Newsletter From AONSA

The Asia-Oceania Neutron Scattering Association

Volume 9, No.2 (Dec, 2017)

The 19th AONSA EC Meeting in Bangkok, Thailand

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President's Message

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

Great developments and very successful activities have been made over the last 10 years since AONSA was formed in 2008. Friendship among AONSA colleagues built over the years has been the key base for the continuing success of AONSA. In November, we had AONSA EC Meeting in Bangkok, Thailand for the first time, a good indication that the AONSA network of friendship is expanding. The neutron symposium held the following day clearly showed the strongly growing interests on neutron science in Thailand and neighboring countries. We appreciate the great efforts of Thailand colleagues and look forward to working together for neutron science in our region including Thailand.

The 9th AONSA Neutron School was held at J-PARC last November. We greatly appreciate J-PARC and Japanese colleagues for their great efforts for the very successful school. So far about 350 students and young scientists were trained through the AONSA Schools over the years and enjoyed building friendship with participants, lecturers, and staff scientists.

The AONSA Young Research Fellowship (YRF) Program is in its third year. This year 3 young scientists were selected for the YRF 2018. We sincerely appreciate Vice-President Kazuyoshi Yamada and the selection committee for their efforts. We also greatly appreciate the continuing supports from ACNS/ANSTO and MLF/J-PARC.

Recently, the Chinese Spallation Neutron Source announced its first neutron diffraction pattern measurement. This is great news. Big congratulations for Chinese colleagues for their great achievement and progress! Another great news came from Korea. The HANARO restarted its operation in December after 3.5 years of long shutdown for seismic reinforcement of building. Big congratulations for HANARO! These two are great news not only for the neutron community in our region but also for the global neutron community. We look forward to hearing similar news from JRR3 in very near future.

Finally, since this is my last Newsletter message as President, I would like to sincerely thank the Board members and all AONSA colleagues for their friendship, cooperation, and contributions to AONSA for the last two years. We expect that AONSA will continue to grow and flourish under the new Board and EC lead by Brendan Kennedy.

Report on the 19th AONSA Executive Committee Meeting

The 19th AONSA Executive Committee (EC) Meeting was held on Sunday November 26, 2017, at the Thailand Institute of Nuclear Technology (TINT) in Bangkok, Thailand. Twenty-five participants travelled to Bangkokfor the meeting, consisting of eight Executive Committee (EC) members, eight observers representing neutron facilities in the Asia-Oceania region, and seven special observers. The meeting was held to coincide with the ASEAN Neutron and Synchrotron Science Camp.

The first item of business was the nomination of EC and Board members for the 2018-2019 term. The following nominations were received and unanimously approved:

ANBUG (1)Tracy Rushmer (Macquarie University)
(2) Ian Gentle (University of Queensland)
(Observer) Jamie Schulz (ANSTO)

CNSS (1) Dongfeng Chen (CIAE)
(2) Hesheng Chen (IHEP)
(Observer 1) Yuntao Liu (CARR)
(Observer 2) Fangwei Wang (CSNS)
(Observer 3) Jian Gong (CMRR)

INSS (1)Darminto (Institute of Technology, Surabaya)
(2) Evvy Kartini (BATAN)
(Observer) Iwan Sumirat (BATAN)

JSNS (1)Yoshiaki Kiyanagi (Nagoya University)
(2) Taku Sato (Tohoku University)
(Observer 1) Mitsuhiro Shibayama (JRR3)
(Observer 2) Toshiji Kanaya (J-PARC)
(Observer 3) Masayasu Takeda (JRR3/JAEA)

KNBUA (1) Jae-Ho Chung (Korea University)
(2) Sungkyun Park (Pusan National University)
(Observer) Sungil Park (HANARO/KAERI)

NSSI (1) SM Yusuf (BARC)
(2) D Pandey (IIT BHU)
(Observer) PU Sastry (BARC)

TWNSS (1) Hsiung Chou (Nat. Sun Yat-Sen University)
(2) Ko-Wei Lin (Nat. Chung Hsing University)

Thailand (Observer) Apichate Maneewong (TINT)

Malaysia (Observer) Abdul Aziz Mohamed (UNITEN)

The following nominations were received and unanimously approved for the next Board members, after noting that the current Vice President, K Yamada, has decided not to continue on the AONSA Board for personal reasons, necessitating the nomination of a new President:

President	Brendan Kennedy (University of Sydney)
Vice President	Dongfeng Chen (CNSS; CIAE)
Secretary	Jae-Ho Chung (Korea University)

Treasurer	Hsiung Chou (National Sun Yat-Sen University)
Public Relations Officer	Taku Sato (Tohoku University)
Member-at-Large	Evvy Kartini (BATAN)
Member-at-Large	S.M. Yusuf (BARC)

A range of technical and process matters were dealt with at the meeting. One important item concerned the future staffing and funding of the AONSA Office. It was noted that many of the tasks of the AONSA Office are done primarily by AONSA Board members. Prof. Hideki Seto (KEK) presented a proposal for sharing the responsibilities of the AONSA Office, by formally assigning the preparation of the Newsletter and email updates to the membership to the AONSA Public Relations Officer; preparation and management of the documents for the YRF and AONSA Prize selection processes to the VP; and management of the schedule to the Secretary. The only tasks that would still need to be done by the Office are managing the bank account and handling money (including disbursing funds for the Prize, YRF, AOCNS etc.). This proposal was accepted unanimously by the EC and Board.

Reports were received actions taken concerning the AONSA budget and financial plan, AONSA Prize, AONSA Young Research Fellow (YRF) program, and the activities of AONSA member societies. As a bridging program between the AONSA Neutron School and the YRF program, a scheme for short-term visits for experiments or training scientists from developing countries was proposed (airfare support by AONSA and local expense by hosting facilities). This possibility will be discussed further at the next EC meeting. Such a scheme could potentially be eligible for IAEA funding assistance.

Participants were briefed on and discussed the state of preparations for the 3rd Asia-Oceania Conference on Neutron Scattering (AOCNS-2019) to be held in Taiwan in November 2019(https://sites.google.com/view/aocns2019). The meeting will take place from Nov 11-15, 2019. There will be a call for abstracts in 03/19, with a deadline in 06/19; registrations will open in 06/19, with an early bird deadline in 09/19. Early bird registration planned to be US$620 (approximately half this for students). Final organizational decisions will be made at the 2nd EC meeting of 2019. IAEA etc. support will be sought for delegates from developing countries, with priority given to students. The incoming President, Prof. Brendan Kennedy, reminded the organizing committee of the need to allocate enough keynote and plenary talks to women, and that the process of securing enough abstracts from suitable candidates needs to start as early as possible. It was also decided that there should be a special plenary session during the 3rd AOCNS to celebrate the 10th anniversary of AONSA.

It was determined that ANSTO will host the 10th School in conjunction with the next ANBUG User Meeting in late 2018. It was further hoped that HANARO will be back on line and able to host the 11th School in 2019.

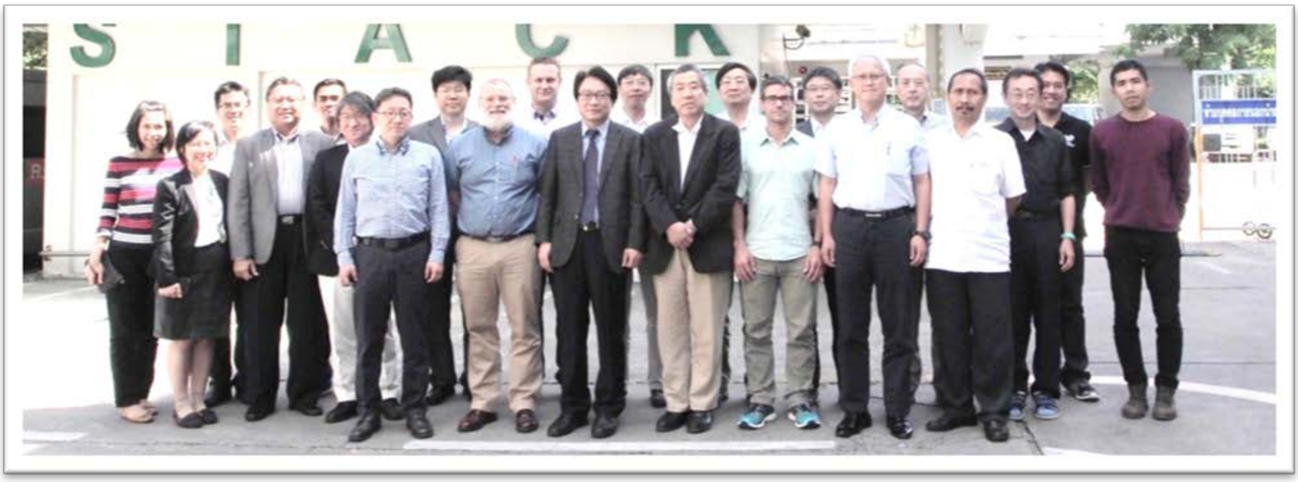
Toshiji Kanaya, Chair of the AONSA Facility Directors Meeting held the previous day, updated

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.

