurlaila Masuku (Chemistry)

Gajah Mada University, in Yogyakarta
Liliany Noviyanti Pamasi (Physics)

Syarif Hidayatullah State Islamic University, in Jakarta
M. Lutfi Maulidi (Physics)
National Nuclear Agency of Indonesia, in Serpong
Siska Febriana (Radioisotpe Production)

They were among hundred students from other ASEAN countries, i.e. Laos, Cambodia, Vietnam, Philippines, Malaysia, and Thailand itself to enjoy the camp for scientific tasks and also to share the information, idea, even the cultures.

Knowledge about synchrotron facilities and technology, as well as its benefits in the field of analysis has been exposed to the students. Some of lectures in the camp were delivered in protein crystallography, XRF, SAXS, X-ray absorption, etc. Beside the lectures and theory, practical use on material characterization was also performed directly using existing facilities in SLRI. Most of

The lectures help them to know the state of the art of research and technology including the dialogue on experiences of the CERN (Conseil Européen pour la Recherche Nucléaire / European Council for Nuclear Research) and DESY Awarded Student Scholarship on theoretical physics have inspired the student to do more for our future in science. This time, special lectures on X-ray synchrotron applications in lithium ion battery has been delivered by Prof. Nonglak Meethong from Khon Kaen University, Thailand and neutron scattering as complementary method on X-ray synchrotron has been also described by Dr. Edy Giri Rachman Putra from National Nuclear Energy Agency (BATAN), Indonesia.

In addition to the scientific task, a social event to observe the start gazing at the Regional Observatory of Suranaree University of Technology (SUT) as well as excursion to Phimai ancient temple and Thao Suranari Monument at Korat city center was nicely arranged.

By bringing the spirit as well as friendships and networking in the ASEAN countries it will revive and enhance X-ray and neutron users in the region. Now, we all motivated for building up strong user groups of neutron and X-ray through the Asia-Oceania Neutron Scattering Association (AONSA) and Asia-Oceania Forum for Synchrotron Radiation Research (AOFSRR). Nowadays, several students who joined the camp have been working in both advanced methods, X-ray synchrotron and neutron scattering.

Contributors

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Jakarta, Indonesia


4th ASEAN Synchrotron Science Camp
10th-14th November 2015
2015-11-13


4th ASEAN Synchrotron Science Camp
10th-14th November 2015
at Synchrotron Light Research Institute (Public Organiza
Nakhon Ratchasima, THAILAND

Sutiarso in Memoriam (1960 – 2016)

Dr. Sutiarso died suddenly on March 9, 2016. It was big shocked and lost for us and also the Indonesian neutron scattering community. He joined neutron scattering laboratory in BATAN Serpong in mid of 1980's after graduated from Physics Department, Institute Technology of Bandung (ITB), Indonesia. During his time in BATAN, he had a chance to continue his study in master degree and then obtained his doctoral degree from the University of Manchester, England in 2003 on Metallurgical Engineering.

After he finished his doctoral degree and back to Serpong, he took responsibility on BATAN's neutron radiography facility. A lot of effort has been undertaken by him to develop and optimise the facility to work functionally and properly. He led neutron radiography group in Neutron Scattering Laboratory before pointed out as the Head of Neutron Scattering Laboratory in 2012. In the last four-five years he was several times assigned by the International Atomic Energy Agency (IAEA) to join Coordinated Research Project (CRP) as well as Technical Cooperation (TC) program in the developing part of the world to promote the neutron radiography/ tomography application for advanced materials research, industrial and cultural heritage applications.

During his period as Head of Laboratory, many activities have been organised such biennial Seminar on X-ray and Neutron Scattering; IAEA Technical Meeting on Regional Research Reactor Users' Networks (RRUNs): Advances in Neutron Imaging in 2012; the 6th AONSA Neutron School in 2014 and also the 13th AONSA EC and the 8th Asia-Oceania Facility Director Meeting in 2014. And his last appearance in AONSA activity was in the 2nd AOCNS in Sydney, Australia, July 19 - 23, 2015 representing of the Indonesian delegates.

Now, all his duties have accomplished as many great memories will be remembered and missed by us and all his colleagues from AONSA, IAEA and others. We truly believe he has done a great job in promoting our facility to the world and it will not be forgotten.

Thank you Dr. Sutiarso and may rest in peace.

Edy Giri Rachman Putra

Polytechnique Institute of Nuclear Technology

National Nuclear Energy Agency (BATAN)

Indonesia

REPORT FROM INDONESIAN NEUTRON SCATTERING SOCIETY

History :

2013	First declalation of the Indonesian Neutron User Group;
2011-2014	Establishment the Indonesian Neutron Scattering Society (INSS) President INSS: Prof. Dr. rer.nat. Evvy Kartini (National Nuclear Energy Agency)
2015	Dr. Sutiarso (former Head of Neutron Scattering Laboratory) attended the ACONSA in Sydney, Australia.
	Sad News, Dr. Sutiarso died in March 2016 and was replaced by Dr.Iwan Sumirat.
	at the 15th EC AONSA Meeting in Tokaimura Japan, Indonesia was announced to become the member of the AONSA
2016	Indonesian Neutron Scattering Society was officially a member of the AONSA

Goal:

To represent the neutron users in the Asia-Oceania Neutron Scattering Association (AONSA)

To promote the application of neutron scattering for research and development in various areas

To encourage young scientists to perform neutron scattering experiment for their research.

To increase the number of Neutron users and societies

To optimize the utilization of neutron scattering facility in Indonesia

To open the national and international networking in the field of neutron scattering

Present status of INNS

The number of members of INSS is 120 (including ~30 students), and 15 supporting members. They consist of 61% , 29% and 10% from R%D, University and Industry, respectively.

INSS BOARD MEETING

The first INSS Board Meeting was held in October 6th, 2015 in BATAN Serpong. The main agenda was the establishment of the Indonesian Neutron Scattering Society (INSS). Several Board members who attended the meeting were Prof.Dr. Evvy Kartini (BATAN), Prof.Dr.Darminto (ITS), Dr. Agung (ITB), Dr. Sutiarso (BATAN), Edy Giri R Putra (BATAN), Dr. Soenarmo (UGM), Ir. Nandang Suhendar (BPPT), Dr.Sudaryanto (BATAN), Dr. Andon Insani (BATAN) and Dr. Teguh Y S Putra (BATAN).

