



Minutes of the 4th AONSA Executive Committee Meeting

Institute of Materials Research & Engineering, Singapore
May 22, 2010

Contents

Main Text of Minutes	2
Appendix 1 Minutes the Board Meeting on March 13, 2010	14
Appendix 2 Rules for EC Nomination and Appointment	38
Appendix 3 AONSA Annual Fee and Budget Plan	39
Appendix 4 Guidelines for AONSA Prize proposed by Working Group ---	40
Appendix 5 Guidelines for Operation of AONSA Schools	44
Appendix 6 Report from the 3 rd AONSA Neutron School 2010	45
Appendix 7 Report from the 4 th AONSA Neutron School @ Tokai	46
Appendix 8 Plan for The 1 st AONSA Conference (AOCNS)	49
Appendix 9 Guide Lines for AOCNS	50
Appendix 10 Procedures to decide the host and location of AOCNS	52
Appendix 11 Calendar of AONSA Activities	53
Appendix 12 Directories and File Naming for AONSA Archive	54
Appendix 13 Neutron Association Reports	56
Appendix 14 Neutron Facility Reports	103

* Note: The minutes of the Board Meeting on March 13, 2010 have its own appendixes.

Minutes of the 4th AONSA Executive Committee Meeting

- Date: 9:00-16:45 on May 22, 2010 (Saturday)
- Place: Institute of Materials Research & Engineering (IMRE), Singapore
- Participants: 14 participants

[Board Members]

John White (President, ANU), Sung-Min Choi (Secretary, KAIST)

Mahn Won Kim (past-President, Advisor, KAIST)

Masatoshi Arai (past-Secretary, Advisor, J-PARC/JAEA)

[Members]

Brendan Kennedy (U. of Sydney), Chih-Hao Lee (National Tsinghua U.),

Ki-Bong Lee (POSTECH), Kazuyoshi Yamada (Tohoku U.)

[Observers]

Shane Kennedy (on behalf of Rob Robinson, Bragg Institute/ANSTO)

Kye Hong Lee (HANARO/KAERI)

Edy Giri Rachman Putra (on behalf of Gunawan, BATAN)

Adbul Aziz Mahamed (Malaysian Nuclear Agency)

Megat Harum Al-Rashid Megat Ahmad (Malaysian Nuclear Agency)

Wim Klooser (Amethyst Scientific Consulting LLP)



1. Opening Remarks by President, John White

The meeting was started with opening remarks of President, John White, and noted the help and hospitality of Prof. Andy Hor, Director-elect of Institute of Materials Research and Engineering (IMRE) to arrange the EC meeting at the IMRE in Singapore. This was highly appreciated by all EC participants. This was followed by self-introduction of participants.

2. Approval of Agenda

The agenda of the 4th AONSA EC meeting was approved by the EC.

3. Approval of the Minutes of the 3rd AONSA EC Meeting in Beijing

The minutes of the 3rd AONSA EC meeting in Beijing (included in Appendix 1) was approved by the EC.

4. Reports of the AONSA Office.

Recent activities of the AONSA office were reported to the meeting, which include

- The Board meeting held on March 13, 2010, in Tokyo.
- Informal AONSA meeting held on March 24, 2010, in Tsukuba.
- Newsletter Vol. 2, No. 1, published in February 2010.
- New AONSA website address (<http://www.aonsa.org>).

5. Approval of the Minutes of the Board Meeting in Tokyo on March 13, 2010.

The minutes of the Board meeting was approved by the EC.

6. Discussions and Decisions

6.1 Formal Matters

6-1-1. New AONSA EC Members and Observers (2010-2011).

- New AONSA EC members and observers were reported to the EC and approved.

6-1-2. Positions of Immediate Past President and Secretary

- Following the recommendation described in the minutes of the Board meeting held on March 13, 2010, it was proposed to the EC that the immediate past President and Secretary should be advisors to the Board for one year and they are ex-officio members of EC without voting power for this period. The change

- of Articles to accommodate the proposal was also proposed to the EC.
- It was proposed by an EC member (B. Kennedy) that the position of immediate past-President should be handled separately from that of immediate past-Secretary. It was proposed that the immediate past-President should be an advisor to the Board for one year and he/she is an *ex-officio* member of the EC for this period (by the definition of EC member, he/she has a full voting power.). On the other hand, the position of immediate past-Secretary should be the same as it was proposed in the minutes of Board meeting (an advisor to the Board and an *ex-officio* member of EC without voting power for one year).
 - The revised Proposal described above was unanimously approved by the 6 attending EC members by voting and the change of Articles (5.1 Board, underlined) to accommodate this was approved by the EC.

<Change of Articles>

Article 5: Organisation of the Committee

5.1 Board

The Committee will nominate a Board which will represent the association between formal meetings. It will comprise the President, the Vice-President, the Treasurer and the Secretary. The holder of each of these positions will be elected by the committee from amongst the current registered delegates. The normal term of office will be 2 years. The President then becomes an *ex-officio* member of the Committee. In normal circumstances, the Vice-President will succeed to the Presidency at after 2 years. The immediate Past-President and Past-Secretary should be advisors to the Board for one year. The immediate Past-President is an *ex-officio* member of the Committee for this period. The immediate Past-Secretary is an *ex-officio* member of the Committee without voting power for this period.

- *Note*: The Article 7 (Modifications to the Articles) states that ‘Any modification to the Articles of Association shall require the approval of more than one half of all registered delegates at formal meetings of the Committee. One month’s notification in advance of any proposed modification is required’.
- Since the minutes of Board meeting on March 13, 2010 which contains the proposal for the modification of Articles related to the position of immediate past-President and past-Secretary was circulated among the EC members more than one month ahead of time, the change of the Articles described above is

legitimate. This was discussed and approved by the EC members before the voting for the change of Articles.

6-1-3. Rules for EC Nomination and Appointment

- The rules for EC nomination and appointment recommended by the Board (included in Appendix 2) was approved by the EC.

6.2 Process Matters

6.2.1 An efficient way of communication among Board and EC members.

- To set up an efficient way of communication among Board and EC members, 'Virtual Board Meeting' was proposed and approved by the EC.
- **Virtual Board Meeting:** President, vice-President and Secretary make a draft minutes of the discussions by email into a set of paragraphs (a summary of discussions) for the whole Board to approve. The Board circulates the minutes of virtual Board meeting to the EC members and uses it to prepare the agenda of EC meeting.
- The circulation of the agenda of EC meeting should be made at least one month before EC meeting.
- A follow-up virtual Board meeting should be held at least within one month after EC meeting.
- These arrangements were approved by the EC.

6.3 Financial Matters

6.3.1 Annual Fee and Budget Plan for the fiscal year of 2010.

- The Annual Fee and Budget Plan for the fiscal year of 2010 (included in Appendix 3) was presented by S.M. Choi on behalf of W. H. Li.
- ANBUG, JSNS, KBNUA and TWNSS have paid their annual membership fee for the year of 2010. The payment by INSS has not been made yet.
- The itemized expense (including the remittance charges occurred during annual fee payments and the charge for new AONSA website address) and current balance were reported and approved by the EC.
- It was approved that while all the remittance charges from the sending and receiving banks during annual fee payments should be paid by senders, the remittance charge in the receiving bank can be covered by AONSA office, if necessary.
- A budget plan for the fiscal year of 2010 was proposed and approved by the EC.

The budget plan includes 1) Support for students to attend the 3rd AONSA Neutron School in India (\$3,000), 2) Expenses for the EC meetings and Working Group meeting (total \$2,000), and 3) AONSA Office general expense (\$500).

- It was approved by the EC that, for efficient operation of AONSA, some difference between the plan and actual uses within a reasonable range should be granted and reported to the EC meeting afterward. (It was noted that sometimes, for example, at the Beijing and Singapore EC meetings, the expenses provided for in the budget were saved because of the generosity of the host organization.)

6.3.2 AONSA Prize Fund.

- It was agreed that the AONSA Prize Fund should be funded by sources other than the AONSA annual membership fee.
- The AONSA Office will set up a new bank account for the AONSA Prize Fund which will be raised through donations or other ways.
- Currently, major neutron facilities have secured or are seeking fund for donations. The HANARO and Bragg Institute got their internal approvals for donations of \$5,000 each for the AONSA Prize Fund, and J-PARC is currently processing it for approval.