In closing the meeting, outgoing President S-M Choi thanked the Thai hosts for organizing an excellent meeting, and looked forward to seeing Thailand form a neutron users' society and join AONSA as a formal member in the near future. He then thanked all the Board and EC members and observers for their service over the last two years of his presidency, and expressed confidence that AONSA would continue to grow in influence and stature over the coming years under its new leadership. Incoming AONSA President B Kennedy thanked SM Choi for his exemplary service to AONSA and to all neutron scattering scientists in the region. He noted that the Asia Oceania region is now leading the world in neutron scattering science and facilities, and he looked forward to the challenge of trying to follow in the footsteps of previous AONSA Presidents.

The 20thEC Meeting will be held in Malaysia in mid-May 2018.

Chris Ling
(Secretary of AONSA)



Group photo of the 19th AONSA Executive Committee Meeting in Bangkok, Thailand

The 9th AONSA Neutron School/The 2nd Neutron and Muon School

The 9th AONSA School and the 2nd Neutron and Muon School were jointly held in 16–20 November 2017 at J-PARC Materials and Life Science Experimental Facility (MLF) and Ibaraki Quantum Beam Research Center (IQBRC) in Japan. The school was for graduate students, post-graduate students, and young researchers.

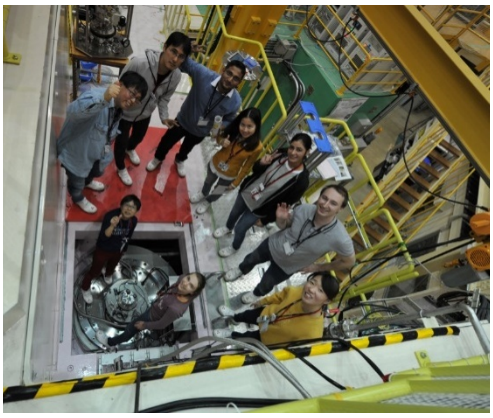
The number of the applicant was more than we expected and finally we accepted 49 students from 13 countries: Japan(9), Korea(10), India(5), Australia (5), Thailand(5), China(4), Indonesia(4), Malaysia(2), Nepal(1), New Zealand(1), Russia(1), Taiwan(1), and Vietnam(1).

The following is a group photo during the school. The anterior half of the program was devoted mainly

to lectures and the posterior half to hands-on experiments.

The lectures started from the Introduction to MLF & JRR-3 by Prof. T. Kanaya (J-PARC), and then, Introduction to Neutron Science by Prof. Yamada (KEK), Neutron Production by Prof. Kiyanagi (Nagoya Univ.), Neutron Diffraction by Prof. Ohoyama (Ibaraki Univ.), Inelastic scattering by Prof. Masuda (ISSP), Neutron Imaging/Non-destructive Analysis by Prof. Saito (KURRI), Structural Studies of Liquid & Amorphous by Prof. Otomo (KEK), Small Angle Neutron Scattering by Prof. Choi (KAIST), Neutron Reflectometry by Prof. Torikai (Mie Univ.), Neutron Physics by Prof. Shimizu (Nagoya Univ.), Introduction to Muon Science by Prof. Kadono (KEK), Muon Spin Rotation/Relaxation by Prof. Adachi (Sophia Univ.), Muonic X-ray by Prof. Kubo (ICU), and Muon Physics by Prof. Saito (J-PARC) were followed. On the last day of the school, a Science Seminar was made by Prof. Koike (Tohoku Univ.). The president of AONSA, Prof. Sung-Min Choi gave a lecture on SANS. 10 neutron instruments and 1 muon instrument were used for the hands-on experiments. A photo at the hands-on experiment is shown below.

The students were very active and vivid. All lecturers had good impression for them. They



presented nicely the experimental results. And the Muon experiment group won the best presentation award.

We appreciate very much for financial support from IAEA and other support organizations,

Principal:

Yoshiaki Kiyanagi *(Nagoya University)*

Responsible person for execution of School:

Takenao Shinohara *(J-PARC center)*

Yoshiaki Kiyanagi

(NAGOYA University)

Announcement of AONSA Young Research Fellows 2018



Dr. Xingxing ZHANG **Dr. Wang Hay KAN** **Dr. Jin PENG**

The AONSA Young Research Fellowship program, which was established in early 2014, 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.

All applications were received by the submission deadline (July 31, 2017) and intensively reviewed by the Selection Committee (SC) for the AONSA Young Research Fellows (YRFs) 2018.

The final selections were made by the SC in consultation with two hosting neutron Facilities and officially approved at the 19th AONSA Executive Committee Meeting on November 26, 2017 in Bangkok, Thailand.

It is AONSA's great pleasure to announce that three highly talented young scientists have been selected as the winner of AONSA YRF2018 who will visit major neutron Facilities in the Asia-Oceania region for collaborative research using neutrons in 2018. The AONSA YRFs' round-trip airfare will be supported by AONSA, and their local living expense during their Fellowship visits will be supported by their hosting Facilities.

Hosting Facility: J-PARC

Dr. Xingxing ZHANG

PhD in Materials science and engineering, Chinese Academy of Sciences (2013)

Current Affiliation: Institute of Metal Research, Chinese Academy of Sciences

Title of Research Proposal:

Elastoplastic deformation and damage evolution of CNT/Al composites

Hosting Facility: ANSTO

Dr. Wang Hay KAN

PhD in Solid Oxide Fuel Cells, University of Calgary (2014)

Current Affiliation: Lawrence Berkeley National Laboratory (USA)

Title of Research Proposal:

Engineering ionic channel of polyanion-type cathodes through soft ionic exchange methods

<u>Hosting Facility:ANSTO</u>

Dr. Jin PENG

PhD in Physics, Tulane University (2012)

<u>Current Affiliation</u>: Nanjing University

<u>Topic of Research Proposal</u>:

Neutron scattering study of Single crystalline Ca_3Mn_2-xTi_xO_7 ($0 \leq x \leq 1$)

Kazuyoshi Yamada

(Vice president of AONSA)

Report on the 14th Asia-Oceania Neutron Facility Directors Meeting (AONFDM)

On November 25th, 2017 the 14th Asia-Oceania Neutron Facility Directors Meeting (AONFDM) was held at Thai Institute for Nuclear Technology (TINT) Office in Bangkok, Thailand. The participants were Fangwei Wang (CSNS), Sungil Park (HANARO), Toshiji Kanaya (J-PARC), Masayasu Takeda (JRR-3), Jamie Schulz (OPAL). Furthermore, Sung-Min Choi (KNBUA/KAIST), Kazuyoshi Yamada (KEK), Hsiung Chou (TWNSS/National Sun Yat-Sen Univ.), Wen-Hsien Li (NCU), Hideki Seto (KEK), Yoshiaki Kiyanagi (JSNS/Nagoya Univ.), Abdul Aziz Mohamed (UNITEN), Roppon Picha (TINT), Kanokporn Boonsirichai (TINT), Suthipong Boonmak (TINT), Sorada Chanintayuttavong (TINT), Jatechan Channuie (TINT)and Kanchalika Dechates(TINT) attended the meeting as observers.

The meeting was chaired by Toshiji Kanaya from J-PARC. At the beginning, attendees introduced themselves, discussed the purpose and the role of the FDM and then facility representatives gave a report about their facility. First, Boonmak reported overview of TRR-1/M1 which was modified TRIGA reactor with power of 1.2MW and used as training, Isotope production (Sm-152, P-32), NAA, R&D, Neutron Radiography, Gem Colouring, Technical Tours. (2) CSNS: Wang reported thatCSNS has finished the first stage of joint commissioning andobserved first neutron pulse on 28th August 2018.(3) HANARO: Park reported that reinforcement activities completed in April 2017, and the regulator body (Nuclear Safety and Security Commission) was reviewing the case.(4) J-PARC: Kanaya reported that operation of new target (#8) was very stable at 300 kW and the power will increase gradually to 500 kW until before the summer shutdown 2018. (5) JRR-3M: Takeda reported that the reviewing process for restart of the JRR-3 reactor moved to the final stage. Anti-seismic reinforcement of peripheral buildings has become necessary as a result of re-evaluation of standard seismic motions with latest findings. ISSP continued to support access to international facilities for Japanese researchers. (6) OPAL: Schulz reported that OPAL & cold source continued to operate reliably, instrument publication output continued to increase, and hosted 2 AONSA YRF August-November 2017. The reports on CARR/CIAE, CMRR, DHRUVA and G. A. Siwabessy were sent to the FDM meeting and presented by Jamie Schulz.