Summary of the first INSS Board Meeting: The status of Indonesian neutron society in Asia Oceania Neutron Scattering Association (AONSA) was limited as observer and will by upgraded as member by fulfilling several requirements, such as the establishment of a society or association. The society or association should have regular activities such as meetings, conferences, etc. During this meeting, the Indonesia Neutron Scattering Society (INSS) was declared, preceded by the formation of Board of INSS. Indonesia had utilized a neutron facility for more than 20 years, however it is still underutilized. Many research activities only use standard method such as XRD, SEM, etc., and it is expected that neutron scattering method will find wider utilization and should be involved in wider range of research activities.

ACTIVITIES

In order to enhance the Neutron users and societies, a series of Focus Group Discussion on Neutron beam application for research reactor materials was held in BATAN in 2015. Indonesia was also active in the International communities, the former head of Neutron Scattering Laboratory, Dr. Sutiarso, has attended the ACONSA in Sydney Australia, whereas he represented also the Indonesian neutron Scattering Society (INSS). Unfortunately, he passed away in March 2016. A shock for Indonesian neutron community, and also for AONSA. The position was replaced by Dr. Iwan Sumirat.

Neutron and X-ray National Seminar

National Neutron and X-ray Seminar was held in Serpong 6-7 October 2015. The seminar was attended by more than 100 participants from various institutions and universities in Indonesia. The plenary speakers from the Industry and policies, were followed by the poster presentations from all the participants. The seminar was followed by the workshop on the neutron scattering with the experiment at the neutron laboratory.

Supporting Young Scientist to AOCNS

INSS also supporting the young scientist to attend the regional event, i.e. Dr. Maykel Manawan from University of Indonesia was sent for presentation at the ACONSA, in Sydney, Australia. Partial financial contribution was from the committee.

Visiting Expert

In order to enhance the international collaboration, Prof. Dr. Ferenc Mezei, (ESS) one of the famous neutron leaders visited Indonesia in February 2016. He visited both battery and neutron scattering laboratories in BATAN Serpong. He was impressed with the Integrated Battery Laboratory that was ready for real prototype production and also for research by neutron scattering techniques.

15th AONSA Meeting'

During the 15th AONSA Executive Committee Meeting, in Japan 2-6 December 2015, the President of INSS, Prof.Dr. Evvy Kartini attended the meeting and presented the neutron scattering activities in Indonesia and proposed the INSS to become a member of AONSA.

The acceptance Indonesia became official member of AONSA was declared by the President of AONSA, Prof. Dr. Wen Hsien Li.

In the executive committee, Indonesia was asked to represent the member at large, who was represented by Prof. Dr. Evvy Kartini and Prof. Dr. Darminto.

INSS ACTIVTIES 2016

INSS activities after the previous EC meeting are summarized below.

Visiting Expert

In February 5, 2016, Prof. Dr. Ferenc Mezei, a Scientific Director of ESS Hungary. has visited BATAN. Accompanied by President of INSS, Prof. Dr. Evvy Kartini and the director of Center for Science and Technology of Advanced Materials, Drs. Gunawan MSc.,he visited a Neutron scattering facilities in the reactor and neutron guide hall, besides visiting the integrated battery laboratory. He had made some suggestions on improvement of the instruments.

Training workshop on Neutron Tomography for Research and Applications

Neutron Tomography is a Non-Destructive Test for some Industrial application. Previously, neutron radiography used a film method to investigate the inner material. Now on, with a higher improvement in electrical technology, neutron tomography can be implemented at a computer (Computer's Tomography). Since 2011, Neutron tomography has been implemented at BATAN. It is still new technique in BATAN and also the only one facility in Indonesia. BATAN's neutron tomography facility is one of best instruments in South East Asia. This facility has been used by Industrial users such as Astra HONDA Company and Albert Tech. There is several students also performed experiment at this facility who come from Indonesian Agriculture Institute, Indonesia Institute of Technology, Lampung University and Soedirman University.

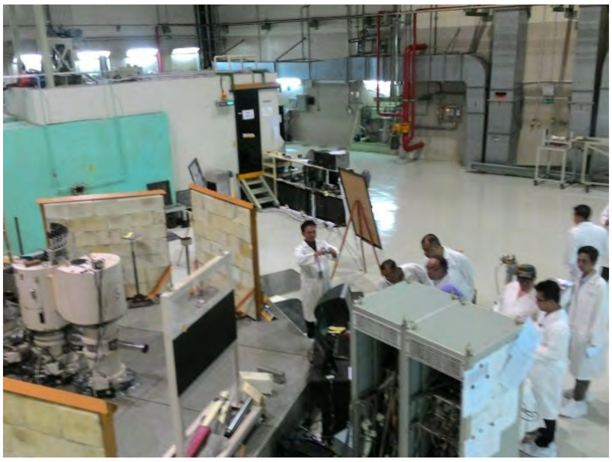
Training workshop on Neutron Tomography for Research and Applications was held in BATAN from March 7 - April 12, 2016. This training was attended by 15 participants, consist of 1 person from center for facility engineering, 2 people from Center for nuclear standardization and quality and 12 people from Center for science of Advanced Materials. The training season consist of 70% practical and 30% theory.

1st Coaching on Inelastic Neutron Scattering

From May 16th to June 3rd 2016, the Centre for Science and Technology of Advanced Materials –(PSTBM) BATAN organized its first coaching on Inelastic Neutron Scattering - INS. This coaching is a part of coaching on "**Materials characterization using Raman and Inelastic Neutron Scattering Techniques**". The coaching was supported by PSTBM and Center for Education and Training – (Pusdiklat) BATAN. Coaching on INS consists of lectures on theories given in class and practical works in the lab. The lab course was held at Experimental Hall of G. A. Siwabessy Multipurpose Research Reactor in Serpong. The coaching is open to researcher in neutron scattering and materials science background from internal BATAN and other institutions. This year we had 15 participants which consist of 12 selected participants from internal BATAN and 3 observers from non-BATAN.

