

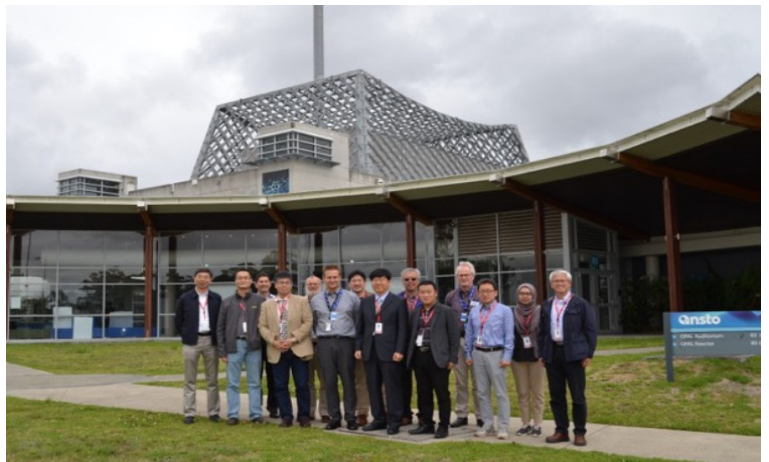
BULETIN

NUKLEAR MALAYSIA

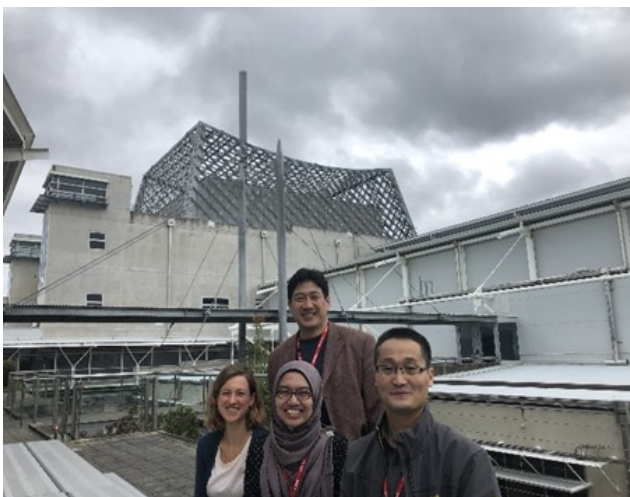
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RSEAP'18
KUALA LUMPUR
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PUSPATI TRIGA REACTOR, BANGI
12-16 NOVEMBER 2018



**RESEARCH REACTOR
SCHOOL EXPERIMENTS**
ON REACTOR PHYSICS
AND NEUTRON APPLICATIONS
FOR ASIA-PACIFIC REGION



The National Nuclear Science, Technology and Engineering Communication
Media

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BULETIN NUKLEAR MALAYSIA

Volume 19, March 2019

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EDITORIAL

After working hard by the editorial members, the issue of Vol. 19 of BNM is finally published. The editorial would like to apologies to all contributors and readers for patiently waiting and loyally supporting of the BNM new issue. This effort has to be appreciated and we hope this sprit will continue for the live of MNS and BNM in particular.

We know that the issue of BNM needs very strong support and commitment from all members of MNS and readers in general. The editorial is very optimistic, with the good support and enough articles from the contributors the half yearly issue of this bulletin will be published on schedule. We also see that from the past few years there was encouraging response from contributors of other organizations beside Nuclear Malaysia. This can probably be improved in the future as sharing and disseminating knowledge is one of the agendas of our society. Different authors could deliver the same message but probably from a different approach. The editorial would also like to welcome contribution from student at levels of education and the MNS has agreed to provide some token as an incentive for your efforts.

The editor welcome articles and news from any related science, technology, engineering regulatory and economy issues. However, we should be bare in mind that the nuclear and nuclear related articles and news should reflex the title of this bulletin. With the current scenario and trend of world energy demand, food and water security, environmental concerned, it is hope that articles and news related to nuclear and nuclear related issue, in particular could be a 'hot' topic of discussion.