In the discussion on the challenges, opportunities and cooperation of neutron facilities, the FDM members agreed with supporting of the restart of HANARO. (After the meeting we were informed good new: Korea's Nuclear Safety and Security Commission approved the restart of HANARO. Standardising the reporting of metrics from facilities at the FDM was also agreed.

After the meeting the FDM members and the observers enjoyed the Cruise on Chao Phraya Princess which was kindly organized by the TINT members. The next AONFDM will be held in Malaysia in May, 2018.

Toshiji Kanaya (J-PARC)

Attendees: Sungil Park (HANARO), Jamie Schulz (OPAL), Toshiji Kanaya (J-PARC), Masayasu Takeda (JRR-3), Fangwei Wang (CSNS), Hideki Seto (J-PARC)

Observers: Suthipong Boonmak, Kanchalika Dechates, Kazuyoshi Yamada, Abdul Aziz Mohamed, Wen-Hsien Li, Hsiung Chou, Sung-Min Choi, Yoshiaki Kiyanagi, Kanokporn Boonsirichai, Roppon Picha, Jatechan Channuie

Cruise on Chao Phraya Princess

Report from JSNS

Activity of JSNS

Now, the number of the member is 622 including 53 students and 21 seniors. From this fiscal year we started the senior membership.The number of the supporting member is 33.The 15th annual meeting of JSNS was held in 3-4 Dec.A keynote lecture was presented by Prof. Takahara about "Structural analysis on soft matter interface by complementary use of quantum beams". A special symposium of "50th anniversary of the pulsed neutron generation at Laboratory of Nuclear Science, Tohoku University" was held on the first day.

The JSNS prizes were presented on 3 Dec. to following persons.

*Meritorious Contribution Prize: Dr. Makoto Hayashi (CROSS Tokai)

"Establishment of the residual stress analysis method by using the neutron diffraction and contribution to industrial applications of the neutrons"

*Science Prize: Prof. Michihiro Furusaka (Hokkaido University)

"Pioneering development of pulsed neutron scattering instruments and measurement techniques"

*Technology Prize: Profs. Shinichi Itoh (His photo is shown), Tetsuya Yokoo, Takatsugu Masuda, Hideki Yoshizawa, Yasuo Endoh, Dr.Daichi Kawana, Messrs. Ryosuke Sugiura, Toshio Asami, Drs. Minoru Soda, Soshi Ibuka, and Takafumi Hawai

"Construction of the high-resolution chopper spectrometer HRC and implementation of the Brillouin scattering method "

Present status of neutron sources in Japan

We got good news about Kyoto University Research Reactor (KUR). It restarted on 29 August, and then it has been working almost continuously although a trouble on the heavy water equipment happened. A cyclotron based quantum beam facility, Aomori Prefecture Quantum Science Center, opened in October, which includes a neutron source for imaging. Hokkaido University neutron source, HUNS, is now under renewal and will restart in May 2018. RIKEN neutron source, RANS, and Kyoto University neutron source, KUANS have been used steadily for various experiments. KUR-LINAC started resonance imaging for nuclear fuel materials. A new neutron source is under construction in Tsukuba area mainly aiming at Bragg edge transmission. J-PARC has put a new target and is running at 300kW. However, JRR-3 has not been ready for operation. It will need more time for restart.

Yoshiaki Kiyanagi
(Nagoya University)

Report from the KNBUA

The year 2017 was a particularly meaningful and hectic year for KNBUA members. It was certainly because the quadrennial ICNS2017 was held in July in Daejeon, Korea, which is the largest gathering of neutron scattering scientists in the world. Since most of core members were involved in the local organizing effort of ICNS2017, we got together at least once a month to meet and prepare for the conference. (Please see the ICNS2017 report on page 33 – 35 in the AONSA newsletter vol. 9, no. 1, 2017.) For this reason, other KNBUA activities were rather limited. Another reason for the relatively inactive domestic events was the prolonged shutdown of HANARO reactor which provides the neutron scattering facility to the community. For instance, the HANARO symposium was not held this year, which would have been in May otherwise.

In the meantime, KNBUA continued to support student travels to neutron scattering schools and conferences overseas or domestic. One Korean student attended the 15th Oxford School on Neutron Scattering, for which KNBUA supported KRW1,000,000 (~ USD900). KNBUA also encouraged domestic students to participate and present posters at ICNS2017 by supporting KRW200,000 (~ USD180) per student (and half the amount for Daejeon locals) to cover travel cost. After all, 43 students presented their research accomplishments at ICNS2017 and benefited by this support. In addition, 10 Korean students attended the 9th AONSA Neutron School held in November at J-PARC. It was the highest number ever accepted by AONSA neutron schools, for which KNBUA is grateful. KNBUA supported KRW500,000 (~ USD450) per participant for this occasion.

To my knowledge, the only local neutron-related event since ICNS2017 was the 13th International Symposium on the Characterization of Metals and Nanostructured Materials by Neutron and X-ray Synchrotron Scattering, or NeXS2017 in short. It was held in October 25th, 2017, at Daegu Convention Center during 2017 Fall Meeting of the Korean Institute of Metals and Materials. Ten presentations were made in the areas of small angle scattering, imaging, diffraction, and industrial applications. It was organized by KAERI and supported by KNBUA.

Group photograph after the NeXS2017.

After all, I would like to thank for all the generous support for ICNS2017 from the member societies of AONSA and neutron scattering facilities particularly in the Asia-Oceania. We sincerely wish that HANARO will resume its operation soon so that KNBUA may regain its momentum in the form of various activities.

Jae-Ho CHUNG
(Korea University)

Australian and New Zealand Neutron Beam Users' Group (ANBUG)

We have just returned from our very successful User Meeting in Melbourne, which for many years has been a highlight of the ANBUG calendar and organised in cooperation with AINSE. This year for the first time the ANBUG User Meeting was run in conjunction with the User Advisory Group of the Australian Synchrotron and named the ANSTO User Meeting. ANSTO now operates the Australian Synchrotron, the Australian Centre for Neutron Scattering and the Centre for Accelerator Science, and all three user communities were well represented at the inaugural joint meeting. Three parallel sessions were organised and the communities came together for excellent plenary talks, including one by ANBUG President Prof Ian Gentle "*Using neutrons to understand diffusion and stability of materials in organic optoelectronic devices*". Two of the three poster prizes went to ANBUG members Grace Crauser and Tim d'Adam. Our intention is to run a more traditional AINSE/ANBUG symposium every second year while every other year will see the joint meeting.

Two ANBUG awards were presented this year at the ANSTO User Meeting, a "Career Award" to Dr Robert Robinson an "Award for Outstanding Research" to A/Prof Christopher Ling. Both awards reflect the esteem in which Dr Robinson ad A/Prof Ling are held in the community and we congratulate them once again.

ANBUG now has close to 330 members, and the executive committee is led by Ian Gentle until the end of 2018, when current vice-president Tracy Rushmer will take over. This year we secured scholarships for five students to travel to the AONSA School in Japan, and two students to ICNS. Supporting students will again be one focus for the group in 2018. We also hope to continue to improve our website and are more than happy to receive content suggestions and links to relevant to schools and conferences in the region.

Ian Gentle and Kathleen Wood

Dr Robinson and A/Prof Ling receive their ANBUG awards at the ANSTO User Meeting.

Report from Taiwan Neutron Science Society (TWNSS)

Reunion & Preparations

Until 2017, TWNSS has 123 individual members including 65 students and one group member (Institute of Nuclear Energy Research). 35 groups carried out nearly 150 neutron experiments with financial supports from Minister of Science and Technology (MOST) in the past five years (2013-2017). The 3rd Asia-Oceania Conference on Neutron Scattering is coming! As the host, TWNSS is preparing for the AOCNS 2019 in Taiwan. Prof. Ya-Sen Sun, TWNSS President, is organizing the 8th Taiwan-Japan Joint Meeting on Neutron and X-ray Scattering, which will be held in Taiwan on March 14th-17th, 2018. In 2017, TWNSS and its members hosted three major events in Taiwan as the best practice. The first one is the TWNSS annual meeting. The second one is the Workshop of "TPS &Complimentary Methods for Emerging Materials" at the 23rd National Synchrotron Radiation Research Center (NSRRC) Users' Meeting & Workshops. The third one is the Symposium of "Advanced Characterization for Materials Genome & ICME: TEM, Synchrotron X-ray, and Neutron" at the International Union of Materials Research Societies (IUMRS-ICA).