IAEA Expert Mission

This expert mission is part of the IAEA National Technical Cooperation INS 1/026 period 2016-2017 entitled Utilizing Neutron Beam Techniques to Support Research on Industrial Applications. The mission will be held from June 20 to 24, 2016 and is divided into two topics i.e. Safety of Experiments and Utilization and Utilizations of Neutron Techniques to Support Industrial Applications. Two IAEA staffs, Dr. David Sears and Dr. Ian Swainson and one international expert from ANSTO Australia, Dr. Mark Summerfield have been involved in this mission. Participants from BATAN consist of Iwan Sumirat (the TC counterpart), Mr. Gunawan, Director of Centre for Science and Technology of Advanced Materials - PSTBM, Mr. Yusi (Reactor Operational Manager), and all instrument scientists and operators of BATAN neutron scattering facility. The safety mission will be conducted on the basis of the presentations by the IAEA Staff and the international expert, presentations by the counterparts (representatives from BATAN/RSG-GAS/Neutron Scattering Laboratory) on the current safety practices, a walkthrough of the facilities, the review of documents related to the safety of experiments and discussions and technical exchanges between the IAEA team and the counterparts during the working sessions to improve safety, identify gaps with respect to the IAEA safety standards and to provide recommendations to close the gaps. The utilization component will review the current situation and develop the work plans accordingly for the project. Prof.Dr. Evvy Kartini, the President of Indonesian Neutron Scattering Society - INSS, was invited to deliver the INSS activities and the plan.



16th AONSA EC Meeting

The AONSA Executive Committee (EC) meeting was held in Dongguan City, Guangdong Province, China, on May 31, 2016, attended by the members representing the neutron associations from AONSA countries, including Indonesia. The Indonesian delegate was represented by Prof. Dr. Darminto (ITS Surabaya), as a board member of the Indonesian Neutron Scattering Society (INSS). The meeting chaired by the President of AONSA, Sung-Min Choi, ran smoothly and relaxing. He opened it with an expression of deep condolence on the death of Dr. Sutiarso (BATAN).

All the report activities of INSS can be downloaded from http://inss.batan.go.id

Prof. Dr. rer.nat. Evvy Kartini

President of INSS

Report from ANSTO

Australia's Open Pool Australian Light-water (OPAL) reactor is a state-of-the-art 20 Megawatt reactor that uses low enriched uranium (LEU) fuel to achieve a range of nuclear medicine, research, scientific, industrial and production goals.

The Australian Centre for Neutron Scattering operates the suite of neutron beam instruments at the OPAL reactor and leads Australia in the use of neutron scattering and X-ray techniques to solve complex research and industrial problems in many important fields. There are currently 13 operating neutron beam instruments available for users and 1 neutron beam instrument under construction.

Open competitive access to the neutron beam instruments is available through the Australian Centre for Neutron Scattering Customer Portal (http://neutron.ansto.gov.au). Calls occur biannually and close in September and March.

So far 2016 has been a year of significant change for ANSTO. In April 2016, ANSTO concluded a restructure of the Nuclear Science & Technology cluster with one of the outcomes of the restructure has been the separation of the former Bragg Institute into the Australian Centre for Neutron Scattering (ACNS), and the National Deuteration Facility (NDF). Over the past 13 years the Bragg Institute has established a strong national & international reputation as leading neutron scattering and deuteration facilities. Under our new titles we will continue to provide the same, if not better, service to users in support of their research.

In July 2016 Rob Robinson left ANSTO after 16 years of service. We would like to take the opportunity to thank Rob for his significant contribution to ANSTO, particularly his role in the establishment and development of the ANSTO neutron scattering capabilities. During his time at ANSTO Rob has initiated and led many successful initiatives that have helped position Australia and ANSTO for ongoing and future success both nationally and globally. Rob's career at ANSTO started in December 1999, when he initially led the Neutron Scattering and Synchrotron Radiation Group, before taking on the leadership position as the Head of the Bragg Institute. He has also played a critical role in developing regional associations and global networks for neutron scattering including the establishment of AONSA. On 29th July a symposium was held to celebrate Rob's contribution to neutron scattering in Australia.

A total of 306 proposals were received for the 2016-2 proposal round with 209 proposals approved across the neutron beam instruments, National Deuteration Facility, X-ray instruments & the Physical Properties Measurement System.

Jamie Schulz
ANSTO

Group photo of ANSTO Staff

Report from HANARO

HANARO has been in shutdown since July 2014 (now just two years passed) and the NSSC (Nuclear Safety and Security Commission) ordered a temporary shutdown and structural reinforcement of the reactor building wall officially and publicly on March 2015, as it was found that there was a small portion (~5%) of wall areas of the reactor building wall (not reactor itself!) not to comply with regulation on the requirement of the seismic margin for a nuclear facility.

Intensive work had been put into the conceptual design for the reinforcement of the building wall, planning on scheduling and rapid budget securing, and a lot of adjustment on those on-going research, development and services activities at that time and then all the documents was submitted October 2015 to the regulatory agency for the permission of the reinforcement work. The contract with a construction company was made on February 2016 and the construction permission from the regulatory agency was issued on May 2016 after full scale inspection on a series of 1:1 real scale mock-up testing for three months for the reinforcement method. Now HANARO is under intensive construction period with many technical obstacles, too.

During the shutdown period, HANARO has been trying to improve the users' access mode for their experiments and we hope to finalize most of procedures and internal regulation for the improved accessibility complying with governmental ever enforced security regulations by the time of first users after the re-operation of HANARO. Along with these long shutdown period, many replacements of aged parts and newer components for the reactor operation under enforced safety regulation has been under way, of which the reactor control computer with full digital way is worth to mention after their 25 years of service. After the building work, we should have to pass a strict inspection by the regulatory agency for 3~4 weeks expected, and then a series of testing operation for the reactor is also planned because many important parts would be replaced such as the reactor control computer, pumps, etc.. We, therefore, expect most probably the users access mode will be available around December at the earliest.