Chief Editor

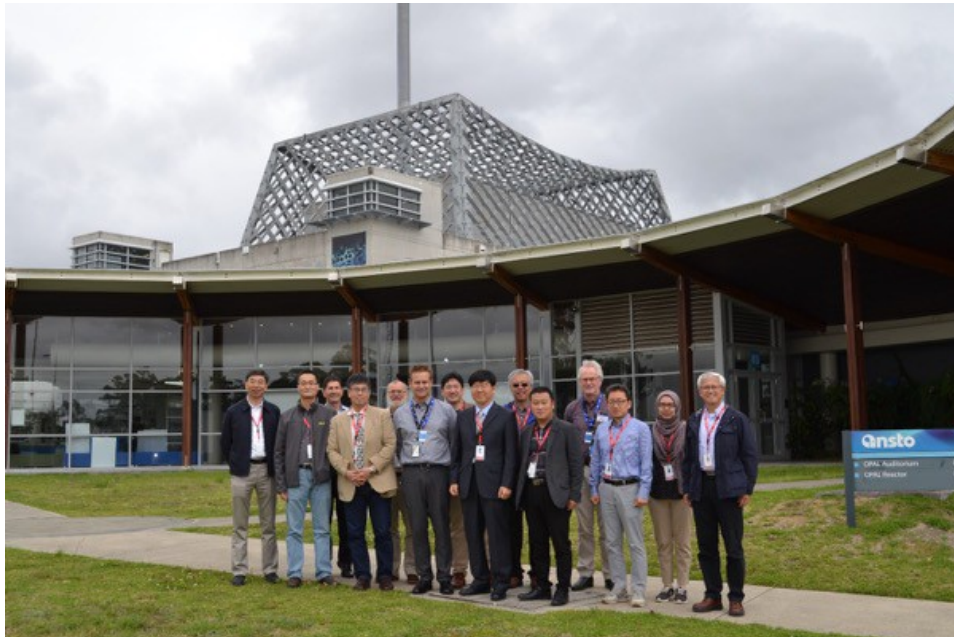
Bulletin Nuclear Malaysia

Asia-Oceania Neutron Scattering Association (AONSA): 16th Facility Director (FD) and 21st Executive Committee (EC) Meetings

*by: Dr. Julie Andrianny Murshidi
Malaysian Nuclear Agency, Bangi, Kajang, Selangor.
(Malaysian Nuclear Society – MNS)*

The FD meeting was held on 16 November 2018 at ANSTO, Sydney, Australia. It was attended by Fangwei Wang (CSNS), Sungil Park (HANARO), Kenji Nakajima (J-PARC), Jamie Schulz (OPAL), Kai Sun (CARR) and Guang-ai Sun (CMRR). In addition, Brendan Kennedy (University of Sydney), Dongfeng Chen (CIAE), Jae-Ho Chung (KNBUA / Korea U), Hsiung Chou (TWNSS / National Sun Yat-Sen University), Shih-Chun Chung (TWNSS / NSRRC), Julie Andrianny Murshidi (Malaysian Community / Nuclear Malaysia), Garry McIntyre (ANSTO) and David Vittorio (ANSTO) were participated as observers. Masayasu Takeda (JRR-3), S. M. Yusuf (BARC) and Iwan Sumirat (BATAN) were apologized for not coming to this meeting.

The meeting was chaired by Sungil Park. All attendees introduced themselves, confirmed the purpose and role of FD meeting, approved the agenda and reviewed the last meeting notes. After that, facility representatives gave reports about their facilities according to the previously agreed standard format. There was a lively discussion on the challenges, opportunities and cooperation of neutron facilities afterward, especially on the new regulation that limits neutron source operation in Korea. Regarding the facility report standardization, directors also discussed the practice of selecting high impact publications.