6.3 Report from the Working Group for AONSA Prize

- The report of the Working Group (WG) chaired by Y. Fujii (included in Appendix 4) was presented by B. Kennedy, which includes 1) Details of WG, 2) WG Members, 3) Action Reports & Plans, and 4) Draft Guidelines for AONSA Prize.
- The excellent work of WG was highly appreciated by all EC participants.
- Most of the draft Guidelines for AONSA Prize reported by WG were agreed by the EC.
- The following changes to the draft Guidelines for AONSA Prize were suggested and agreed by the EC.

(1) AONSA Prize

From

- b. Aim of Prize: To recognize outstanding research career with a significant impact in the use or development of neutron science or technology in the Asia-Oceania Region.

To

- b. Aim of Prize: To recognize outstanding research career with a significant impact [or contribution to](#) the use or development of neutron science or technology in the Asia-Oceania Region.

(2) Nomination

From

- a. Nomination shall be opened to anyone whose work has significantly impacted in the Asia-Oceania Region.

To

- a. Nomination shall be opened to anyone whose work has significantly impacted [or contributed to](#) the Asia-Oceania Region.

From

- b. Anyone (not a member of the AONSA Prize Selection Committee) may submit one nomination or seconding letter for the prize. [Self-nomination should be excluded.](#)

To

- b. Anyone (not a member of the AONSA Prize Selection Committee) may submit one nomination or seconding letter for the prize.

Note:

- The changes of 1-b and 2-a were made to make the candidacy of possible recipients of AONSA Prize more inclusive rather than too restrictive.
- The change of 2-b was made to avoid possible unfair elimination of good candidates from nominations. There was some concern that this change may result in too many nominations for the selection committee to handle. However, it was agreed that this concern can be resolved by the requirement of at least two seconding letters for nomination.

- It was suggested and agreed by the EC that the airfare of recipient(s) and monetary prize should be covered by AONSA and the registration fee of recipient(s) should be covered by Conference at which the AONSA Prize is awarded.

* According to B. Kennedy, in the ICNS 2005, Sydney, the registration fee of the recipient of ENSA Award (Walter Halg Prize) was waived by the Conference.

6.4 AONSA Neutron School.

6.4.1 Guidelines for AONSA Neutron School.

- The guidelines for AONSA Neutron School (included in Appendix 5) were presented and approved by the EC.
- It was agreed that 'The x-th AONSA Neutron School' should be used as an official name. (Not AONSA Summer School or AONSA Neutron Summer School).
- The School should be advertized to other countries in the Asia-Oceania Region such as Vietnam, Thailand and so on. This will be discussed in the follow-up Board meeting as a part of 'Reach-Out Actions'.
- Since it was noticed that there are some interests from outside of the Asia-Oceania Region to attend the School, the School may allow one or two exceptions for acceptance from outside of the Asia-Oceania Region.

6.4.2 Report from the 3rd AONSA Neutron School in India.

- The Report (included in Appendix 6) was presented to the EC by S.M. Choi on behalf of S.L. Chaplot, which includes the schedule, website, international lecturers, selection of students, and AONSA/IAEA supports for travel of students from developing countries.
- The great efforts of the organizers of the 3rd AONSA Neutron School were highly appreciated by all EC participants.
- AONSA allocated \$3,000 to support travel expense of students from developing countries. The number of students that this budget can support may be 3-5 depending on airfare. (As it is stated in the Guidelines for AONSA Neutron School, it is desirable that the registration fee (200 USD) of the students supported by AONSA is waived by the School. This was not discussed in the EC meeting but is included as a possibility, so that AONSA can support more students. The process for selecting students supported by AONSA should be prepared.)
- ANBUG (5 students) and KNBUA (possibly 5 students) are in the process of selecting students who will be supported by their own organizations. The results will be informed to the organizer of the School.
- It was asked by the EC members if the application deadline for the School (May 31, 2010) is firm. It is desirable that the deadline is extended to some extent and Secretary, S.M. Choi, will communicate with the School organizers

on this matter.

6.4.2 Report from the 4th AONSA Neutron School, 2011, in Japan.

- The tentative plan of the 4th AONSA Neutron School in Japan (included in Appendix 7) was presented by M. Arai on behalf of M. Shibayama, which includes 1) Date and Place, 2) Budget, 3) Accommodation, 4) Dinning, 5) Program, 6) Facility, 7) Information/homepage, and 8) Committees.
- The great efforts of the organizers of the 4th AONSA Neutron School in Japan were highly appreciated by all EC participants.
- It was agreed by the EC that the International Advisory Committee for the School should include EC observers as well.

6.5 Asia-Oceania Conference on Neutron Scattering (AOCNS).

6.5.1 Plan for the 1st AONSA Conference (AOCNS)

- The tentative plan for the 1st AOCNS in Japan (included in Appendix 8) was presented by K. Yamada on behalf of T. Kanaya, which includes 1) Dates and Place, 2) Preparatory Committee, 3) International Advisory Board and 4) International Scientific Program Committee.
- The great efforts of the Preparatory Committee of the 1st AOCNS were highly appreciated by all EC participants.
- The International Advisory Board and International Scientific Program Committee have not been formed yet. The members will be decided in the next EC meeting in India (This should be included in the agenda of the EC meeting in India).
- We should find a way to advertise the AOCNS to more broad communities beyond AONSA. (Action for "follow up" Board meeting)

6.5.2 Guidelines for the AOCNS

- The guidelines for AOCNS (included in Appendix 9) were presented by K. Yamada on behalf of T. Kanaya, which includes 1) General Issues, 2) Scientific Issues, and 3) Budget.
- The excellent work of the Preparatory Committee of the 1st AOCNS to prepare the Guidelines was highly appreciated by all EC participants.
- It was agreed by the EC that the Liability and Profit of AOCNS should be appropriately shared by AONSA and host country.
- It was suggested that a small AONSA fee (10 USD for example) should be

included in the Registration fee of AOCNS, which will allow AONSA to secure additional funds for AONSA Prize or others.

6.5.3 Procedure to decide the host and location of AOCNS

- The procedure to decide the host and location of AOCNS (included in Appendix 10) was presented by S.M. Choi, which includes 1) Basic Principles and 2) Procedures.
- The procedure was approved by the EC.
- It should be decided at which EC meeting we should decide the next AOCNS. There are two possibilities, the EC meeting just before the AOCNS or the EC meeting during the AOCNS.

6.5.4 Support for ICNS 2017 in Korea

- As it was discussed in previous EC meetings, Korea has proposed to host ICNS 2017.
- It was agreed that AONSA will support Korea to host ICNS 2017.

6.6 AONSA Newsletter

6.6.1 Report for AONSA Newsletter

- The report for AONSA Newsletter was presented by S.M. Choi, which includes 1) Purpose and 2) Schedule of Newsletter.
- The purpose of Newsletter are advertisement of each society's activities and sharing of expertise.
- The schedule of Newsletter is late April and late October + Special Issue each two years in the form of February 2010 issue.
- It was suggested that the Newsletter should contain contact information for submitting contributed articles.
- It was agreed that the EC members and observers should be responsible for distributing the Newsletters to their own communities.
- It was suggested that we should find a way to distribute the Newsletter to broader communities. This will be discussed in the follow-up Board meeting as a part of 'Reach-Out Actions'.
- Wim Klooster kindly volunteered to distribute the Newsletter to the South-East Asia Region.

6.7 Calendar of AONSA Activities

- The updated Calendar of AONSA activities and other related activities (included in Appendix 11) was presented by S.M Choi.
- **The schedules of the next face-to-face Board Meeting and the 5th AONSA EC Meeting in India** are agreed to be held on October 4th (Mon), 2010 and October 5th (Tue), 2010, respectively, during the 3rd AONSA Neutron School in India. (Note: The organizers of the School in India proposed the 5th AONSA EC meeting to be held on October 9th or 10th 2010. However, it was pointed out that these proposed schedules are rather inconvenient for most of EC members.)
ACTION for "follow up" Board meeting.
- It was suggested and agreed that the Calendar of AONSA Activities may contain events of local communities relevant to AONSA. To be included in the Calendar, the EC member and observer societies should send their events to the AONSA Office.