Chang-Hee LEE

(HANARO)

Pool top area view for the structural reinforcement work and the neutron scattering instruments floor below the green net

Outside view of the reactor building on the preparation phase

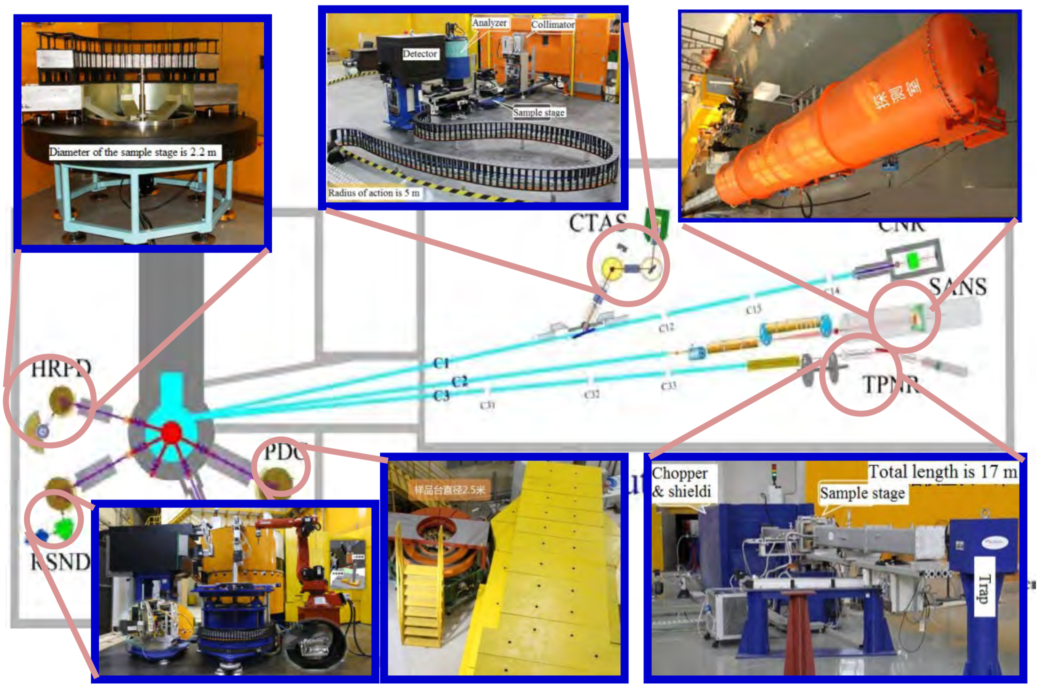
A New Operating Neutron Scattering Facility CMRR in China

The China Mianyang Research Reactor (CMRR) with the power of 20 MW is located in Mianyang city, Sichuan Province. The thermal and cold fluxes for neutron scattering are measured to be 2.4×10^{14} $n\cdot cm^{-2}\cdot s^{-1}$ and 10^{9} $n\cdot cm^{-2}\cdot s^{-1}$. Eight neutron scattering instruments have been installed and started operation from the middle of 2014. They are high resolution neutron diffractometer (HRND), residual stress neutron diffractometer (RSND), thermal neutron radiography station (TNR), high pressure neutron diffractometer (HPND), small-angle neutron spectrometer (SANS), time-of-flight and polarized neutron reflectometer (TPNR), cold neutron triple-axis spectrometer (CTAS) and a cold neutron radiography station (CNR).

CMRR has run about 100 days in 2015 and provided more than 40% beam time for national users. Nearly twenty papers have been published by users from 2014. It will run more than 120 days from 2016 and service for users more in the future. Three new instruments has been approved and will be built as the second phase during the next three years, which are a polarized thermal neutron triple-axis spectrometer (TTAS), an ultra small-angle neutron spectrometer (USANS), and a neutron standard-test beam line (NSTB). At the same time, more sample environment systems will also be added, such as high/low temperature, high pressure, superconducting magnetic field and chemical loading, etc.

Guangai Sun

Key Laboratory of Neutron Physics, Institute of Nuclear Physics and Chemistry, China Academy of Engineering Physics



BATAN's Neutron Scattering Laboratory Facility Report

Figure 1 In-house Topographic scanner with visible light being explored to be applied at DN1, Engineering diffractometer.

Internal residual stress mapping of engineering sample need precision of real dimension of the sample which could be different with its technical drawing due to the manufacturing process. 3D scanner with sub-millimeter resolution using visible light is being explored to measure the surface coordinates of the sample. Figure 1 shows the in-house production of 3D topographic scanner for strain scanner instrument, DN1.

Figure 2 HRPD – upgrading counting system.

To increase the capability and in an effort to suppress the noise of the multi detectors, the counting system of HRPD had been upgraded from analog to digital signal processing (DSP) used FPGA based system (Figure 2). Major noises come from electronic. With the DSP, electronic noise could be identified and easily extracted using software. In advanced, the performance of HRPD expected increase significantly.

Figure 3 Developing new shielding for TAS

New shielding had been installed in the areas that are suspected as sources of background to the Triple Axis Spectrometer. We are still working on suppressing the still high background to get better S/N ratio. Figure 3 shows some pictures of the process.

Figure 4 Installation of upgraded 2D detector for SANS.

Upgraded 2D detector had been installed in SANS (Figure 4). The performance of the detector still needs further treatment. The development of new software for data acquisition had been conducted to integrate the data acquisition and the instrument control. The migration of the motion control from PCI to Ethernet base is conducting in our SANS, due to the computer broken and the new computer generation nowadays did not support many PCI card.

Iwan Sumirat

Neutron Beam Technology Division – PSTBM BATAN

Call for Applications for the AONSA Young Research Fellowship 2017

The AONSA Young Research Fellowship Program has been established in 2014 to support highly talented young scientists in the Asia-Oceania region and help them to develop their expertise and career in neutron science and technology. The Program will provide financial support for Fellows to visit major neutron facilities in the region for collaborative research using neutrons.