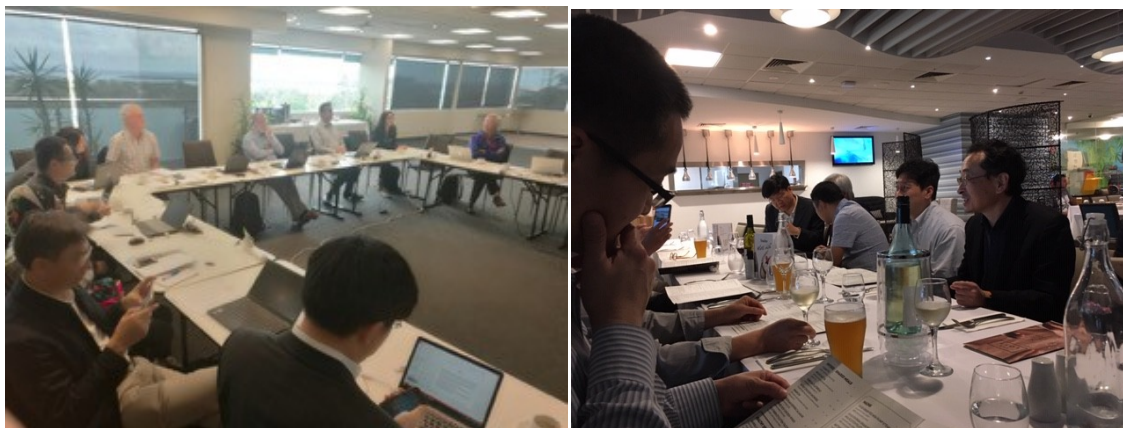
Participants of the FD and EC meetings pose for a group photo: Fangwei Wang, Kai Sun, David Vittorio, Kenji Nakajima, Brendan Kennedy, Jamie Schulz, Dongfeng Chen, Sungil Park, Shih-Chun Chung, Guang-ai Sun, Garry McIntyre, Jae-Ho Chung, Julie Andrianny Murshidi, and Hsiung Chou (from left to right)

The EC meeting was held on 17 November 2018 at Tradies Caringbah near ANSTO. Six EC members, seven observers representing neutron facilities in the Asia-Oceania region and three special observers joined the meeting. Tracy Rushmer (Macquarie University) and Shih-Chun Chung (NSRRC) newly joined the meeting as EC members representing ANBUG and TWNSS respectively. Thitirat Rattanawongwiboon (TINT) and Julie Andrianny Murshidi (Nuclear Malaysia) were also new observers representing Thailand and Malaysian communities. Garry McIntyre as Research Leader of Australian Center for Neutron Scattering was also attended as special observer.

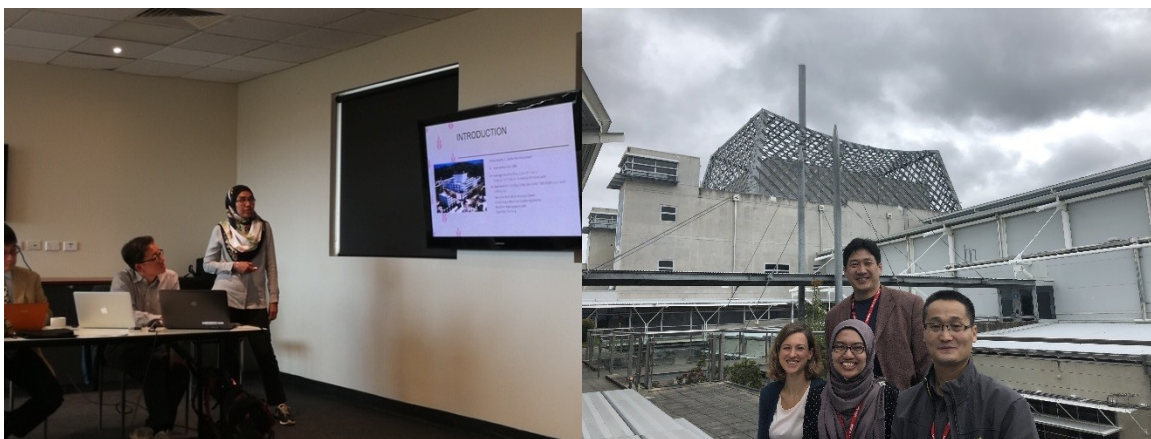
The most intensively discussed topic during the EC meeting was the selection of 2019 AONSA Young Research Fellows. Three fellows had been selected where one fellow will be hosted by J-PARC and another two fellows by ANSTO. The 5th AONSA Prize was also announced where Mahn Won Kim, the 1st President of AONSA became the winner among three candidates.