6.8 Other Issues

6.8.1 Collaborations with International Council of Scientific Unions (ICSU)

- Recent activities in relation to the International Council of Scientific Unions (ICSU) were reported by the President.
ICSU has established a regional office and is keen to intersect with scientific associations in our region to promote cooperation and international programs. The President has made contact with the regional office in Malaysia (Professor Mohammed Nordin Hasan) and its Australian representative from the Academy of Science, Professor Bruce McKellar. The vice President and President met Prof Reiko Kuroda, the ICSU Vice President in Tokyo, on 20 March,

6.8.2 Discussions with IAEA, IAEA Regional Meeting 2010

- A communication regarding the recent IAEA CM meeting (August 12-14, 2009 at ANSTO, Sydney, Australia) and the follow-up IAEA CM meeting (October 27-29, 2010 at KAERI, Daejeon, Korea) was reported.
- The IAEA CM meeting is focused on neutron beams in the Asia-Pacific Region. The results of the recent work by the technical working group of RCA indicate that the Research Reactor Utilization with emphasis on education, science and applications with neutron beams is one of the recommended priorities.

6.8.3 Relations with IUCr

- Recent activities and possible future activities with IUCr were presented by S.

Kennedy, which includes bilateral collaborations of AONSA and IUCr on projects for our region - each supporting the other".

6.8.4 AONSA Archive

- Directory and file naming for AONSA Archive (included in Appendix 12) was reported.

7. Discussions among South-East Asian Colleagues

- During the lunch time, Edy Giri Rachman Putra (Indonesia), Abdul Aziz Mohamed (Malaysia), Wim Klooster (Singapore) and Megat Harum Al-Rashid Megat Ahmad (Malaysia) had informal discussions on collaborative neutron activities in the South-East Asian region and formation of South-East Asia regional neutron association. The result of their discussion was reported to the EC at the beginning of the afternoon session,
- **Summary of Discussion** (by Wim Klooster).
To have a short version of our (MY, IND, SG) discussion: We are interested in setting up a neutron society for SE Asia, including MY, IND and SG, but also open to people from Thailand, Vietnam and others from SE Asia who might be interested in the use of neutrons. We will have to work out the details of how to set up an international society, how this society will be represented at AONSA, how to pay the fees, etc etc. With the help of AONSA we should be able to come to a satisfactory solution. In the meantime, we will work on trying to grow the local communities of neutron users.
- President, John White, strongly encouraged the activities of South-East Asian colleagues and the EC agreed that AONSA will support their activities to form a neutron society of SE Asia.

8. Reports from Neutron Associations

- Recent activities of neutron associations were reported to the EC (included in Appendix 13).
- ANBUG (Brendan Kennedy)
- INSS (S.M. Choi for Samrath Chaplot)
- JSNS (Kazuyoshi Yamada)
- KNBUA (Ki Bong Lee)
- TWNSS (Chih-Hao Lee)
- Indonesian Neutron Community (Edy Giri Rachman Putra)

- Malaysian Neutron Community (Abdul Aziz Mohamed)
- Chinese Neutron Community (S.M. Choi for Chun Loong)

9. Reports from Neutron Facilities

- Current status and recent progress of neutron facilities in the region were reported to the EC (included in Appendix 14).
- ANSTO (Shane Kennedy)
- BARC (S.M. Choi for Samrath Chaplot)
- J-PARC & JRR-3 (Masatoshi Arai & Mitsuhiro Shibayama)
- HANARO (Kye Hong Lee)
- SIKKA (Chih-Hao Lee)
- BATAN (Edy Giri Rachman Putra)
- CSNS (M. Arai for Fangwei Wang)
- CARR & CPHS (S.M. Choi for Chun Loong)

10. Closing Remarks

- The 4th AONSA EC meeting was closed with closing remarks by President, John White.

11. Additional Activities

- After the EC meeting, an introductory presentation about the activities of IMRE (which hosted the EC meeting) was given by Prof. Andy Hor and his colleagues. This was followed by a lab tour and a dinner generously hosted by IMRE.

Appendix 1

Minutes the Board Meeting on March 13, 2010

- Date: March 13, 2010 (Sat.)
- Place: JAEA Tokyo Office, Tokyo
- Participants:
J. White (President), Y. Fujii (vice-President)
S.-M. Choi (Secretary), W.-H. Li (Treasurer)
M.W. Kim (past-President), M. Arai (former Secretary)
Y. Sugikawa (Secretary of AONSA Office)

Acceptance of the Agenda

At President's suggestion - agreed this item will be added always for members

Report on 14 January 2010 informal meeting (SENDAI)

At President's suggestion this report was accepted and this process will be followed for all such informal meetings.

Report on e-mail correspondence between Board members since 14 January 2010. ("Virtual meetings")

To prepare items for the Agenda of the Executive there has been e-mail correspondence between Board members between January 2010 and March 2010. This was systematized to gather input for the 13 March Board meeting. The whole discussion is attached, Appendix 1.

In the course of this correspondence it was realized that we were having a "virtual meeting". This practice has been used by the International Union of Pure and Applied Physics with good effect.

For formality, the Board was asked to go through the attached correspondence and the minutes below are taken from the approved correspondence and the ensuing discussion.

All recommendations are in black

1. Formal matters

- a. Approval of Beijing EC meeting minutes.

Board Agrees - it is accepted already.

- b. Approval of Executive Committee membership 2010-2011

- The EC member and observer list is complete and attached except the position of immediate Past President and Chinese observers.

The list is attached as Appendix 2

- Role of Past President and Secretary arising from this agenda item (Sun-Min Choi (29-1-10)). (The President and past President left the room for this):

Agreed Immediate Past President and Secretary should be advisor to Board for one year. They are ex-officio members of Executive without voting power for this period.

(It was also agreed that the former Secretary and President should be "observers for 13-3-2010 meeting)

This should be approved by next EC for a **change of articles.**

- **Letter to Chinese Colleagues with proposed observer membership. Appendix 3**

(c) **RULES for EC NOMINATION and APPOINTMENT**

The Secretary suggested draft rules for nomination (Sung-Min30-1-10)

Agree to recommend to the Executive

(1) **Nomination Process. The Board on behalf of the EC requests nominations by the second EC meeting in the second year of any Presidency and informs the EC.**

(2) **The EC is then formed for the next Presidency from those presented formally by current "paying regular member" society Presidents. Normally only members of the Nominating Society can be nominees.**

Secretary collects all of these proposals and presents to Board at next meeting. President announces the new Executive at the beginning

of new Presidency.

NOTE some Associations have been given three years to become paying members and these Associations can nominate Executive members.

b) EC Observers

Once one observer from each major neutron facility (which was listed as one of the major neutron facilities in a previous term) is recommended, he/she will be honored automatically unless there is any clear conflict.

Discussion and Agreement:

- (1) Observer status is one way in which AONSA can welcome new associations. The EC encourages movement from observer status of Societies to full membership to keep a balance EC membership.**
- (2) Nomination Process. The Board on behalf of the EC collects nominations..**

ACTION Sung-Min will draft a letter relating to AONSA categories of Observer status.

2. Process matters

We need to set up an efficient way of communication among Board and EC members.

- i. We need to decide whether we will have "virtual" Board meetings and formal process. If we decide to have 'virtual' Board meetings, what are the formal procedure and schedule?

ACTION Discussion on 13 March 2010: Present process should be improved so that President Vice President and Secretary make draft minute of

the discussions by e-mail into a set of paragraphs for the whole Board to approve.

Board Recommends to Executive that minutes of "virtual Meetings between Board members be made for Board to use in preparation of EC agendas.

3. Approval of meeting Schedule

Face-to-face EC and Board meetings 2010.

14 January informal Board Meeting (SENDAI)

13 March Board meeting Tokyo

24 March Informal Executive meeting at ASEMS, TSUKUBA

ACTION need a face to face EC meeting soon. When and Where. Objective Singapore JWW to find possibilities and report.