Any young scientist in the Asia-Oceania region within 8 years of the completion of his/her PhD and who wishes to perform neutron research at major neutron facilities in the region (but not in his/her home country) can apply by following the Rules as described below. The hosting Neutron Facilities in 2017 are J-PARC (Japan), OPAL at ANSTO (Australia), and HANARO at KAERI (Korea). A total of three Fellowship positions are available in this application round (one for each hosting Facility) and the possible duration of each Fellowship visit is 3 to 12 months. Please send your applications electronically to the AONSA Office (doda.chikako@jaea.go.jp) with c.c. to naomi.nagata@kek.jp by **August 31, 2016**. The results will be communicated to applicants in November 2016 and the Fellowship visits will start in 2017.

An application should include:

- A standard application form (provided by AONSA) with all required information completed including a scientific plan for collaborative neutron research.
  (The application form can be downloaded from http://www.aonsa.org)
- A curriculum vitae including a full list of publications.
- One recommendation letter from a supervisor at home institute.
- One letter of support from President of the home neutron society or a representative of home neutron community.

For the more information about neutron scattering instruments available and possible opportunities at the Facilities, please contact the following persons.

J-PARC: Dr. Ryoichi Kajimoto
Email: ryoichi.kajimoto@j-parc.jp
OPAL at ANSTO: Dr. Jamie Schulz
Email: jys@ansto.gov.au
HANARO at KAERI: Dr. Chang Hee Lee
Email: leech@kaeri.re.kr

Selection Committee for the AONSA Young Research Fellowship 2017

K. Yamada (Chair, JSNS), Hsin-Lung Chen (TWNSS) Anna Paradowska (ANBUG), R. Mittal (NSSI), Sungil Park (KNBUA), F. Wang (CNSS), E. G. Putra (INSS)

AONSA Young Research Fellows

(Established February 21, 2014)

The purpose of the Asia-Oceania Neutron Scattering Association (AONSA) Young Research Fellowship Program is to support highly talented young scientists with leadership potential in the Asia-Oceania region, helping them to develop their career and expertise in neutron science and technology. The Program will provide financial support for Fellows to visit major neutron facilities in the region for collaborative research using neutrons.

1. Rules

a. The Fellowships shall be awarded every year to highly talented young scientists in the region who have demonstrated strong scientific or technical needs for an extended visit to a major neutron facility in the region (but not in his/her home country). Recipients can receive the Fellowship only once.

b. The duration of the Fellowship visit shall be 3 to 12 months depending on his/her needs and resources available. The maximum number of recipients each year shall be determined by the AONSA Executive Committee (EC) after consultation with hosting facilities.

c. The Fellowship consists of a certificate of Fellowship award, one round-trip airfare between his/her home institute and the hosting facility, and local living expense at the hosting facility. The amount of support for local living expenses shall be determined based on the nominal cost of living and funding resources available. At least one staff member shall be assigned by the hosting facility to the Fellow as a collaborator and mentor.

d. The financial responsibility for each Fellow shall be shared by AONSA, the hosting facility, the home institute, and another funding agency (if available). When other funding resources are not available, AONSA shall provide one round-trip airfare, the hosting facility shall cover local living expenses, and the home institute shall provide salary, insurance and other financial needs. When funding from another agency is available, the guidelines of that agency shall be followed.

e. Within 3 months of completing the Fellowship visit, each Fellow shall submit a report to the AONSA Office and the hosting facility with a brief description of research performed during his/her visit and other outcomes.

f. In any publication resulting from the Fellowship visit, the AONSA Young Research Fellowship Program and hosting Facility shall be acknowledged.

g. A special session with successful Fellows as speakers shall be considered at the following AOCNS meeting.

2. Applications and Eligibility

a. The AONSA Young Research Fellowship Program shall be open to young scientists in the Asia-Oceania region within 8 years of the completion of his/her PhD (as of the application deadline, excluding career interruptions) who wish to perform neutron research at major neutron facilities in the region (but not in his/her home country).

b. The Call for Applications shall be announced by Chair of the Fellowship Selection Committee (SC) through the AONSA network including member societies, observers and other personnel determined by the SC.

c . An application should include:

- A standard application form (provided by AONSA) with all required information completed including a scientific plan for collaborative neutron research.
- A urriculum vitae including a full list of publications.
- One recommendation letter from a supervisor at home institute.
- One letter of support from President of the home neutron society or a representative of home neutron community.

d. The application shall be electronically submitted to the AONSA Office by the deadline indicated in the Call for Applications.

e. An application shall be valid for one cycle only.

3. Selection Committee

a. The SC shall consist of seven members chaired by the AONSA Vice President, other six members appointed by the EC. The term of SC members shall be two years. A member can be reappointed once (up to four years).

b. The SC members shall represent a broad range of member societies (not observers) and fields of neutron science and technology. The Chair of the SC may co-opt a person or persons from member societies or from observer country/region, when none of the six members has expertise in the research field(s) required for reviewing submitted applications. Co-opted member(s) shall be approved by the EC.

c. The SC members shall be posted on the homepage of AONSA when the SC issues the Call for Applications. The co-opted member(s) shall also be posted.

d. The Chair of the SC shall consult with the Directors of hosting facilities concerning the suitability of prospective successful candidates at their facilities before finalizing and announcing the SC's decision.

e. The SC's review shall be completed within 2 months after the application deadline.

f. The SC shall submit a list of recipients with a review report for each recipient to the EC for approval by the end of November of each year. The approval by the EC may be done electronically, if necessary.

g. The list of recipients shall be communicated to the Directors of the hosting facilities and posted on the AONSA website. The result of each application shall be communicated to each applicant individually by the Chair of the SC.

h. The AONSA Office, hosting facilities and home institutes shall cooperate to arrange the Fellowship visits efficiently.

i. The commencement of the Fellowship is subject to meeting the security and visa requirements of the hosting facility.