TWNSS Annual Meeting

The 2017 TWNSS Annual Meeting and Workshop for neutron science and application was held during September 2nd and 4th, 2017, at the National Chiao-Tung University (NCTU). Professor E-Wen Hung and Dr. Chen Siao-Huei Chen (Institute of Nuclear Energy Research) were the organizing committee. For the 2017 TWNSS Annual Meeting and Workshop, there were 123 participants and 33 invited oral presentations. One plenary speech titled Mutliferroic Behaviors in Spin-Frustrated Systems was delivered by Prof. Hung-DuenYang(former Minister of MOST), National Sun Yet-sen University. Five keynote speeches were respectively delivered by Dr. Cheng-Si Tao (Institute of Nuclear Energy Research), Prof. Mu-Ping Nieh (University of Connecticut), Prof. Chen-Wei Liu (National Dong-Hwa University) and Dr. Ulf Garber (Australian Nuclear Science and Technology Organisation, ANSTO). There were three workshops for condensed matters, soft matters, and high entropy alloys, hosted by Prof. Chun-Chuen Yang, Prof. Ya-Sen Sun, and Prof. E-Wen Huang, respectively. In addition, there was one section related to promotion of the application of neutron technique in material research, which aimed to motivate and cultivate potential new neutron users. During the section, the neutron group leader, Mr. Shih-Chun Chung, and two group members, Dr. Chin-Wei Wang and Dr. Chun-Ming Wu, of National Synchrotron Radiation Research Center (NSRRC) introduced about the major tasks of Neutron Group.

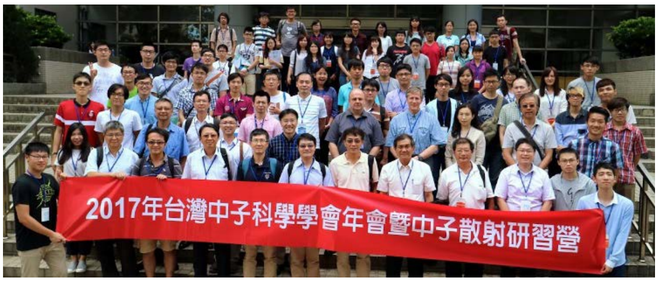


Fig. 1. The TWNSS Annual Meeting at the NCTU.

NSRRC Workshop

NSRRC Users' Executive Committee (UEC) Chair E-Wen Huang launched the Workshop. Speaking on synchronizing multi-scale measurements, high-speed computation via the cloud in the AI era. This year, Industrial Technology Research Institute (ITRI) sponsored this workshop. The NSRRC former Director Dr. Keng S. Liang opened the session. Yuya Shinohara, Univ. of Tennessee, is the first few users of the TPS. He shared the latest experiences of using Coherent X-ray Scattering (TPS-25A).

Fig. 2.Workshop IV of the NSRRC Annual Meeting.

IUMRS-ICA-2017

IUMRS-ICA-2017 is the 18th conference in this international series, organized by the MRS-Taiwan. This is one of the series of the IUMRS-conferences hosted by the Asian MRS Members. The conference was held in Taipei City and had more than 1,200 delegates attended. The organizers are Prof. Xun-Li Wang, City University of Hong Kong; Dr. Wan-Chuck Woo, Korea Atomic Energy Research; Dr. Stefanus Harjo, Japan Proton Accelerator Research Complex; Dr. Wen-Jay Lee of National Center for High Performance Computing, and Prof. E-Wen Huang, National Chiao Tung University. Prof. Cevdet Noyan, Columbia University, gave keynote speech on the nano materials. Dr. Yu-Shan Huang of NSRRC introduced the latest status of the newly-built TPS. Dr. Shi-Wei Chen of NSRRC organized the TPS tour.

Fig. 3.Group picture of the speakers in the opening date.

The 8th Taiwan-Japan Joint Meeting on Neutron and X-ray Scattering, 2018

In 2006 the first joint meeting was initiated by Professor Tsang-Lang Lin (National Tsing-Hua University) and Professor Mitsuhiro Shibayama (The University of Tokyo), and held at Tokai, Japan. Since then the joint meeting has been held bilaterally in Taiwan and Japan. The 2nd meeting was held Wulei (2007), the 3rd meeting was held at Kyoto (2008), the 4th meeting was held at Yilan (2010), and 5th meeting was held at Tokai (2013), the 6th meeting was held at Taipei (2014), and the 7th meeting was held at Kumatori (2016). In the meetings, the synchrotron X-ray and neutron scattering studies of bio-materials, soft matters and nanomaterials were discussed. In particular, participants continually strengthened the collaboration between Taiwan and Japan based on the Taiwan neutron instrument SIKA (Spin-polarized Inelastic K-space Analyzer) located at ANSTO as well as the synchrotron X-ray facilities at NSRRC, and neutron scattering facilities as well as synchrotron facilities in Japan.

The 8th meeting will be held at Taoyuan, Taiwan on March 14th-17th, 2018. The meeting is jointly organized by Professor Ya-Sen Sun (National Central University), Professor Yi-Fan Chen (National Central University) and Professor Masaaki Sugiyama (Research Reactor Institute, Kyoto University). In this meeting, we will continuously put emphasis on (i) promotion of participation of young scientists, (ii) strengthening of collaboration between Taiwan and Japan. The 8th meeting will focus on neutron and X-ray scattering studies of bio-materials, soft matters, membranes, neutron/X-ray technique and facilities, and nanomaterials. There will be more than 30 oral invited talks and more than 90 participants in the meeting. Welcome your participations!

Prof. Ya-Sen Sun

(National Central University)

Neutron Scattering Society of India (NSSI) Report

Solid State Physics Division of Bhabha Atomic Research Centre (BARC), Mumbai, in association with the NSSI, organized a one-day theme meeting on neutron scattering in BARCon 19th August, 2017. The meeting was attended by nearly 100 participants including Dr. Takashi Kamiyama, J-PARC, Japan, Dr. S.H. Lee, KENS/KEK, Japan, Dr. Javier Campo, Aragon Materials Science Institute, Zaragoza, Spain, and Dr. O. Prokhnenko, Helmholtz-Zentrum, Berlin, Germany. The meeting was inaugurated by Dr. B. A. Dasannacharya, the recipient of the AONSA Prize 2013.On this occasion, Dr. Saibal Basu, Head, Solid State Physics Division, BARC, and Member-at-Large, AONSA Board (Jan. 1, 2016- Dec. 31, 2017)was felicitated on his 60th birthday on the eve of his superannuation on August 31, 2017.

Photograph: Inauguration of the Theme Meeting on Neutron Scattering in Mumbai (August 19, 2017). Dr. B. A. Dasannacharya is delivering the inaugural address. Right to left: Dr. Saibal Basu, Head, Solid State Physics Division, BARC; Dr. N. K. Sahoo, Associate Director, Physics Group, BARC; and Dr. S. Mitra, Convener of the Theme Meeting on Neutron Scattering.

New website for the NSSI: http://nssi.org.in/.

S. M. Yusuf
Secretary, NSSI

R. Mukhopadhyay
President, NSSI

Report from Chinese Neutron Scattering Society (CNSS)

The 5th Chinese Conference on Neutron Scattering and Workshop on Applications of National Neutron Facilities was held in Chengdu on November 1st to 3rd, 2017, jointly organized by CNSS, China Academy of Engineering Physics (CAEP), China Spallation Neutron Source (CSNS), and China Institute of Atomic Energy (CIAE), and hosted by China Mianyang Research Reactor (CMRR)and Sichuan University. More than 240 researchers from more than 70 universities, research institutes and business companies participated at this meeting, 94 participants gave oral talk to share their recent research results, including of the recent progress of three national neutron facilities, CSNS, CMRR and CARR. The conference developed users community and promoted the efficient operation and opening of neutron facilities in China.

On November 13th, 2017, the kick-off meeting of National Key R & D Program of China "Study on Key Technology and Frontier Application of Neutron Scattering" was held in China Institute of Atomic Energy. The project focuses on key neutron optical components, large area 2D GEM neutron detector with high resolution, new technique of neutron spin echo and total scattering, and nondestructive investigation of advanced engineering materials, on basis of the CARR, CSNS and CMRR neutron scattering platform. Peking University, Jilin University, and Beijing Institute of Aerial Materials are also involved. Fifties scholars, experts and technicians on neutron scattering and advanced materials attended at the meeting.

Dongfeng CHEN (CIAE)

Report from the INSS 2017 Activities
Indonesian Neutron Scattering Society
http://inss.batan.go.id

Fig.1. Keynote Speakers at MRS-INA C&C, Yogyakarta, 8-12 October 2017

The Indonesian Neutron Scattering Societies INSS) and the Materials Research Society Indonesia (MRS-INA C&C) have jointly organized first MRS-INA Conference and Congress (MRS-INA C&C). The main goal of the conference was to bring together both communities from materials scientists and also the neutron scattering communities. Both President of AONSA and IUMRS delivered plenary lectures.