The summary report of the 10th AONSA Neutron School which was just completed at ANSTO was given by Tracy Rushmer of ANBUG. The 11th AONSA Neutron School will be held in Daejeon, Korea. CMRR will host the 22nd EC meeting in Mianyang in late May 2019. The 23rd EC will be held in Taiwan during the 3rd AOCNS. The member societies and observer communities were also reported on their recent activities.

After both meetings, all participants had dinner at The Bridge Restaurant, Woronora and The Loft Restaurant, Caringbah sponsored by AONSA's host.



Participants during EC meeting (left) and enjoying their dinner at The Loft Restaurant, Caringbah (right).



Author gave presentation on 'New Neutron Beam Facilities Planned For Reactor Triga PUSPATI (left) and had the chance to mingle in a relaxed atmosphere with other delegates at the meetings.

OPAL (Australia's Open Pool Australian Lightwater reactor)

HANARO (High Flux Advanced Neutron Application reactor, Korea)

J-PARC (Japan Proton Accelerator Research Complex)

CARR (The China Advanced Research Reactor)

CMRR (The China Mianyang Research Reactor)

JRR-3 (Japan Research Reactor-3)

CIAE (Chinese Institute of Atomic Energy)

NSRRC (The National Synchrotron Radiation Research Center, Taiwan)

BARC (The Bhabha Atomic Research Centre, India)

BATAN (Badan Tenaga Nuklir Nasional, Indonesia)

ANSTO (Australian Nuclear Science and Technology Organisation)

CNSS (The Chinese Neutron Scattering Society)

KNBUA (The Korean Neutron Beam Users Association)

TWNSS (The Taiwan Neutron Science Society)

ANBUG (The Australia-New Zealand Neutron Beam Users Group)

Research Reactor School Experiments on Reactor Physics and Neutron Applications for Asia-Pacific Region 2018

*by: Dr. Muhammad Rawi Mohamed Zin
Malaysian Nuclear Agency, Bangi, Kajang, Selangor.*

Controlling a nuclear reactor for power and research purposes is quite similar with driving a car. If a car is fuelled by liquid petrol or natural gases, a nuclear reactor on the other hand is fuelled using solid uranium-235. This is known as fuel element or fuel assembly. If a car engine is controlled by accelerator pedal and break, a nuclear reactor is operated by the control rods. Analogous, pressing the accelerator in a car is similar to extracting the control rod away from a nuclear fuel assembly. In both cases, pressing the accelerator pedal and extracting the control rods will increase usage of fuel. Furthermore, the driver and operator should have gone through the proper training and examination. Finally they obtained driving or operator license from respective regulatory body.

Last November, TRIGA PUSPATI reactor again hosting Research Reactor School Experiments on Reactor Physics and Neutron Applications for Asia-Pacific Region for one week. A week before, similar school has been conducted and attended by the same participant in Badan Tenaga Nuklir Nasional (BATAN), Indonesia. This was the second cycle after completion of the first one in Bangkok and Dalat in 2017. The school has been participated by more than 10 people from member state around Asia-Pacific region. The main objective is to promote the safety aspect of nuclear research reactor operation and application to the member state.

There are more than 12 experiments have been conducted by the participants. In addition, the participant also attended the tuition where they can interact with the tutor directly. Furthermore, the participant had an opportunity to attend class for the TRIGA simulator and neutronic calculation of the nuclear reactor core. Attending the pre-test and



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post-test made the class more fun since the effective of the school and also understanding of the student can be assessed. Many participants satisfied that they gain more knowledge during the school and will recommend to their colleague when get back home after the school. Most of them hope that this school will sustain and even getting more support not only from member state but also from International Atomic Energy Agency (IAEA). It is important because the school is recognized by the IAEA and at the initiation stage, the experiment modules and lecturers have been assessed by the IAEA experts.



Reactor operator was explaining about ReDIC, a digital control console used for operating TRIGA PUSPATI reactor to the participant from Iraq, Iran, Philippine, Vietnam and Indonesia.



The instructor showed the flow of coolant at the reactor pool top.



The participant learnt about Neutron Activation Analysis (NAA) at the reactor physics laboratory. It is the most useful technique used in research reactor for various applications.