May EC meeting SINGAPORE date under discussion 1/5 or 7/5 or 22/5

4 October in India. EC Decided during the Summer School (3 to 9 October)

30 October - 4 November informal EC meeting Korea Questionnaire to EC meeting - how many EC members are coming to AsCA or Hanaro. about 30 October or 31 October in Busan. or 3 or 4 November in Hanaro.

ACTION JWW to contact the EC - tell them a possible agenda and ask to fill out availability in April and May

4. Financial Matters

From Treasurer: Dues remaining to be paid:

Due: 2009 INSS

2010 INSS, TWNSS(processing)

ACTION need to get efficient transfers - how much do banks charge - this to be minimized if possible.

ACTION WHL to monitor this.

We need to prepare the budget plan for this fiscal year. (This will be submitted to EC for approval.)

ACTION WHL will do this

ACTIONS

WHL

- (1) 2009 Budget had in it \$2000 reserved for neutron School. Not spent
- (2) \$500 was allocated for the AONSA EC meeting in Beijing. But since Chinese colleagues paid the bill for dinner, it was not used.
- (3) **Need for new Account for AONSA award. The AONSA Award is planned to be funded by sources other than the AONSA annual fee. Therefore, the AONSA Office will set up a new bank account for the AONSA Award Fund which will be raised through donations.**
- (4) **Need an operation Budget of AONSA this to be done by WHL as draft for Board to include in papers for EC in May.**
- (5) The AONSA office will try to minimize the handling charge by the receiving bank which occurs during payment of Annual Fee. However, if it occurs it will be paid by the AONSA office. It is about \$45 per transfer of annual fee this year.
- (6) **A tentative budget to support students to attend Neutron School is \$3,000 and a tentative operation budget of AONSA is ca. \$1,000. Therefore, ca. \$4,000 is expected to be spent in 2010 and the left over will be accumulated for later use.**
 - **The items needed for the operation of AONSA will be listed.**
 - It should be noted that the actual operation budget may be slightly different from the plan.
 - Therefore, for efficient operation of AONSA, some difference between the plan and actual use within a reasonable range should be granted and reported to the EC meeting afterward.

5. AONSA AWARD

AONSA award - establishment of the working group at March 13 meeting. Report of the group to the Board and then the next Executive. Membership and function of a working group to prepare rules for nomination and selection.

ACTIONS **Agreed Working group to define rules - The group (includes Chair) should have 5 members requested by Chair from "regular members - including India",) Vice President is Chair. He will accept the working group from the suggestions. Report for face to face EC in May.**

Decision of the rules at 2nd Face to face EC 2010. One big award for 2011. We should discuss the general philosophy of AONSA Award at EC meeting May 2010

6. AONSA School 2010

(a) India School 2010

Guidelines for the School (Beijing meeting 2009) Appendix 4

(b) Discuss Vice President's paper Small Science at Large Facilities re AONSA School 4-9 October

Proposal of Y Fujii concerning 'plain explanation of necessity of large facility for small science'. President proposes a working group on this when he is Japan March between March 11 and March 26.

ACTION **Premature to organise a working group.**

7. AONSA CONFERENCES

(a) AONSA Conference and School 2011 Preliminary information See **Appendix 5.**

(b) Procedures to decide the host and location of Asia-Oceania Conference on Neutron Scattering (AOCNS) Draft 17-3-2010 Appendix 6

8. AONSA website address

www.aonsa.org (Currently, this is available for our use.) President proposes that we use this address.

ACTION **Agreed Yukari to do.**

9. AONSA Newsletter

The Board thanked the AONSA Office for the Published Newsletter and discussed its purpose: Advertisements of each society's activities and sharing of expertise. Web linking of AONSA site to Facility sites was proposed. Timing of the Newsletter was discussed: Agreed to suggest late April and late October + Special Issue each two years in the form of February 2010 issue. Make sure that we have on our calendar Asia-Oceania Conferences

10. CALENDAR 2010-2015

ACTION **Secretary to produce an updated calendar for the next two years for EC May and draft for Informal EC 24 March.**

Items to be included in Calendar>

- Schedule of EC and Board meetings
- Schedule of Conferences/Meetings which are related to AONSA activities, includes IUCr, AsCA etc
- Activities of working group (?)

Aim to plan co-inciding EC meetings with science meetings which EC members are likely to attend.

11. ANY OTHER ISSUES

11.1 with ICSU

(a) The President and Vice President will meet Professor Kuroda - Vice President of ICSU to present AONSA's activities to her.

Prof. Reiko Kuroda will be available for our visit only on Mar. 19 (Fri.) 10:30-12:00. I'll take you to her office in Komaba Campus of Tokyo University from Tokai on Mar. 19.

(b) Submission to ICSU Foresight process January 25 2010.

Dear Professor White

Thank you for your input to the ICSU foresight process. As will all other submissions of ideas, we will fold your ideas into a master compilation of all suggested key drivers of international science over the next 20 years and begin the challenging process of distilling these ideas down to a number that will help define the scenarios of international science in the future. Thanks again for spending time to submit your input.

Sincerely

(c) Contact with Emeritus Professor Mohd. Nordin Hasan FASc, Director, ICSU Regional Office for Asia and the Pacific, 902-4 Jalan Tun Ismail, 50480 Kuala Lumpur, MALAYSIA

11.2 Discussions with IAEA- IAEA Regional Meeting 2010 **Appendix 7**

APPENDIX 1
ACTIONS from the AONSA Board January 2010 correspondence
John White 1 February 2010

2. Formal matters to be resolved

a. Approval of Beijing EC meeting minutes.

Yukari Sugikawa 28-1-10: Could you please tell me if I should send it now or another time?

President suggests last distribution once more to old EC.

Deadline for any reply 15-2-

10. No response by then is taken as approval.

Y. Fujii approves it as a former observer except for the budget proposal which should be replanned based on the new situation, in particular the budget support for the AONSA Award.

[Sung-Min] I agree with President except budget plan as pointed out by Fujii-san. We should discuss the budget plan in the Board meeting on March 13.

b. Approval of Executive Committee membership 2010-2011

President suggests: formal approval from old + new EC. Deadline for any reply 15-2-

10. No response by then is taken as approval of proposed list.

Y. Fujii approves it except for the formal position for the Immediate Past President.

[Sung-Min] I think the EC member and observer list is complete except the position of immediate Past President and Chinese observers.

Discussion needed on matter raised by Sun-Min Choi (29-1-10) :

RULES for EC NOMINATION and APPOINTMENT

From Sung-Min 30-1-10

For the procedures for officially approving the EC members, I suggest the following.

a) EC Members

Once two delegates from each member society are recommended for EC members, they will be honored automatically unless there is any clear conflict.

If the delegates (EC members) need to be replaced during their term due to their own domestic issues, it needs to be informed to AONSA EC.

b) EC Observers

Once one observer from each major neutron facility (which was listed as one of major neutron facilities in a previous term) is recommended, he/she will be honored automatically unless there is any clear conflict.

Once Secretary get all the list of EC members and observers, President simply announces it after confirming with other Board Members.

Any new facility, project or community that wants to send an observer should get an approval from EC.

c) To make EC function immediately in a new term, the recommendations for new EC members and observers need to be made before a new term starts.

For example, by the last EC meeting or by the end of each term. We are late for this but we can do this way in the next term.

President suggests that these rules be discussed and adopted by the Board on 13-3-10 for the Executive meeting in April 2010.

Y. Fujii agrees with Sung-Min's proposal for officially nominating/approving EC members and he also agrees with President's proposal for taking formal procedures.

[Sung-Min] I agree on President's suggestion.

Discussion needed on matter raised by Sun-Min Choi (30-1-10) :

Followings are new EC members and observers confirmed by member societies or facilities. Some of them are still missing and today I sent out reminding emails.

From China (from Chun Loong), we got 4 people (Chun Loong, Dongfeng Chen, Jie Wei and Fangwei Wang, same as before) recommended for observers.

I think we should discuss about this before we finalize the observer list.
Any comments on this?