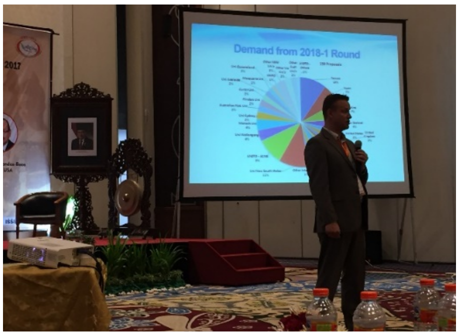


Fig.2. Signing MoU between AONSA and MRS-INA

There is a special session of AONSA neutron lecture in the afternoon for the students. The prominent scientists in the neutron field, such as Prof. K. Yamada, Prof. T. Kanaya and Prof. Dr. Sung-Min Choi introduced the neutron scattering to this audience so that they get more experience in neutron scattering. In 2017, INSS focus on promoting the neutron science to young scientists and students at several universities. The students were very enthusiastic in learning about neutron scattering.

The topic of the conference varies from the nuclear science and technology applications towards the new advanced materials. This combination indeed attracted the IUMRS President to have cooperation with the AONSA. The committees were glad to have the prominent neutron scientists in the conference,

Fig.3. Dr. Jamie Schulz was delivering Plenary Talk about ANSTO

Dr. Jamie Schulz, introduced the Neutron facilities and program at ANSTO; Dr. Jaime Fernandez B, from Oakridge National Laboratory explained the American Neutron Spallation source and the specific application for the magnetic materials. Prof. Toshiji Kanaya, described the most intense Japan Proton Accelerator Research Complex (J-PARC). Prof. Sung Min Choi introduced the AONSA, and how it developed and became a professional organization. Other neutron topics, were delivered by Dr. Christina Rhem from China, Dr. Astrid S, from Julich Center, Germany, Dr. Haryo and Dr. Kawakita from J-PARC Prof. Takashi Kamiyama, from KEK, brought several students for this conference.

The conference provided social events, such as Banquet at Omah Dhuwur, and Ramayana Ballet at Prambanan Temple. The participants were enthusiastic and enjoyed the program.

Fig.4. Enjoying the Sunset, Dinner and Ramayana Ballet Prambanan Temple

Fig.5. Meeting and discussion with Head of BATAN, Prof. Dr. Djarot S. Wisnubroto

Since the event was successfully conducted, and the combination between neutron scattering societies and materials research societies are very important for all the participants, the President IUMRS would like also to continue the collaboration.

ICA-IUMRS–Bali, October 30-Nov.2, 2018

One of the most notable events will be the International Conference in Asia of the

International Union of Materials Research Society (ICA-IUMRS) was held in Bali in October 30-November 2, 2017. The conference was organized jointly with the Indonesian Materials Research Society (MRS-INA), (http://www.mrs-ina.org).

We are planning to organize the ICA IUMRS in Bali October 30-2 November 2018, in which the AONSA would be invited to organize jointly this conference. In addition, a neutron school or workshop for materials characterization will be allocated in this conference.

International Atom Indonesia Best Paper Awards

The INSS also supports the publication of Atom Indonesia, an international journal related to nuclear and science technology published by BATAN. We received a good news, that this year, our Journal has been indexed by Scopus and became one of the best journal in Indonesia. An International Atom Indonesia Best Paper Award (I-AIBPA) was recently organized, and pleased to inform that the winner is Z.Tan et al, from the KEK, Japan. This shows the importance and appreciation of the neutron scattering application on materials research (http://aij.batan.go.id). The winners of best papers was awarded the prize ~700US$ and certificate by the Head of BATAN during annual BATAN anniversary in 5th December 2017.

Participations in AONSA Neutron School

This year, INSS have selected several candidates to attend the AONSA neutron school in J-PARC Japan. There were four researchers and students attended the school, namely Dr. Maykel Manawan (UI), Dr. Wisnu Ari Adi (BATAN), Heri Jodi M. Eng (PhD Student, UI), and Cipta Panghegar BSc. (STTN). They have shared their experiences during the training in Japan, and will use the neutrons as the tool in their research.

Fig.6. Indonesian participants at AONSA School, J-PARC Japan.

Evvy Kartini

(National nuclear Energy Agency, Indonesia)

Report from J-PARC

In this summer shutdown period, various maintenance work and construction of new beamline were performed.

Fabrication of the next target vessel (#8) was completed as it was scheduled. The new target has less welding parts in the water shroud to reduce the risk of breakdown we experienced in the previous targets. From October 2nd, replacement of the target vessel with improved water shroud structure was performed (Figure 1). With the new target vessel, we started the operation from October 24th with the beam power of 300 kW, which will be gradually increased to 500 kW before the next summer shutdown.

About neutron instruments, maintenance and upgrade works for existing instruments were also carried out. For example, maintenance for the beam-transport sections of BL01 (4SEASONS) and BL19 (TAKUMI) have been done. A long-term running test on newly developed T0 chopper has been started. Construction of POLANO (the polarized neutron spectrometer atBL23) was progressed in the collaboration between KEK and Tohoku University and on-beam performance test on the part of installed components hasbeen started. Part of VIN ROSE (the spin-echosuite at BL06) has been opened to theuser program from this autumn.

General proposals and new user promotion proposals for the 2018A period was closed on November 8 and we received 260 neutron proposals. Those proposals will be sent to the Neutron Science Proposal Review Committee for reviewing process. Final results will be sent to users in February, 2018.

A report meeting of industrial application at J-PARC MLF was on July 20 and July 21 at Akihabara Convention Center. Total number of attendees was 452 during the two days of this meeting. The promotion of industrial application is one of the main missions of MLF. The industrial application at MLF is growing but it is not steady in terms of "creation of Innovation" through the industrial application of neutron and muon experiments. In this report meeting, it aimed to get common understanding of the essential output on the innovation and requiring actions by MLF for results between industrial users and facility staff.

The 9th AONSA School / the 2nd Neutron and Muon School was held in J-PARC MLF during November 16th and 20th. Details of the school are described in Report from JSNS.

Kenji Nakajima and Toshiji Kanaya
(J-PARC)

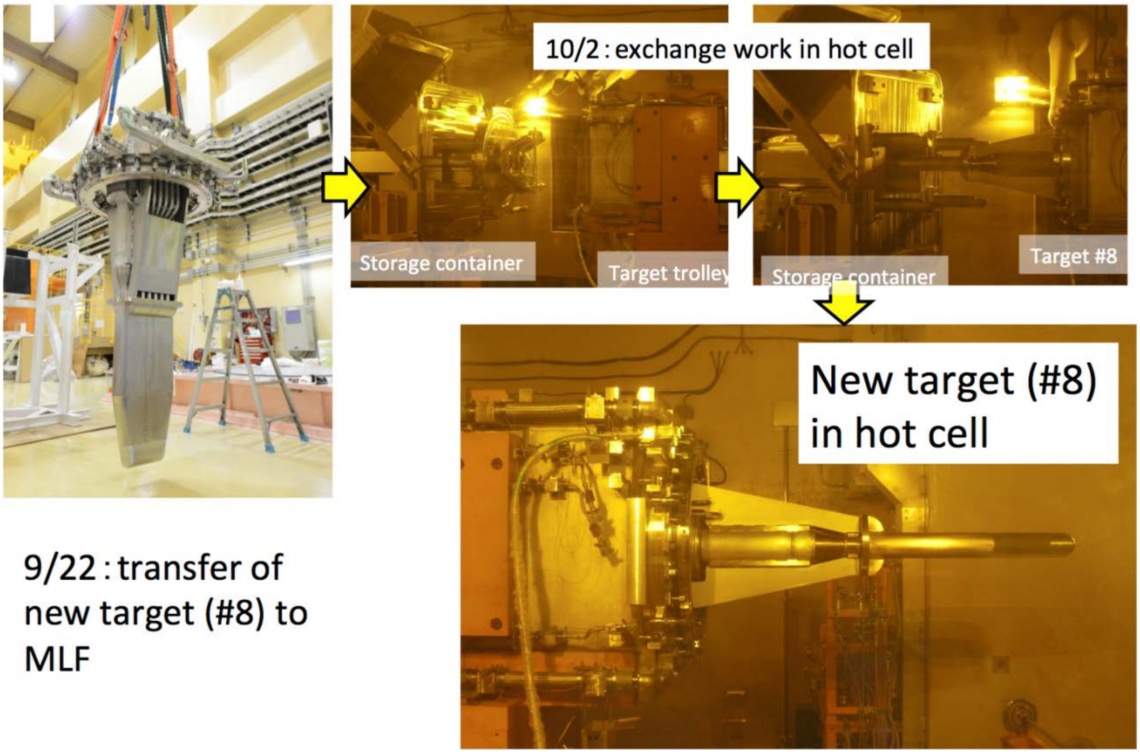


Figure 1. Replacement of the target vessel (#8)