UTM Debate Team won Intervarsity Nuclear Debate Challenge 2018

by:

Fatihah Mazlann

Nuclear Engineering Student Society (NESS)

Universiti Teknologi Malaysia (UTM) debating team has won the first place in Intervarsity Nuclear Debate Challenge 2018 and thus regain the Noramly Cup of past winners, namely Universiti Malaya (UM).

The debate challenge which was held on 16th to 18th November 2018 at Faculty of Built Environment and Surveying (FABU) was organized with a collaborative effort between Nuclear Engineering Student Society (NESS), Nusantara Technologies Sdn. Bhd, Malaysian Nuclear Society (MNS) and UTM English Debate Society.

Participation for 2018 consist of 32 students from six local public universities (UA). Six Malaysian universities that took part were Universiti Teknologi Malaysia (UTM), Universiti Teknikal Malaysia Melaka (UTeM), Universiti Teknologi MARA (UiTM) Bukit Besi branch, UiTM Shah Alam and Pasir Gudang branch and Universiti Tenaga Nasional (UniTEN). The debate challenge was organized with the theme, "Would the World be Better-off without Nuclear Power?" and it was designed to encourage undergraduates to learn the basis of important knowledge sharing and critical thinking.

A cash prize worth RM 1300.00 was awarded to the champion, Muhammad Yusuf, Fariqy Farhan and Chia Yong Chai from UTM along with a Noramly Cup, coveted trophy and certificates while UniTEN emerged as a second place winner and took home RM 800.00. UiTM Shah Alam came in the third place. The Best Speakers category witnessed the participant from UniTEN, Shatiswarren Pachiappan crowned as the Best Speakers and received a cash prize of RM 200.00.

The prize giving ceremony was enlivened by the Johor State Assemblyman (ADUN) for the Mengkibol constituent, YB Chew Chong Sin, ADUN who attended the Gala Dinner as representative of YB Tan Hong Pin, Johor State Local Government, Science and Technology Committee Chairman. Also attending the Gala Dinner were Mr. Nazaruddin Rahmat Muji Dato' Mohamed Razali, Managing Director of Nusantara Technologies Sdn Bhd, the major sponsor of the event; Prof. Dr. Mohd Ghazali Mohd Nawawi, Chair of School of Chemical and Energy Engineering; Assoc. Prof. Dr. Khaidzir Hamzah, Head of Nuclear Engineering Programme; Assoc. Prof. Dr. Roshanida A. Rahman, Deputy Dean of Faculty of Engineering (Student Affairs) and Dr. Zulhairun Abdul Karim, Advisor of Nuclear Engineering Student Society.

Considering the positive feedbacks, the event is expected to gain more participants in the future and become a platform for knowledge transfer and correcting the misconceptions and stigmas on nuclear power.



From Left (Devintharaaj a/l Kumar, Mr. Nazaruddin Rahmat Muji Dato' Mohamed Razali, YB Chew Chong Sin, Chia Yong Chai, Muhammad Yusuf and Fariqy Farhan)



A group photo during the Debate Challenge 2018 dinner.

International Nuclear Science and Technology (INST 2019) Bangkok, Thailand

oleh: **Zaifol Samsu**

Malaysian Nuclear Agency, Bangi, Kajang, Selangor.

INST2019 merupakan persidangan dwitahunan yang dianjurkan oleh *Thailand Institute of Nuclear Technology (TINT)* yang menghimpunkan para penyelidik dan saintis dari seluruh pelosok dunia untuk berkongsi pengetahuan dan pengalaman berkaitan sains dan teknologi nuklear. Persidangan ini berlangsung pada 4 - 6 Februari 2019 bertempat di Centara Grand, Central Ladprao, Bangkok, Thailand. Slogan persidangan kali ini adalah "*Nuclear for Better Life*" iaitu peranan nuklear dalam pembangunan kehidupan manusia ke arah yang lebih baik. Seramai 153 orang pembentang telah membentangkan hasil kerja mereka samada dalam bentuk pembentangan lisan atau poster. Persidangan ini telah dirasmikan oleh Puteri Maha Chakri Sirindhorn.