President suggests that bringing China more closely into AONSA be discussed at the next Board and Executive but for the meantime we accept those proposed.

Y. Fujii agrees with President's proposal.

[Sung-Min] I agree with President.

c. Approval of past-President status on EC meeting.

President recommends: Past President should be member of EC and Board for one year after Presidency- subject to the Secretary assuring the Board that this can be accommodated with our statutes.

President suggests: To be decided at 13 March Tokyo meeting.

Y. Fujii agrees with President's proposal; however, it requires the change of the Article of AONSA which should be approved by the EC after the Board Meeting.

[Sung-Min] I agree on President's recommendation. As pointed out by Y. Fujii, we need to modify the Article of AONSA.

d. Agreement on Board meeting 13-3-10 : 29-1-10 Fujii (3) We'll meet together in the afternoon of March 13 (Saturday) at JAEA Tokyo Office in the mid-town of Tokyo accessible in 30 minutes from Haneda Airport. We'll let you know more detailed information later.

Y. Fujii: Yukari has already scheduled as you have been noticed.

e. Approval of draft schedule of face-to-face EC and Council meetings 2010.

President suggests: To be decided at 13 March Tokyo meeting.

Y. Fujii agrees with President's proposal.

[Sung-Min] I agree.

f. Matters from Sendai meeting:

- i. Final comments on draft budget plan (AONSA office plus treasurer)

- ii. Calendar 2010-2011 - production of detailed calendar containing suggested meeting times, major events etc
- iii. AONSA newsletter. Agreement on February and August distribution dates and content of the next issues as proposed
[Sung-Min] We may need further discussion about the schedule of AONSA Newsletter.
- iv. Agreement on EC meeting Hanaro - 1-2 November 2010. See my comment above at
- v. AONSA award - establishment of the working group at March 13 meeting. Report of the group to the Board and then the next Executive. We should discuss when this should be for the calendar. I understand from Rob Robinson (today) that the IAEA meeting in Singapore, foreseen for April 2010 may now be at the end of 2010 there.
- vi. Proposal of Y Fujii concerning 'plain explanation of necessity of large facility for small science'. President proposes a working group on this when he is Japan March between March 11 and March 26. (A good introduction to this can be found through <http://www.nature.com/news/2010/100120/pdf/463282a.pdf> is the article on big science spurs collaborative trend. This may also be useful for our Asia- Europe meeting at KEK at the end of March.
Y. Fujii agrees with President's proposal and he is writing his message on the Feb. 2010 issue of AONSA NEWSLETTER on the similar subject.

g. mn

3. Process matters

- a. Circulation of all correspondence to all EC members.
President suggests this be reviewed at 13 March 2010 meeting for any improvements.
 - The present attached email coming from a suggestion from Masa Arai today may be one such improvement as it seems that most emails, when responding with 'reply', copy the original email but add carriage returns and this is confusing.
 - A second improvement may come from our filing system if we

can think of some way to 'flag' key correspondence between board members.

I would be glad of suggestions from the board, in particular the secretary and the AONSA office.

Y. Fujii agrees with President's suggestion.

[Sung-Min] We need to operate AONSA as openly as possible. However, circulating all correspondences to all EC members may generate too many emails to follow. So, I propose to circulate those correspondences (or summary of correspondences) that require attention from all EC members.

I think that emails with file attachment (present one) may be a good choice to start with.

(This method has some difficulties for efficient communication as well. I will try to think about this matter more.)

We circulate the summaries of correspondences and minutes of meetings to all EC members and archive those on the AONSA website after getting approvals from participants.

b. Approval of email 'virtual' EC meetings and draft schedule

Y Fujii 28-1-10 (1) I'd like to ask Secretary(Sung-Min Choi) to propose the procedures for officially approving the EC members by virtual meeting or by any other method because our final decision on the EC members is the most urgent issue to proceed all actions under the new Presidency. This time we should like to appoint each member by clearly stating his/her category in the Articles 4.1 Delegates and 4.2 Observers.

President suggests: This be decided provisionally now with any discussion of improvements and formalities at 13 March Tokyo meeting and schedule recommended to EC meeting planned for April 2010.

Y. Fujii has proposed a list of members and observers as attached.

[Sung-Min] I agree on President's suggestion. My proposal is given in 1-a.

4. Financial matters

- a. From Sendai meeting: Final draft budget plan for March 13 Board meeting.
- b. From Sung-Min 30-1-10

I have a few comments for the Budget plan distributed by Yukari.

a) In the Beijing meeting, we agreed to set up a new address for AONSA website. So I thought, the budget for website was already approved.

b) In the Beijing meeting, we agreed to raise a AONSA award fund which is separate from AONSA annual membership fee.

So, the budget for AONSA award should not be included in the current budget plan.

The HANARO already got an approval for donating \$5,000 for AONSA award. To process it, the AONSA office needs to prepare a new Bank account for AONSA award fund.

c) \$3000 for AONSA Neutron School in India is reasonable. This budget should be used for students from developing countries.

d) \$500 reserved for EC meeting expense seems to be reasonable.

For the moment, I do not find any further item for Budget plan.

If there is no urgent need for spending budget, could we discuss the budget plan more during the Board meeting in March ?

For other items that are asked for my attention, I will send in another email.

c. [President suggests send draft to EC in good time for EC meeting April 2010.](#)

d. Report on annual membership fee payments March 13 2010.

[Y. Fujii agrees with President's suggestion for the further action on this matter.](#)

[\[Sung-Min\] I suggest that we send out the budget proposal to EC members after the Board meeting on March 13.](#)

29-1-10 Fujii suggestions:

(2) *Regarding the budget plan 2010 distributed by Yukari yesterday, I'd like to ask Secretary and Treasurer(Wen-Hsien Li) to reconsider it upon **our more detailed action plans** this year before it will be circulated to the EC members for approval.*

My additional comment: This Yukari's original mail sent to you this morning should be sent to all EC Members to approve it, AFTER the present

Board Members agree.

JWW proposes: Board members to bring any additional items.

Budget discussion and Board Recommendation to EC on 13 march 2010

Y. Fujii agrees with President's proposal.

e.

5. Any other business.

Newsletter February 2010

President agrees the suggested contents from the Sendai meeting:

- Declaration of the new managements

Y. Fujii: Yukari is now collecting.

- Pictures of new AONSA **Board** members and their statements. -
AONSA office to get a photo and brief biography statement (five lines maximum??) from each Board member.

Y. Fujii: Yukari is now collecting.

- Updated member list and pictures of members.

Y. Fujii: Since the position of the Immediate Past President has not been decided officially, we can list all members except for him/her (This time it's Mahn Won Kim).

- Calendar for 2010-2011 - Provisional Calendar can be inserted.

Y. Fujii: Yukari is now working on it.

President asks: how many societies have submitted reports so far?

Y. Fujii: Only one from Australia on "The 8th AINSE/ANBUG Neutron Scattering Symposium, December 2009". In order to prevent the further delay in publication of this February issue, however, we have already agreed to publish new Board Members' message, Calendar and any other articles if available.

[Sung-Min] For Calendar, we may need discussion before we finalize it and there are some unresolved issues as well. So, I think it would be safe to publish AONSA Newsletter after the Board meeting. Also, the last issue of Newsletter was published on December 1st 2009.

Since February issue 2010 is too close to the last issue, we did not formally

ask for articles or news from societies.

John W White

Y. Fujii's further comments on the position of the Past President:

(1) Without changing the present Articles, he/she can be appointed an observer in EC based on the Article 4.2 "Further individual observers may be co-opted according to the needs of the Association".

(2) By changing the Article, he/she can be a member of Board or/and EC. Present President's suggestion in this correspondence "President recommends: Past President should be member of EC and Board for one year after Presidency- subject to the Secretary assuring the Board that this can be accommodated with our statutes." seems reasonable but it requires the change of the Article.

Meanwhile until it's officially decided by the EC Meeting hopefully in April, the presence by the Past President in the upcoming Board Meeting in Tokyo (Mar. 13, 2010) should be authorized as an observer defined as (1). Even in this case he can be an observer in EC not in Board, but he can be an observer in the Board to be approved/declared by the present President.