Call for Nominations for the AONSA Prize 2017

The AONSA is inviting nominations for the AONSA Prize to recognize an outstanding research career with a significant impact or contribution to the use or development of neutron science or technology in the Asia-Oceania Region. The AONSA Prize was established in 2010 and is awarded every two years. The first three Prizes were awarded to Prof. Noboru Watanabe (KEK) in 2011, Prof. Balebail Anantha Dasannacharya (BARC) in 2013 and Prof. John William White (Australian National Univ.) in 2015. Anyone may submit one nomination or a seconding letter for the AONSA Prize 2017 by following the rules as described below by **August 15, 2016**. Please send nominations electronically to the Chair of the Selection Committee (yamadak@post.kek.jp) with c.c. to naomi.nagata@kek.jp. The Prize winner(s) for 2017 will be announced in November 2016. The Prize Ceremony will take place and the Prize winner(s) will deliver the Prize Lecture during the ICNS-2017, July 9-13, 2017, Daejeon, Korea.

Selection Committee for the AONSA Prize 2017
K. Yamada (JSNS), W-H. Li (TWNSS)
K. Char (KNBUA), I. Gentle (ANBUG)
D. Chen (CNSS), S. Basu (NSSI)
E. Kartini (INSS)

AONSA Prize (Established on Oct. 5, 2010)

The Asia-Oceania Neutron Scattering Association (AONSA) awards the AONSA Prize every two years to a person or persons to recognize his/her or their outstanding research career with a significant impact or contribution to the use or development of neutron science and technology in the Asia-Oceania Region.

1.Rules

a. The Prize shall ordinarily be awarded to one person but may be shared by no more than three persons when all the recipients have contributions to the same accomplishment. Recipient(s) should receive the AONSA Prize only once.

b. The Prize consists of a certificate citing the contributions made by the recipient(s) and a monetary prize. The amount shall be decided by the AONSA Executive Committee (hereafter referred to as the EC). Where the award is shared, the prize money shall be equally divided amongst recipients

2. Nomination and Eligibility

a. Nomination shall be opened to anyone whose work has significantly impacted or contributed to the Asia-Oceania region.

b. Anyone (not a member of the AONSA Prize Selection Committee (hereafter referred to as the SC)) may submit one nomination or a seconding letter for the Prize.

c. A nomination should include:

- A letter of not more than 5,000 characters evaluating the nominee's qualification for the Prize and identifying the specific work to be recognized.
- A brief curriculum vitae
- A short list of major publications
- Up to five reprints/preprints
- At least two, but not more than four seconding letters

d. Nomination should be electronically submitted to Chair of the SC by the deadline issued by the SC.

e. Nomination shall be active through two review cycles (4years). Nominations may be updated while still active.

3. Selection Committee

a. The SC shall consist of seven members chaired by the AONSA Vice President while other six members shall be appointed by the EC. Their term shall be two years (one selection cycle). A member can be reappointed for the next selection cycle (up to two cycles for four years).

b. The SC shall be independent of the EC. Nominations shall be treated in confidence within the SC.

c. The SC members shall represent a broad range of member societies (not observers) and fields of neutron science and technology. The Chair of the SC may co-opt a person or persons from member societies or from observer country/region when none of six members can cover research field(s) for reviewing nominations submitted. Co-opted member(s) shall be approved by the EC.

d. The SC members shall be posted on the home page of AONSA when the SC issues the call-for nominations. The co-opted member(s) shall also be posted.

e. The SC shall submit the name(s) of recipient(s) with a report of nomination process to the EC prior to five months to Prize Ceremony at the quadrennial Asia-Oceania Conference on Neutron Scattering (AOCNS) or the quadrennial International Conference on Neutron Scattering (ICNS), both held in an interval of two years.

f. The SC shall carry out AONSA Prize Ceremony at AOCNS or ICNS.

Australia-Japan Workshop on Neutron Science

After the Great Earthquake (Mar. 11, 2011), Institute for Solid State Physics, The University of Tokyo (ISSP) started a travel supporting program in Apr. 2012. The travel expenses for the experiment performed using foreign facilities are supported by General User Program for Neutron Scattering Experiments, ISSP. On Oct. 1, 2014, ISSP closed an Agreement on Academic Exchange between ISSP and ANSTO, and it became effective on Jan. 1, 2015.

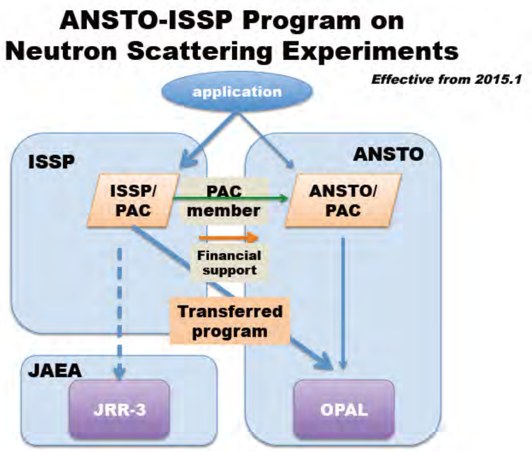


Fig.1 Scheme of the Agreement on Academic Exchange between ISSP and ANSTO. Proposals approved by both ISSP and ANSTO are transferred to ANSTO. The travel expenses are supported by ISSP. This program lasts until JRR-3 resume.

According to the agreement, the 1st Australia-Japan Workshop on Neutron Science was held on the 4th of Mar. 4, 2016, as a satellite workshop of ANSTO-J-PARC/MLF Workshop. The objective of the workshop was to promote scientific exchange between Japanese scientists using OPAL and ANSTO staff.

The workshop started by opening addresses by M. Shibayama, ISSP, and R. Robinson, ANSTO. There were 9 oral and 20 poster presentations from both sides, including Structural Origin of the Anisotropic and Isotropic thermal Expansion of K2NiF4-Type Oxides, by M Yashima (TITECH), Magnetic correlations in the high-Tc cuprate superconductors, by K. Suzuki (Fujita Gr., Tohoku U.), Magnetic Order of Buckled Honeycomb Lattice Antiferromagnet Ba_2NiTeO_6, by S. Asai (Masuda Gr., ISSP), Nano structural studies with SANS by KUR group by M. Sugiyama (KUR), Neutron scattering study of novel chiral magnets and ladder superconductors, by T. Sato (Tohoku U.), Structural Analysis of Lipophilic Polyelectrolyte Solutions and Gels in Low-Polar Solvents, by M. Shibayama (ISSP), Overview and recent highlights of neutron diffraction research at OPAL, by M. Avdeev (ANSTO), and Recent Highlights from QUOKKA - the monochromatic Small Angle Neutron Scattering instrument at OPAL -, by E. Gilbert (ANSTO).