Kesinambungan dari persidangan ini, *Newton Neutron Application Workshop* juga telah diadakan pada 5 Februari 2019 di bawah kelolaan TINT - STFC *Newton Program on Skills for Large Facilities*. Empat orang penyelidik dari Malaysia terpilih sebagai penceramah jemputan untuk membentangkan hasil penyelidikan mereka iaitu Dr. Muhamad Rawi Muhamad Zin, Dr. Julia Abdul Karim, Dr. Julie Andrianny Murshidi dan En. Zaifol Samsu.



Empat penyelidik Malaysia yang berjaya mendapat tajaan dari TINT.



Penyelidik Nuklear Malaysia yang membentangkan hasil kerja mereka: En. Zaifol Samsu sebagai pembentang oral (kiri) dan Dr. Julia Abd Karim dan Dr. Julie Andrianny Murshidi sebagai pembentang poster (kanan).



Penyampaian cenderahati kepada Dr. Muhamad Rawi Muhamad Zin sebagai pengerusi sesi.



Para peserta mengambil peluang bergambar di reaktor TRIGA Thailand.

Bengkel ini merupakan platform untuk perkongsian pengetahuan para penyelidik dari United Kingdom dan menguatkan keupayaan pengetahuan dan keupayaan saintifik para penyelidik dari rantau Asia Tenggara dalam penggunaan teknik neutron. Di akhir persidangan ini, satu sesi lawatan ke *Thai Research Reactor* TRIGA Mark III telah diadakan. Reaktor dengan kuasa 1.2 MW ini telah beroperasi dan memberikan perkhidmatan kepada komuniti Thai melebihi 50 tahun. Penggunaan utama reaktor ini adalah untuk penghasilan radioisotop, irradiasi batu permata, *neutron activation analysis* (NAA) dan pengimejan neutron.

**INTERNATIONAL NUCLEAR SCIENCE, TECHNOLOGY AND
ENGINEERING CONFERENCE 2018 (iNuSTEC2018)**

by: Oon Jun Teck

Nuclear Engineering Student Society (NESS)

From 23 November to 25 November 2018, iNuSTEC2018 was held successfully in Dewan Sultan Iskandar, Universiti Teknologi Malaysia (UTM). The theme for this year was ‘Sustainable Nuclear Science and Technology for Well-Being of Mankind’. This conference endeavour to bring together more than a hundred youth selected from local and abroad universities and nuclear professionals from the academia and also research and development (R&D) sector. They had the opportunity to learn, share, exchange ideas and network on issues related to nuclear science, engineering and technology. During the conference, messages and information regarding government policy, nuclear science, technology and engineering had been delivered.

A total number of 346 participants were involved in this conference. Several events such as nuclear industry corporate exhibition, keynote speech, technical talk, Monte Carlo N-Particle (MCNP) simulation workshop, Nuclear Youth Competition 2018 (NYC2018), “The History of Nuclear Energy” Photo Exhibition, Nuclear Science, Technology and Engineering related research posters exhibition were held concurrently with the conference. The three days conference provided opportunities for participant to present their research findings either through oral or poster presentation. This conference also raised great awareness on the importance of nuclear science and technology which is very crucial and educative especially for the sustainable development of energy industry in Malaysia. As the result, it had received public support on the importance of nuclear for the energy sector and the care for our environment that directly involves the use of nuclear science and technology for security purposes.

Special thanks to UTM, NESS and Malaysia Nuclear Society (MNS) for making this event a success, while Hitachi-Ge Nuclear Energy LTD, Japan, China National Nuclear Corporation (CNNC) and local companies for supporting this yearly event. The next conference (NuSTEC2019), to be held at Universiti Kebangsaan Malaysia (UKM), Bangi, Selangor.



Photo 1: Assoc. Prof. Dr. Khaidzir Hamzah, the Head of Nuclear Engineering Programme, School of Chemical and Energy Engineering, Faculty of Engineering, UTM delivered his speech during iNuSTEC 2018.



Photo 2: Opening Ceremony of iNuSTEC 2018



Photo 3: The press and media conference after the opening ceremony.



Photo 4: Teleconference with Datuk Raja Aziz Raja Adnan from the International Atomic Energy Agency (IAEA).



Photo 5: Representative from CNNC participated at iNuSTEC 2018's corporate exhibition.



Photo 6: News coverage of iNuSTEC2018 from SINAR HARIAN.