APPENDIX 2

Appendix 2



AONSA Executive Committee (Updated on 1 February, 2010)

	Category	Title	Name	Affiliation	e-mail	
KNBUA	<i>*Secretary</i> (Member #1)	4.1	Prof.	Sung-Min Choi	KAIST	sungmin@kaist.ac.kr
	Member #2	4.1	Prof.	Ki Bong Lee	POSTECH	kibong@postech.ac.kr
	Observer#1	4.2 a	Dr.	Kye Hong Lee	KAERI	khlee@kaeri.re.kr
	<i>*Past President</i>	TBD (4.2 d?)	Prof.	Mahn Won Kim	KAIST	mwkim@kaist.ac.kr
ANBUG	<i>*President</i>	Ex-officio	Prof.	John White	ANU	jww@rsc.anu.edu.au
	Member #1	4.1	Prof.	Brendan Kennedy	The University of Sydney	B.Kennedy@chem.usyd.edu.au
	Member #2	4.1	Dr.	Chris Ling	The University of Sydney	c.ling@chem.usyd.edu.au
	Observer#1	4.2 a	Prof.	Rob Robinson	ANSTO	rro@ansto.gov.au
JSNS	<i>*Vice President</i> (Member #1)	4.1	Prof.	Yasuhiko Fujii	JAEA	fujii.yasuhiko@jaea.go.jp
	Member #2	4.1	Prof.	Kazuyoshi Yamada	Tohoku University	kyamada@imr.tohoku.ac.jp
	Observer#1	4.2 a	Prof.	Masatoshi Arai	JAEA	masatoshi.arai@j-parc.jp
	Observer#2	4.2 a	Prof.	Mitsuhiro Shibayama	Tokyo Univ.	bushmont@gmail.com
TWNSS	<i>*Treasurer</i> (Member #1)	4.1	Prof.	Wen-Hsien Li	NCU	whli@phy.ncu.edu.tw
	Member #2	4.1	Prof.	Chih-Hao Lee	NTHU	chlee@mx.nthu.edu.tw
INSS	Member #1	4.1	Prof.	Samrath L. Chaplot	BARC	chaplot@magnum.barc.gov.in
	Member #2	4.1	Dr.	Dhananjai Pandey	Banaras Hindu University	dpandey_bhu@yahoo.co.in
	Observer#1	4.2 a	Prof.	R. Mukhopadhyay	BARC	mukhop@barc.gov.in
CSNS, CARR & CPHS	Observer#1	4.2 b	Prof.	Chun LOONG	Sun Yat-Sen University	ckloong@gmail.com
	Observer#2	4.2 b	Prof.	Dongfeng CHEN	CIAE	dongfeng@ciae.ac.cn
		4.2 b	Prof.	Jie WEI	Tsinghua University	weij@tsinghua.edu.cn
		4.2 b	Prof.	Fangwei WANG	The Institute of Physics, CAS	fwwang@aphy.iphy.ac.cn
BATAN	Observer#1	4.2 a	Dr.	Gunawan	BATAN	gun@batan.go.id
Malaysian Nuclear Society @ Malaysian Nuclear Agency	Observer#1	4.2 a	Dr.	Abdul Aziz Mohamed	Malaysian Nuclear Agency	aziz_mohd@nuclearmalaysia.gov.my

Category (AONSA Article)

4.1 Delegates

Each paying Regular Member (affiliated society) will nominate two delegates to the Association Executive Committee (hereafter referred to as the Committee). A substitute delegate will be allowed. The individual delegation is recommended to be 2 years and is renewable.

4.2 Observers

Invited observers to the Committee will include representatives nominated by:

- The major neutron scattering facilities in the Region
- Projects for new neutron sources in the Region

Appendix 3

Letter to Chinese Colleagues 17-3-2010

Dear John,

The attached is a draft for Email to Chinese colleagues for their observer status. Please feel free to add or revise it, as needed.

By the way, if you send me the memo file you typed in during the Board meeting, I can prepare a minutes of the meeting. Your memo was very clear and complete already and maybe there is not much I need to do further. Anyway, I can help.

Best regards,

Sung-Min

Dear Colleagues,

We had a AONSA Board Meeting on March 13th in Tokyo and confirmed the AONSA Executive Committee Members and Observers nominated by participating societies in early this year. Following the AONSA article on Observer Status, we would like to specify 4 Chinese observers into three categories (please refer to the AONSA article on observers).

Chun Loong : (4.2c) represents Chinese neutron scattering user group

Dongfeng Chen : (4.2a) represents major neutron facility (CARR)

Fangwei Wang : (4.2b) represents new neutron source project (CSNS)

Jie Wei : (4.2b) represents new neutron source project (CPHS)

If you have any comment on this, please let us know.

We wish that Chinese neutron scattering user group can change its AONSA membership into a regular member by forming a Neutron Association in near future.

Looking forward to meeting you in the AONSA EC meeting which is expected to be held in April or May this year in Singapore. We will consult with you for the schedule soon.

Best regards,

John White and Sung-Min Choi

Appendix 4

Guidelines for Operation of AONSA Schools

Rob Robinson and Sung-Min Choi, 20 August 2009

These guidelines are based on the experience so far with the AONSA Schools held in Daejon (2008) and Sydney (2009)

1. The school should be able to handle 40 or more graduate students; it is desirable to include hands-on practice on real neutron-scattering instruments if at all possible;
2. No more than 50% of the student attendees should be from institutions in the host country; at least 50% should come from other user communities in the Asia-Oceania region, with a reasonable spread;
3. The host organisation pays for all local expenses (accommodation, meals, local transportation) for both students and lecturers;
4. Airfares are the responsibility of the students (or their home institutions) and lecturers (or their home institutions). The only exceptions are students from developing countries, and we have been able to support 4-5 such students at each school, so far;
5. Regarding lecturers, it is desirable to have a minimum of:

At least 2 domestic lecturers

2 lecturers provided by JSNS/J-PARC

2 lecturers provided by KNBUA/HANARO

2 lecturers provided by ANBUG/ANSTO

It is desirable to have some continuity in the pool of lecturers from the previous school or schools;

6. We should seek funds to support student attendance from developing countries, from the IAEA and elsewhere.

Appendix 5

AONSA Conference and School 2011 Preliminary information

Committees

(a) International Advisory Board (Members of ANSTO)

Mahn Won Kim (KAIST, Korea)

Ki Bong Lee (POSTECH, Korea)

John White (Australia Nat. U., Australia)

Rob Robinson (ANSTO, Australia)

... (, Australia)

Brendan Kennedy (, Australia)

Yasuhiko Fujii (JAEA, JAPAN)

Kazuyoshi Yamada (Tohoku U, JAPAN)

Wen-Hsien Li (NCU, Taiwan)

Chih-Hao Lee (NTHU, Taiwan)

Samrath L. Chaplot (BARC, India)

Dhananjai Pandey (Banaras Hindu University, India)

(b) Task Force: JSNS (domestic advisory committee for JSNS)

Arai (J-PARC/JAEA), Kakurai (JAEA), Kanaya (Kyoto U), Kawabata (Kyoto U), Murakami (KEK), Shibayama (U Tokyo), Niimura (Ibaraki U), Suzuki (NIMS, JSNS), Seto (KEK), Takano (Ibaraki Pref), Iwasa (Tohoku U.)