It was reported that there were 57 scientists were supported to conduct their experiments at foreign facilities, among which 22 carried out their experiments at ANSTO. According to a questionnaire of Feb. 29, 2016, there were 20 papers published as Japanese Universities-ANSTO collaborations, and 19 papers were in preparation. This scientific relationship will continue even after resume of JRR-3.

The details of the workshop are given at http://shibalabbeta.wix.com/jaworkshop

Mitsuhiro Shibayama

University of Tokyo

Fig. 2 Group photo of the 1st Australia-Japan Workshop.

The 15th Japan-Korea Meeting on Neutron Science

Since 2000, Korea-Japan meeting on Neutron Science has been held every year between Korea and Japan. This year, the 15th meeting was held on Jan. 6 to 8 (2016) at Busan, Korea. Traditionally, the meeting started evening welcoming reception on Jan. 6. During two full days scientific meeting started from Jan. 7, there were 30 invited oral presentations and 26 poster presentations. The meeting was started by reviewing last year scientific collaboration activities between two countries including experimental outcomes and small group workshops. After reviewing collaboration activities, the meeting was covered various scientific and instrumental issues including the facility overviews, hard-matter, industrial applications, bio, soft-matter, instrumental and young scientist session. In particular, we added focused session to promote strong scientific collaboration. This year, the focused session was dedicated to the inelastic scattering small group between Korea and Japan. The 7 scientists between two countries covered important scientific and instrumentations issues in the inelastic neutron scattering field.

The 15th Japan-Korea meeting on Neutron Science was successfully ended hoping for the continuous active collaborations between two countries. However, we will not have meeting in 2017 due to ICNS2017. The next meeting will be held in the beginning of 2018 in Japan. Any international participants including members of AONSA will be welcomed to contribute the Korea-Japan meeting on Neutron Science in near future.

Lastly, we thank for the financial supports from Korea Atomic Research Institute, Advanced Research Center for Nuclear Excellence, KAIST, Center for Korean-JPARC Users, Ckor-JPARC program and Pusan National University for the successfully meeting.

By Sungkyun Park
(Pusan National Univ. Korea) and
Kenji Nakajima (J-PARC, Japan)

1st Workshop for J-PARC/ANSTO MoU Collaboration

Over 2nd-3rd March 2016 the first workshop J-PARC/ANSTO MoU collaboration was held in Tokai, Japan. This workshop was the first formal collaborative meeting following the signing of the Memorandum of Understanding (MoU) between the two organisations at the 2nd Annual Asia Oceania Conference on Neutron Scattering (AOCNS) in Sydney on 19 July, 2015. The main focus of the MoU is to facilitate staff exchanges between two of the leading nuclear research organisations in the Asia Pacific region. The two day workshop was officially opened by Naohito Saito (Director of J-PARC Center), Adi Paterson (CEO of ANSTO), Kazuyoshi Yamada (Director of Institute of Materials Structure Science) & Hideaki Yokomizo (Director of CROSS-Tokai) and was attended by 12 ANSTO staff and over 40 J-PARC staff. Collaborative opportunities that were discussed during the meeting included hard & soft matter science, food science, industrial applications, sample environments, polarised neutrons, safety, and deuteration. The first day of the workshop was devoted to presentations of the neutron beam facilities, applications and research programs of both sides, including potential collaboration areas of food science, deuteration facilities, industrial engagement and sample environment. The workshop divided into parallel sessions on the second day to focus on specific collaboration areas. At the conclusion of the workshop a number of collaboration initiatives were agreed upon.

Yukinobu Kawakita *(J-PARC, JAEA)*

Jamie Schulz *(ANSTO)*

International Conference on Neutron Scattering

The International Conference on Neutron Scattering (ICNS 2017) will be held from July 9th to 13th in Daejeon, South Korea. The city of Daejeon is located southbound from Seoul by 2-hour drive or 1-hour bullet-train ride. It is often called the city of science hosting many universities and research institutions including Korea Advanced Institute of Science and Technology (KAIST) and Korea Atomic Energy Research Institute (KAERI). The ICNS 2017 is co-organized by the KNBUA and the KAERI, and its venue will be the Daejeon Convention Center near the city center.

The ICNS 2017 homepage (http://www.icns2017.org) is scheduled to open officially in early July 2017. The lists of the International Advisory Board (Chair: Ki Bong Lee, POSTECH) and the International Program Committee (Chair: Kookheon Char, Seoul National University), respectively, are ready to be available as soon as the homepage opens. The ICNS 2017 will cover broad topics in neutron science including, but not limited to: soft matter, biology & biological interface, condensed matter physics, magnetism & thin films, chemistry & earth science, engineering materials, energy & environmental materials, imaging & radiography, neutron physics, industrial applications, sources & instrumentations, sample environment & software, etc. The International Program Committee members are working hard in the last stage of selecting plenary speakers.

We would like to welcome you all to the ICNS 2017.