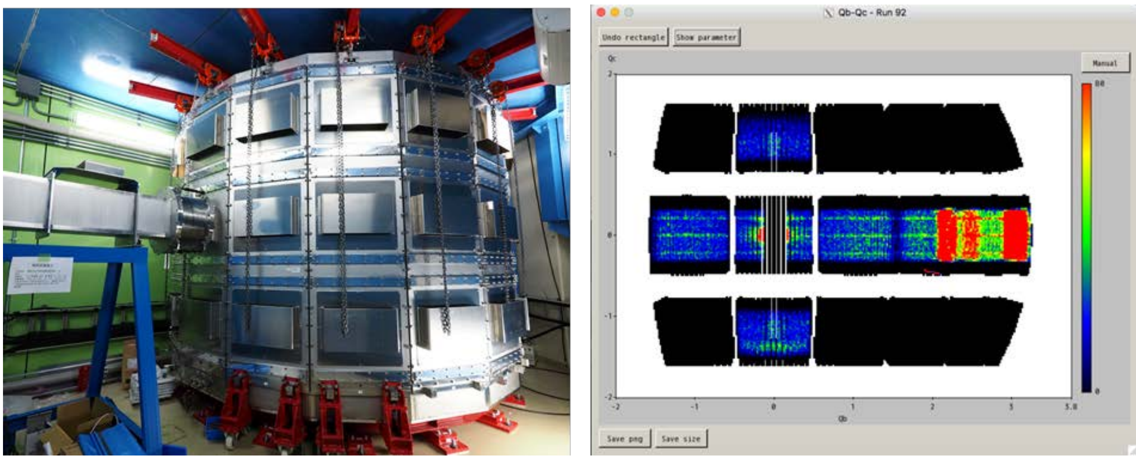


Figure 2. POLANO and detector map image obtained at on- beam commissioning.

Report from JRR-3

JRR-3: The JRR-3 achieved the first criticality in 1962 and it was modified for upgrade and resumed its operation in 1990 as a high performance and multipurpose research reactor with thermal power of 20 MW. Nine instruments are installed in a reactor room and 22 in a beam hall. Japan Atomic Energy Agency (JAEA) owns eighteen instruments, and the others belong to domestic universities and institutes.

The large earthquake hit JRR-3 on 11 Mar 2011. Although JRR-3 itself had no serious damage, utilities which are necessary for safety operation had to be repaired. The repair and confirmation of the safe operation of JRR-3 have been completed within two years after the earthquake. JRR-3, however, was requested to confirm the new regulatory requirement for nuclear reactors.

An application document for restarting of JRR-3 was submitted almost threeyears ago, and the reviewing process now at last moved to the final stage.JAEA officially announced a schedule for restarting of JRR-3 in June lastyear. In this schedule, the reactor was expected to restart in February,2018. Unfortunately the schedule has to be reconsidered based on the delayof reviewing process. The revised schedule will be announced soon.

JAEA: Overseas neutron experimental facilities, e.g., ORNL, OPAL, NIST, SNS, ILL, etc. as well as J-PARC were used to keep their research activities without neutrons from JRR-3. New techniques for neutron scattering experiments are being developed such as a high pressure anvil cell that can simultaneously measure the neutron diffraction and the electric resistivity under a high pressure and the

rapidest bulk texture measurements using pulsed neutrons.

ISSP: Neutron Science Laboratory (NSL) of ISSP has been running Overseas-Experiment Program since 2012. Travel expenses for two scientists per proposal were supported under the program. In 2017 Japanese fiscal year (JFY), 52 persons were sent abroad, namely, OPAL, NIST, ILL, IRNL, etc. as of 31 October, 2017. Table 1 shows the statistics of the program. 72 papers have been published in refereed journals since JFY 2011. The list of papers is shown in the following URL:

http://www.issp.u-tokyo.ac.jp/labs/neutron/download/OverseasPubList.htm

NSL continues call-for-proposals every year to keep neutron users in Japan. For JFY 2018, 103 general user proposals and 17 Instrument and Research Team (IRT) proposals were approved. Some proposals will be supported by the Overseas-Experiment Program.

Table 1. Numbers of scientists sent to overseas facilities since 2011 under Transferring program of NSL-ISSP.

Facility			Number of users						
			FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
ILL	ILL	France	3	9	0	4	3	1	0
OPAL	ANSTO	Australia	7	7	4	18	22	34	19
HANARO	KAERI	Korea	2	7	7	0	0	0	0
FRM-II	MLZ (Munich)	Germany		4	1	0	8	1	4
ISIS	*Rutherford Appleton* Laboratory	UK		4	2	4	4	0	4
SINQ	PSI	Switzerland		1	4	5	6	1	3
NBSR	NIST	USA			3	13	5	2	9
BER II	HZB (Berlin)	Germany			2	0	7	3	2
HFIR	ORNL	USA	13		1	1	1	6	3
SNS	ORNL	USA			4	2	1	5	6
LLB	CEA-CNRS	France			1	1	1	1	2
Total			25	32	29	48	58	54	52

Mitsuhiro Shibayama (ISSP, U. Tokyo)

Masayasu Takeda (JAEA)

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.

The Australian Centre for Neutron Scattering (ACNS) had a very productive year in 2017. The availability of the neutron-beam instruments achieved 96.0%. In excess of 470 users (1400 visits) performed experiments utilising ACNS' world-class neutron-scattering facilities. User feedback continued at high levels, in terms of both volume and the scores given for service by ACNS staff.

Projects to replace the existing Cold Neutron Source and install an additional split neutron guide in the TG123 neutron beam assembly are progressing well with planned installation of the TG123 neutron beam assembly in 2019. The replacement cold source installation date has been delayed until 2023. Australia has just concluded a 10 research infrastructure roadmap in which the 2^{nd} neutron guide hall for OPAL has been included. In 2018 we are planning to commence a detailed scoping and planning study for the construction of the 2^{nd} neutron guide hall.

We are currently installing the BioRef neutron reflectometer which was the transferred from the BER-II Reactor in Germany to OPAL in early 2017. When installed at the OPAL reactor the instrument will be named SPATZ, the German word for sparrow, which follows the tradition of the naming convention of other instruments at the Australian Centre for Neutron Scattering, which are named after Australian and other fauna.

A total of 258 proposals were received for the 2018-2 proposal round with 156 proposals approved across the neutron beam instruments, X-ray instruments & the Physical Properties Measurement System.

Jamie Schulz
(ANSTO)

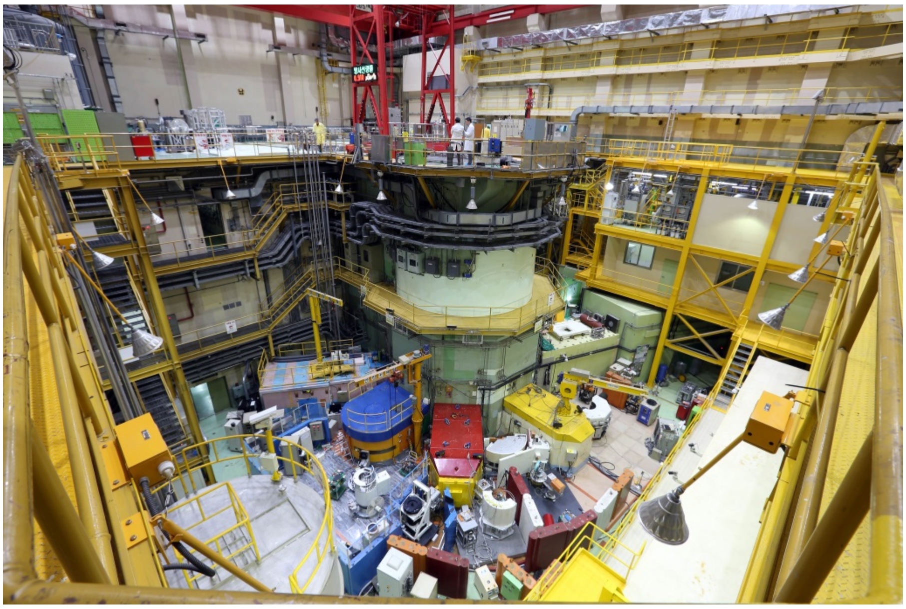
After the long wait, on 30 November the Nuclear Safety and Security Commission of Korea gave the go-ahead to High-flux Advanced Neutron Application Reactor (HANARO) to restart. Reactor operators turned on the reactor on 5 December. The reactor reached the full power of 30 MW before it was turned off in preparation for normal operation. It was the first operation in 3 and half years since the reactor was manually shut down in July 2014.