(c) Executive Committee

Chair: Mitsuhiro Shibayama (ISSP, U. Tokyo)

Vice Chair: Masatoshi Arai (J-PARC/JAEA)

Secretary: Kenji Nakajima (J-PARC/JAEA)

Program: Takashi Kamiyama (J-PARC/KEK)

Public Information: Otomo (J-PARC/KEK)

Treasurer: Nobuaki Takahashi (J-PARC/JAEA)

Computing environment: Nakatani (J-PARC)

Amenity: Nakamura: (J-PARC)

3. Program (tentative)

a. Lectures: material (science oriented)

1. General Introduction

2. Neutron source (reactor, pulse)
3. Neutron optics/polarization, neutron detection
4. Overview of material science
5. Overview of soft matter science
6. Industrial applications

b. Parallel courses (methodology)

Diffraction (powder)

Inelastic scattering (chopper, triple axis)

SANS & Reflectivity

Residual stress/radiography

Biological Crystallography

c. Laboratory Course (tutorial; candidates)

- * Powder diffraction: SHRPD (BL08; Kamiyama)
- * Inelastic scattering: 4 SEASONS (BL01; Kajimoto)
or AMATERAS (BL14; Nakajima) or Triple Axis (JRR-3; Kakurai)
- * Small-angle scattering: SANS-U (JRR-3; Shibayama) or TAIKAN (BL15; Suzuki)
- * Reflection: ARISA-II: (BL16; Yamada)
- * Neutron Spin Echo (JRR-3; Endo)
- * Residual stress: TAKUMI: (Aizawa, Harjo)
- * Biological Crystallography: iBIX (BL03; Kusakabe)

Appendix 6

Procedures to decide the host and location of Asia-Oceania Conference on Neutron Scattering (AOCNS)

<Basic Principles>

- The host and location of AOCNS will be circulated in the Asia-Oceania Region.
- Under normal circumstance, the host and location of AOCNS will be decided 4 years ahead of time and will be announced in the AOCNS just before it.
- The host and location of AOCNS will be decided in the AONSA EC meeting after reviewing the conference proposals submitted by neutron societies in the Region.
- Both paying regular member societies and non-paying societies can submit proposals.

<Procedure>

1. Call for conference proposals will be announced 6 months ahead of the AONSA EC meeting in which proposals will be reviewed and decided.
2. Conference proposals should be submitted to the AONSA Office by the application deadline specified in the call for proposals. Under normal circumstance, the deadline is 1 month before the AONSA EC meeting. Only one proposal is allowed for each society.
3. The submitted proposals will be reviewed and decided in the AONSA EC meeting specified in the call for proposals.
4. The host and location of the next AOCNS will be announced in the AOCNS just before it.

* If we apply these rules, we should announce Call for Proposals late this year and decide in the first face-to-face EC meeting in the next year. Or we can announce Call for Proposals early next year and decide in the EC meeting during the conference.

Appendix 7

Discussions with IAEA- IAEA Regional Meeting 2010

Dear All,

As indicated in the work-action plan of our last IAEA CM, held on 12-14 August at ANSTO, a follow up meeting in Q4 2010 was scheduled. This is to inform you that an informal agreement was made to hold the new IAEA CM on neutron beams in Asia-Pacific on 27-29 October 2010 at KAERI, Daejeon, Korea, just before the 10th HANARO Symposium (1-2 November 2010). More information will follow in the coming days, including detailed terms of reference. Other important information:

As you might know, last week the technical working group for Asia-Pacific region (RCA) have worked on strategic topics to be identified and recommended for the new TC cycle (from 2012). Although it is very preliminary but it seems that one of the recommended priorities will be on RR utilization with emphasis on education, science and applications with neutron beams. This would open a possibility for developing a new regional TC project on this subject for 2012-2014. Indeed, these strategic topics still has to be approved in April 2010 by RCA national representatives, following the recommendations of the above technical working group. In this regard, informally, I would encourage you to approach your national RCA representatives and express your support for the need of a new regional project related to neutron scattering for science and applications. This would ensure that working group recommendations on neutron beams are approved in April by national representatives.

I will come back to you shortly. Best regards, Danas Ridikas, Research Reactor Officer

Appendix 2

RULES for EC NOMINATION and APPOINTMENT

(Approved by the EC on May 22, 2010)

a) EC Members

1) The Board on behalf of the EC requests nominations from the AONSA Member Societies by the 2nd EC meeting in the 2nd year of any Presidency and informs the EC.

2) The EC is then formed for the next Presidency from those presented formally by current "paying regular member" society Presidents. Normally only members of the Nominating Society can be nominees.

3) Secretary collects all the nominations and presents to the Board. President announces the new Executive at the beginning of new Presidency.

b) EC Observers

Once one observer from each major neutron facility (which was listed as one of the major neutron facilities in a previous term) is recommended, he/she will be honored automatically unless there is any clear conflict.

c) Agreement:

Observer status is one way in which AONSA can welcome new associations. The EC encourages movement from observer status of Societies to full membership to keep a balance of EC membership.

Appendix 3 AONSA Annual Fee and Budget Plan

AONSA Budget Plan (Annual Fee)						
Date (Y/M/D)	Item	Income (US\$)	Expense (US\$)	Balance (US\$)	Remark	
2008						
2008/11/28	Account open	\$ 1.00		\$ 1.00		
2008/12/19	Annual fee (JSNS)	\$ 2,000.00		\$ 2,001.00		
2009						
2009/1/16	Annual fee (KNBUR)	\$ 2,000.00		\$ 4,001.00		
2009/2/23	Interest	\$ 0.12		\$ 4,001.12		
2009/3/2	Annual fee (ANBUG)	\$ 2,000.00		\$ 6,001.12		
2009/3/23	Annual fee (TWNSS)	\$ 2,000.00		\$ 8,001.12		
2009/8/17	Interest	\$ 0.30		\$ 8,001.42		
2010						
2010/2/4	Annual fee (JSNS)	\$ 2,000.00		\$ 10,001.42		
2010/2/22	Interest	\$ 0.34		\$ 10,001.76		
2010/3/3	Annual fee (KNBUR)	\$ 1,954.35		\$ 11,956.11	Transfer fee	\$ 45.65
2010/3/3	Annual fee (ANBUG)	\$ 1,954.35		\$ 13,910.46	Transfer fee	\$ 45.65
2010/3/24	Annual fee (TWNSS)	\$ 1,921.72		\$ 15,832.18	Transfer fee	\$ 75.28
2010/4/13	Tsukuba congress center for AONSA board meeting (04/24)		\$ 305.98	\$ 15,526.20	payment to JAEA	¥ 27,520.00
2010/4/23	Domain name fee & maintance for 2 years		\$ 69.34	\$ 15,456.86	payment to KDDI	¥ 6,300.00
2010/May	EC meeting (Singapore)		\$ 400.00	\$ 15,056.86	Estimate	
2010	AONSA office general expense		\$ 500.00	\$ 14,556.86	Estimate	
2010/May	Award meeting		\$ 400.00	\$ 14,156.86	Estimate	
2010/Oct	EC meeting (India)		\$ 400.00	\$ 13,756.86	Estimate	
2010/Oct	AONSA school (India)		\$ 3,000.00	\$ 10,756.86		
2010/Nov	Informal EC meeting (HANARO)		\$ 400.00	\$ 10,356.86	Estimate	

Appendix 4

Guidelines for AONSA Prize proposed by Working Group

Details of WG

According to the following directions issued at the Board Meeting on March 13, 2010, the Working Group was formed on April 20.

AONSA AWARD: AONSA award - establishment of the working group at March 13 meeting. Report of the group to the Board and then the next Executive. Membership and function of a working group to prepare rules for nomination and selection.

ACTIONS: Agreed Working group to define rules - The group (includes Chair) should have 5 members requested by Chair from "regular members - including India",) Vice President is Chair. He will accept the working group from the suggestions. Report for face to face EC in May. Decision of the rules at 2nd Face to face EC 2010. One big award for 2011. We should discuss the general philosophy of AONSA Award at EC meeting May 2010

WG Members:

Prof. Yasuhiko Fujii (AONSA Vice President; CROSS, Japan): Chair
Prof. Ki Bong Lee (AONSA EC; POSTECH, Korea)
Prof. Brendan Kennedy (AONSA EC; Univ. of Sydney, Australia)
Prof. Chih-Hao Lee (AONSA EC; NTHU, Taiwan)
Prof. R. Mukhopadhyay (AONSA EC; BARC, India)

Action Report & Plans

April 20 (Tue.) Working Group formed.
May 5 (Wed.) 1st Working Sheet to represent guidelines drafted by WG Chair (YF) distributed
May 10 (Mon.) Deadline for WG members' comments
May 12 (Wed.) Distribute the summary of WG members comments and 2nd draft of Working Sheet
May 14 (Fri.) Deadline for WG members' further comments
May 17 (Mon.) WG's 3rd draft of Guidelines (Ver.3 , May 15, 2010) to be proposed to EC as Appendix 6 of Agenda.
May 22 (Sat.) At EC in Singapore. WG's Guidelines to be discussed.