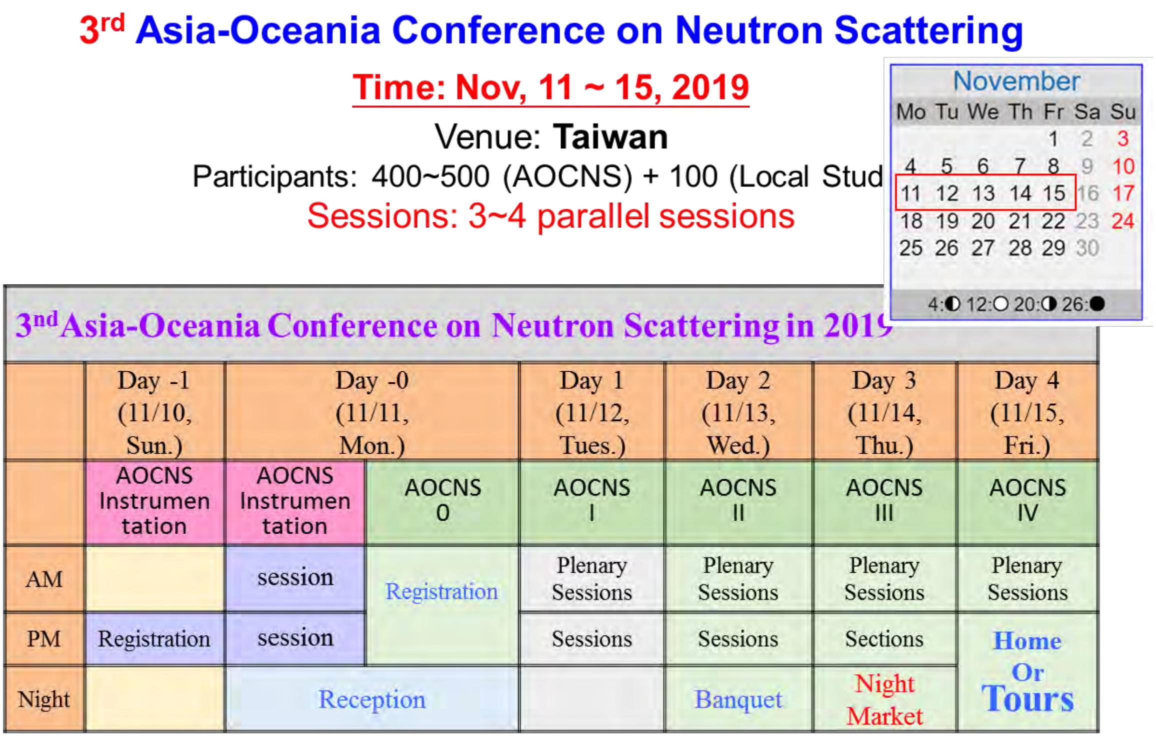
Jae-Ho Chung
Korea University

ICNS 2017
International Conference on Neutron Scattering
July 9-13, 2017 | DCC, Daejeon, Korea

Report on recent progress of TWNSS-organized 3rd Asia-Oceania Conference on Neutron Scattering (the 3rd AOCNS (2019))

TWNSS has been selected to host the 3rd AOCNS. The conference will take place from 11~15, 2019, in the Kenting National Park. The primitive nature of Kenting will bring the attendees relaxing atmosphere to enjoy the latest neutron techniques and the up-to-date neutron knowledge of science and engineering. For the program committee of the 3rd AOCNS, all Presidents of the member associations are recommended as the international advisory Board (IAB) and 2 recommendations will be made as the international Scientific Program Committee (ISPC) from each of the member associations. 2019 TWNSS EC members, Secretary and several professors [Dr. Chao-Hung Du, Tamkang University; Dr. Hsi-Mei Lai, National Taiwan University; Dr. Ko-Wei Lin, National Chung-Hsing University; Dr. Er-Wen Huang, National Chiao-Tung University; Dr. Yi-Fan Chen, National Central University; Dr. Hsiung Chou, National Sun Yat-Sen University; Dr. Chang Leih-Jeng, National Cheng-Kung University; Dr. Chen-Wei Liu, National Dong-Hwa University; Dr. Yuan-Ron Ma, National Dong-Hwa University; Dr. U-Ser Jeng, National Synchrotron Radiation Research Center (NSRRC); Dr. Yu-Sang Huang, National Synchrotron Radiation Research Center (NSRRC)] have been determined as organization committee (OC).

The tentative program of the 3rd AOCNS (2019)


3rd Asia-Oceania Conference on Neutron Scattering

Time: Nov, 11 ~ 15, 2019

Venue: Taiwan

Participants: 400~500 (AOCNS) + 100 (Local Stud

Sessions: 3~4 parallel sessions

November

Mo	Tu	We	Th	Fr	Sa	Su
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

4:◐ 12:○ 20:◑ 26:●

3nd Asia-Oceania Conference on Neutron Scattering in 2019

	Day -1 (11/10, Sun.)	Day -0 (11/11, Mon.)		Day 1 (11/12, Tues.)	Day 2 (11/13, Wed.)	Day 3 (11/14, Thu.)	Day 4 (11/15, Fri.)
	AOCNS Instrumentation	AOCNS Instrumentation	AOCNS 0	AOCNS I	AOCNS II	AOCNS III	AOCNS IV
AM		session	Registration	Plenary Sessions	Plenary Sessions	Plenary Sessions	Plenary Sessions
PM	Registration	session		Sessions	Sessions	Sections	Home Or Tours
Night		Reception			Banquet	Night Market	

The primary site of the 3rd AOCNS (2019)

Hsiung Chou

President, TWNSS

Calendar of AONSA Activities

Year 2016

Date	Events
May 30	11th AONSA Facility Directors' Meeting (Dongguan, China)
May 31	16th AONSA EC Meeting (Dongguan, China)
Jul 10-14	American Conference on Neutron Scattering (Long Beach, CA, USA)
Nov 17	12th AONSA Facility Directors' Meeting (India)
Nov 18	17th AONSA EC Meeting (India)
Nov 15-19	8th AONSA Neutron School (India)
Nov 22-26	Neutron and Muon School (Tokai, Japan)
Dec 1-2	16th JSNS Annual Meeting (Nagoya, Japan)
Dec 5-6	AINSE-ANBUG Neutron Science Symposium (Lucas Heights, Australia)

Year 2017

Date	Events
Feb 22-26	HANARO Winter School (Daejeon, Korea)
Mar 10-13	7th Taiwan-Japan Joint Meeting on X-ray and Neutron Scattering
May 26	HANARO Symposium (KAERI, Korea)
July	12th AONSA Facility Directors' Meeting (Daejeon, Korea)
July	18th AONSA EC Meeting (Daejeon, Korea)
July 9-13	ICNS-2017 (Daejeon, Korea)
Nov	13th AONSA Facility Directors' Meeting (Bangkok, Thailand)
Nov	19th AONSA EC Meeting (Bangkok, Thailand)
Dec 2-3	17th JSNS Annual Meeting (Fukuoka, Japan)