Unfortunately, the subsequent normal operation did not last long. Reactor operators had to shut down the reactor when they found the hot water layer on top of the reactor pool was not thick enough. As of writing, the investigation is going on to figure out why excessive heat loss happened during operation.

Meanwhile, Neutron Science Center was getting ready for normal operation. Nine instruments were operating before the shut down in 2014, and we put a lot of effort to keep them in a working condition. Hopefully, they are fully operational once the reactor comes back. Three cold neutron instruments, Bio-Reflectometer (Bio-REF), Disk-Chopper Time-of-Flight spectrometer (DC-ToF), and Cold neutron Triple-Axis Spectrometer (Cold-TAS) are in the commissioning stage and require neutrons before testing is complete. They are expected to join the rank of operational instruments soon. Glass Test Station (G-TS), formerly a simple reflectometer to test home-made neutron guides, received a lot of modification during the shutdown period. It can now do polarized neutron analysis, and also requires neutron beams before finalizing the instrument.

Most likely it will take a few months before operation of the reactor and the instruments become stable. We do not intend to start the proposal round until then. Also, we need to recover the operational budget and refill the positions of those who left NSC during the extended shutdown before full user operation resumes.

Sungil Park
(KAERI)



Engineers inspect the HANARO reactor during the start-up on 5 December.

Progress of Neutron Scattering Facilities at CARR

The cold neutron source at CARR was successfully completed after several years of hard work. On April 24, 2017, the first overall commissioning was carried out. The cold source runs smoothly, and its performance is very close to predictions. So far, the installation and preliminary debugging work of cold source have been completed.

On October 28 to 31, 2017, the cold source final commissioning test was carried out. During the test, the neutron counts of 6**Å** at the reactor power 15 MW were monitored on small angle neutron scattering spectrometer at the end of Cold Neutron Guide D (CNGD). The result shows that the gain factor in neutron flux of 6Å with the cold source at 20K is about 15 times relative to 60K.

Figure 1. Installation and commissioning picture of Cold Source System

At the beginning of 2017, the neutron activation analysis team officially joined the neutron scattering group at CARR. At present, they mainly focus on the construction of instrument neutron activation analysis (INAA) system and prompt gamma neutron activation analysis (PGNAA) system, as shown in figure 2. Moreover, they also carry out some research in the related fields, such as neutron depth profile research, and so on.

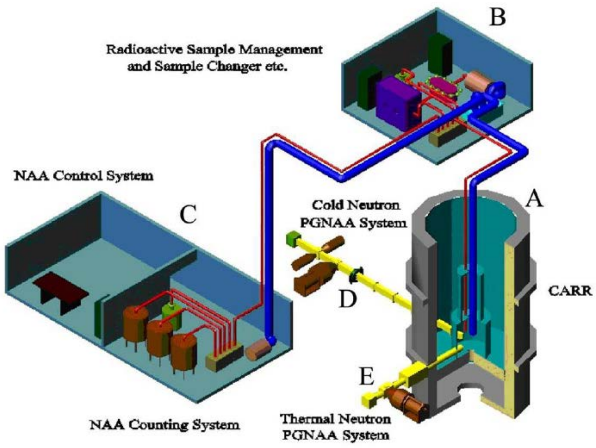


Figure 2. The layout drawings of instrument neutron activation analysis (INAA) system and prompt gamma neutron activation analysis (PGNAA) system at CARR

Little neutrons are available to do experiments in 2017 at CARR. However, instrument scientists still made full use of time to concentrate on the first phase instrument upgrading and the second phase instrument construction. The RUC-CIAE Cold Neutron Triple-axis Spectrometer has finished construction and start to debug on schedule.

Figure 3. Picture of RUC-CIAE Cold Neutron Triple-axis Spectrometer

Yuntao Liu and Kai Sun

First joint commissioning of CSNS

The CSNS (China Spallation Neutron Source) is being constructed at Dongguan City, Guangdong Province, with a coverage area of about 70 hectares. In Phase I, the facility consists of an 80-MeV H^-linac, a 1.6-GeV proton rapid cycling synchrotron (RCS)providing a beam power of 100 kW with a repetition rate of 25 Hz, twobeam transport lines, a solid tungsten target, and 3 initial neutron instruments.

A neutron beam was successfully obtained at the China Spallation Neutron Source (CSNS) for the first time on 28th August. This is a great milestone for the CSNS project, marking the completion of the main construction and the start of the test operation phase. As a national large scientific facility, CSNS has made outstanding achievements. The CSNS project should be fully completed and open to domestic and international users by 2018 as scheduled.

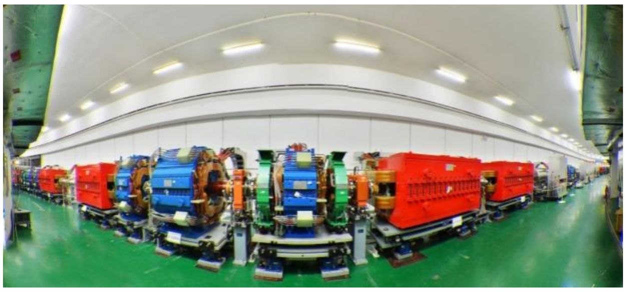
“The idea of building the CSNS in China was first proposed at the Xiangshan Science Conference in February 2001,” said Chen Hesheng, “The Chinese Academy of Sciences (CAS) has given CSNS a lot of support since 2006. We worked with more than 100 organizations all over the country, especially in producing equipment for the accelerator, target and instrument systems. We managed to overcome many technical problems and as a result, our equipment localization rate is over 96% and much of it has reached a world-leading level.”

Diffraction pattern of Si on GPPD

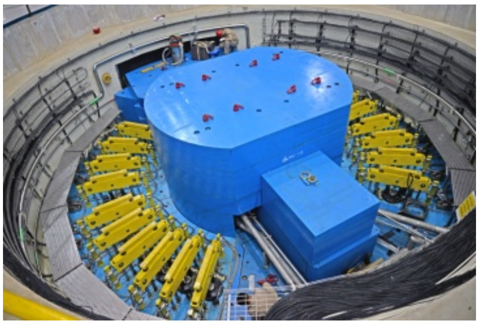
The CSNS team has spent nearly 6 years on this project and witnessed many significant moments. The groundbreaking ceremony was held in October 2011. In October 2014, the H^- ion source, the first piece of accelerator equipment, was installed into the linac tunnel. In July 2017, a proton beam was successfully accelerated to 1.6 GeV in the rapid cycling synchrotron (RCS). On August 28th, 2017, the first neutron pulse was bombarded, indicating the success of the design, fabrication, installation and commissioning of the accelerator and target station. The neutron beam was derived to three day-one neutron instruments (GPPD: general purpose powder diffractometer, SANS: small angle neutron diffractometer, and RM: reflectometer multipurpose) during Nov. 1-9, 2017.The first diffraction pattern has been recorded on Si powder sample by GPPD, and the resolutions $\Delta d/d$, estimated from the sum of neutron counts, are 0.56% for 90° detector bank and 0.23% for the backscattering bank, respectively.

Aerial view of CSNS

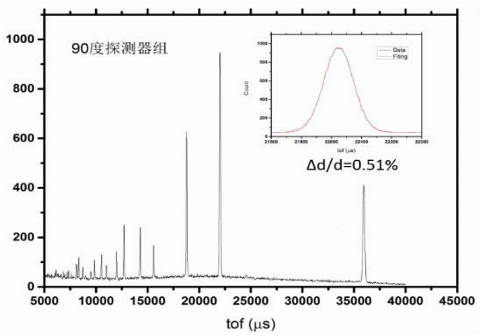
Linac



RCS: Rapid Cycle Synchrotron



Target station



Diffraction pattern of Si on GPPD

Prof. Fangwai Wang (CSNS)

Spin-reorientation in perovskite $NdFe_{0.5}Mn_{0.5}O_3$: A Neutron scattering investigation at the Dhruva reactor, Mumbai

Spin-reorientation is a magnetic phenomenon in which magnetic moments rotate with respect to the crystallographic axes upon a change in the temperature or magnetic field. Temperature induced spin-reorientation in perovskite $NdFe_{0.5}Mn_{0.5}O_3$ has recently been investigated using the neutron diffraction and neutron depolarization facilities at the Dhruva reactor, Mumbai. The oxide compound crystallizes in the orthorhombic Pbnm structure, where both Mn and Fe occupy the same crystallographic site (4b). The compound orders into an antiferromagnetic phase close to 250 K, where Mn/Fe spins have Gy type of alignment (spins aligned along the crystallographic *b*-direction). It undergoes a spin-reorientation transition, with Mn/Fe spins changing their alignment from G_y (above 75 K) to G_z type (below 25 K, with spins aligned along the crystallographic *c*-direction), over a wide range of temperature between 75 and 25 K. At 4 K, the magnetic structure belongs entirely to G_z-type (Fig. 1). In the neutron depolarization study [where one measures the transmitted intensities of neutrons in non-spin flip and spin flip channels with the spin flipper off and on (Flipping ratio, *R*), respectively], the observed decrease in the flipping ratio below ~ 75 K (Fig. 1) confirmed the presence of ferromagnetic spin correlations. The observed spin reorientation has been explained using the first-principles calculations within the GGA+U & GGA+U+SO formalisms and phenomenological theory. These results have been recently published in Phys. Rev. B in collaboration with the research group of Dr. V. K. Malik and Dr. T. Maitra from the Indian Institute of Technology, Roorkee, India [Ref: Phys. Rev. B **96**, 144420 (2017)].

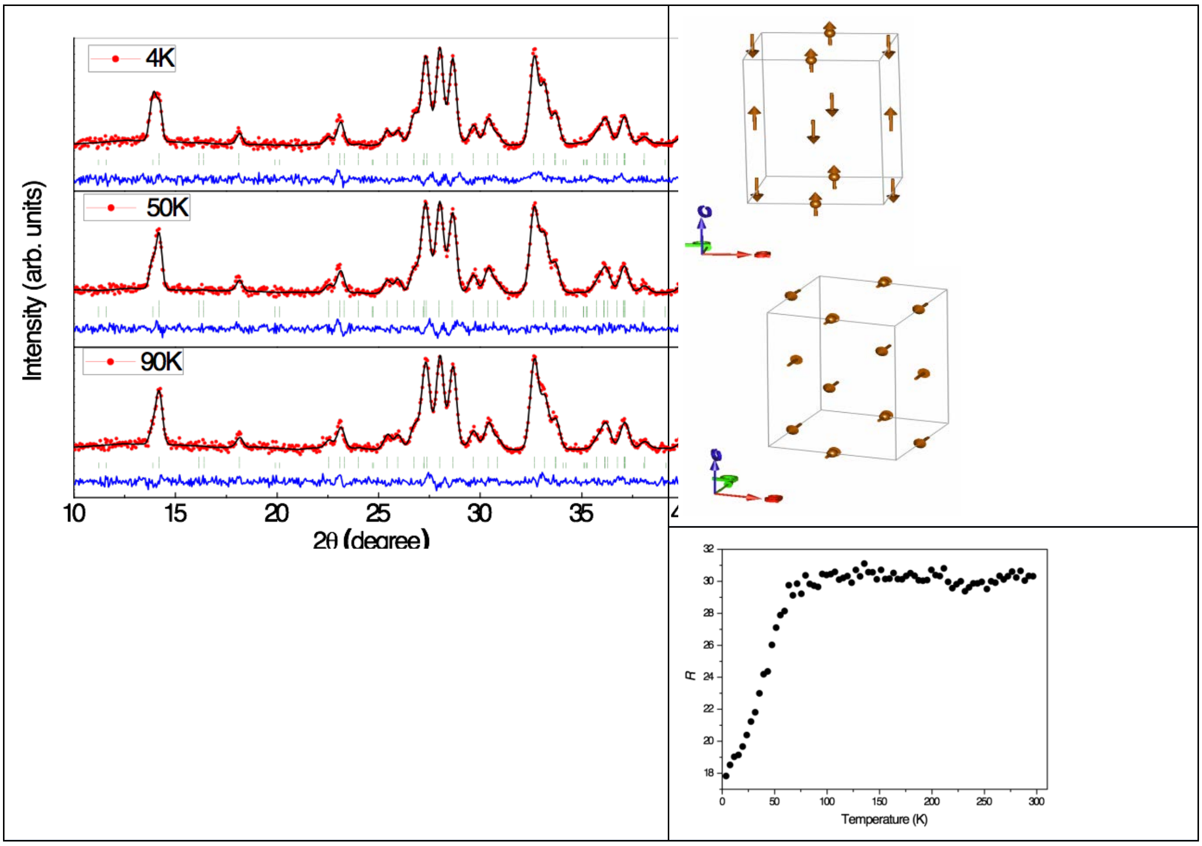


Fig. 1 Rietveld refined neutron diffraction data at various temperatures measured using the neutron powder diffractometer PD-I at the Dhruva reactor, Mumbai, India. Magnetic structures at 4 K and 90 K are shown on the right top panel, Temperature variation of flipping ratio (*R*) measured using the polarized neutron spectrometer at the Dhruva reactor, Mumbai, India (bottom right panel).

A. Jain and S. M. Yusuf*

Bhabha Atomic Research Centre, Mumbai (*Email: smyusuf@barc.gov.in)

BATAN's Neutron Scattering Laboratory –Facility Report

From September 15 to 25 2017, Professor Masayuki Nishida from Kobe City College of Technology Japan and three of his students had performed several experiments at BATAN neutron scattering laboratory using diffractomer for residual stress (DN1), diffractometer for texture analysis (DN2), High Resolution Powder Diffractometer (DN3), and Neutron Radiography- Tomography facility (RN1). One topic of the experiments is measurement of residual stress at very low temperature. The other topic is to inspect the innerpart of the broken motor to locate the source of the fault (Figure 1).

Fig. 1. Students of Kobe City College of Tehnology performed experiments at BATAN neutron scattering facility.

On October 26 2017, an MoU between Center for Science and Technology of Advanced Materials - PSTBM and CEPERPolytechnique of Manufacture had been signed by the Deputy of Head of Batan for Science and Application of Nuclear Technology, Prof. Dr. Efrizon Umar and Drs. H. Anas Yusuf Mahmudi, MM as the the Director of the Polytehcnique. One point of the MoU is for the utilization of BATAN's neutron facility for materials characterization, epsecially materials for industrial applications (Figure 2).

Fig. 2. Signing of MoU for neutron scattering facility utilization between PSTBM BATAN and CEPER Polytechnique of Manufacture.

Through the IAEA TC Expert Mission Program, Dr. Peng Jen-Chih (HanzPeng) of NSRRC Taiwan had assisted the instrument scientists and engineers of neutron scattering laboratory to install and configure SPICE software at BATAN's TAS. Dr. Hanz Peng stayed in BATAN from November 5 to 10, 2017.During the mission Dr. Hanz Peng gave a lecture on SPICE and guided local engineers to implement the SPICE at BATAN's TAS(Figure 3).

Fig. 3. IAEA Expert Mission: installation and configure of SPICE software at BATAN TAS.

Supported by the IAEA TC Scientific Visit Program, BATAN's TAS Instrument Scientist (the author) visited Oak Ridge National Laboratory - ORNL USA from November 13 to 17 2017, to study the technique for phonon Density of States measurements using Triple Axis Spectrometer. The hostsfor the visit areDr. Jaime Fernandez-Baca and Dr. Songxue Chi, the Instrument Scientists of HB3 at High Flux Isotope Reactor - HFIR (Figure 4).Besides learning activities at HFIR laboratory, Dr. Jaime also introduced the author to the X-10 Graphite Reactor and the facilities at the Spallation Neutron Source - SNS.

Fig. 4. The author visited HFIR of ORNL to study the technique for phonon DOS measurements at HB3 TAS. The author with Dr. Jaime and Dr. Songxue (above and below picture, respectively).

Iwan Sumirat

(BATAN)

Calendar of AONSA Activities

Year 2017

Date	**Events**
Nov 25	13th AONSA Facility Directors' Meeting (TINT, Bangkok, Thailand)
Nov 26	19th AONSA EC Meeting (TINT, Bangkok, Thailand)
Nov 27	TINT Neutron Symposium (TINT, Bangkok, Thailand)
Dec 2-3	17th JSNS Annual Meeting (Fukuoka, Japan)

Year 2018

Date	**Events**
May 5	20th AONSA EC Meeting (Uniten, Malaysia)
May 6	14th AONSA Facility Directors' Meeting (Uniten, Malaysia)
May 7	Seminar neutron beam for science and engineer (Uniten, Malaysia)
Nov	15th AONSA Facility Directors' Meeting (ANSTO, Sydney, Australia)
Nov	21st AONSA EC Meeting (ANSTO, Sydney, Australia)

Year 2019

Date	**Events**
May	16th AONSA Facility Directors' Meeting (HANARO, Daejeon, Korea)
May	22nd AONSA EC Meeting (HANARO, Daejeon, Korea)
Nov	17th AONSA Facility Directors' Meeting (Taiwan)
Nov	23rd AONSA EC Meeting (Taiwan)