	Three of WG members (Ki-Bong Lee, Brendan Kennedy and Chih-Hao Lee) will attend EC. Brendan will present while Chih-Hao will take a note.
June 30 (Wed.)	Based on EC's comments, the final guidelines in a form of the present Working Sheet and a draft of formally-written Rules will be prepared and distributed to EC.
July 31 (Sat.)	2nd draft of Rules will distributed to EC and its formal approval should be made in the middle of August. <u>Then WG's task will be over.</u>
August 31 (Tue.)	Start forming the Selection Committee to be chaired by the Vice President according to the new Rules
Oct. 4-9	The Selection Committee to be approved by EC in Mumbai, India.
Nov. 1 (Mon.)	SC will announce the call-for nomination for the AONSA Prize 2011
Feb. 28 (Mon.)	Deadline for nomination
June 30, 2011	SC will submit name of recipient and record of selection process to EC which will formally approve/announce(5 months prior to the Ceremony).
Nov. 19-23, 2011	The AONSA Prize Ceremony at #1 AOCNS (Japan)

Report on Guidelines

(WG's 3rd Draft)

(1) AONSA Prize

a. Title of Prize : AONSA Prize

b. Aim of Prize: To recognize outstanding research career with a significant impact in the use or development of neutron science or technology in the Asia-Oceania Region.

c. How often : Every two years. The Prize Ceremony shall be held at the occasion of AOCNS (Asia-Oceania Conference on Neutron Scattering in 2011, 2015, 2019,,,,,) and ICNS (International Conference on Neutron Scattering in 2013, 2017, 2021,,,,,).

d. Recipient(s) : The AONSA 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.

e. Certificatte & money: The Prize consists of a certificate citing the contributions made by the recipient(s) and a monetary prize to be offered voluntarily by several Societies and Facilities (Not from regular annual fees of AONSA). The amount shall be

decided by the Executive Committee. Where the award is shared, the prize money shall be equally divided amongst recipients.

(2) Nomination

a. Nomination shall be opened to anyone whose work has significantly impacted in the Asia-Oceania Region.

b. Anyone (not a member of the AONSA Prize Selection Committee) may submit one nomination or seconding letter for the prize. Self-nomination should be excluded.

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 Selection Committee (SC) by the deadline issued by SC.

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

(3) Selection Committee

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

b. The SC shall be independent of EC and SC members shall represent a broad range of member societies (excluding observers if explicitly stated) and fields of neutron science and technology. Nominations shall be treated in confidence within SC.

c. SC members shall be posted on the home page of AONSA when SC issues the call-

for nominations.

d. SC shall submit the name(s) of recipient(s) with a report of nomination process to EC prior to five months to Prize Ceremony at AOCNS or ICNS.

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

<The End>

Appendix 5

Guidelines for Operation of AONSA Schools

Rob Robinson and Sung-Min Choi, 20 August 2009

These guidelines are based on the experience so far with the AONSA Schools held in Daejon (2008) and Sydney (2009)

1. The school should be able to handle 40 or more graduate students; it is desirable to include hands-on practice on real neutron-scattering instruments if at all possible;
2. No more than 50% of the student attendees should be from institutions in the host country; at least 50% should come from other user communities in the Asia-Oceania region, with a reasonable spread;
3. The host organisation pays for all local expenses (accommodation, meals, local transportation) for both students and lecturers;
4. Airfares are the responsibility of the students (or their home institutions) and lecturers (or their home institutions). The only exceptions are students from developing countries, and we have been able to support 4-5 such students at each school, so far;
5. Regarding lecturers, it is desirable to have a minimum of:

At least 2 domestic lecturers
2 lecturers provided by JSNS/J-PARC
2 lecturers provided by KNBUA/HANARO
2 lecturers provided by ANBUG/ANSTO

It is desirable to have some continuity in the pool of lecturers from the previous school or schools;

6. We should seek funds to support student attendance from developing countries, from the IAEA and elsewhere.

Appendix 6

Report from School Organizing Committee of AONSA Neutron School 2010

The 3rd AONSA Neutron School is planned to be held at Mumbai during 4-9 October 2010. The **announcement** and some **detailed information** are already available on the AONSA website.

Please see below a few issues relevant to the Indian AONSA School that may be discussed at the EC meeting at Singapore.

1. Lectures

The following offers are available:

John White: "**Introduction to Neutron Scattering**" and "**Neutrons and Nanotoxicology**" (about the use of reflectivity for studying protein nanoparticle interactions)

Robert ROBINSON suggested Dr. Michael James as a lecturer.

Michael James: **reflectometry**, and general introductory lectures into elastic scattering, research reactors, neutron optics etc.

Sung-Min Choi: **SANS**

Masatoshi Arai: "**pulsed neutron sciences**" including neutron production, neutronics, instrumentation, and experimental techniques, and applicable sciences.

Brendan Kennedy and Kazu Yamada offered to find suitable lecturers from Australia and Japan respectively.

These already cover many important techniques. We would also like to have others teaching diffraction and inelastic scattering. In addition, we would have complementary/supplementary lectures by speakers from India.

2. Selection of students

I think it should be fine if Australia and other regions select their students and let us know. EC may discuss how many students may be accepted from each region.

3. AONSA/ IAEA support for travel of students from developing countries

IAEA are in the clearance process as on 11 May 2010. It will take additional 1-2 weeks.

EC may decide how many students AONSA could support. **We are not requesting from AONSA any other financial support for the School.**

4. Schedule

The School is planned from 4th October (Monday) to 10th October (Saturday). We expect about 5 lectures per day for the first three days, followed by two days of hands-on experiments by the participants.

Proposed EC meeting during the AONSA School

The EC meeting could be held on 9th and 10th October 2010 (Friday and Saturday). Any suggestions are welcome.

Appendix 7

AONSA Neutron School @ Tokai <*tentative plan*>

2010.1.15

2010.2.10

2010.3.2/2010.3.12/2010.3.15/2010.3.18/2010.4.2/2010.4.28/2010.5.7

Mitsuhiro Shibayama

1. Dates and Place

Dates: Nov. 14 (Sun), 2011 – Nov. 18 (Fri), 2011

(The last week of the 4th cycle of JRR-3),

followed by AOCNS (Nov. 20 – Nov.23), IPS11 (Nov. 20 – Nov.23),

Annual Meeting of JSNS (Nov. 20 – Nov.23)

Place: J-PARC and JRR-3 and

Ibaraki Quantum Beam Research Center (IQBRC; 1F and 2F)

2. Budget

J-PARC, AONSA

3. Accommodation

Guest House (@ KEK), Masago, etc.

4. Dining

??

5. Program

a) Lectures:

Main courses material (science oriented)

Parallel courses (methodology)

b) Laboratory Courses: (tutorial)

c) Presentation

6. Facility

Lecture rooms: Meeting Room (IQBRC 1F), Meeting Room & Multi-purpose hall (IQBRC 2F) (pre-reserved on 2010.2.17)

personal computer: at least 10,

software: Igor or Excel, power point, word

7. Information

MLF (or J-PARC) home page

5. Committees

(a) International Advisory Board (executive of AONSA)

Australia ([ANBUG \(The Australian Neutron Beam Users Group\)](#))

John White (Australia Nat. U., Australia)

Rob Robinson (ANSTO, Australia)

Branden Kennedy (, Australia)

[JSNS \(The Japanese Society for Neutron science\)](#)

Yasuhiko Fujii (JAEA, JAPAN)

Kazuyoshi Yamada (Tohoku U, JAPAN)

Korea (KNBUA; [The Korean Neutron Beam Users Association](#))

Mahn Won Kim (KAIST, Korea)

Ki Bong Lee (POSTECH, Korea)

INSS (The Indian Neutron Scattering Society)

Samrath L. Chaplot (BARC, India)

Dhananjai Pandey (Banaras Hindu University, India)

TWNSS (The Taiwan Neutron Science Society)

Wen-Hsien Li (NCU, Taiwan)

Chih-Hao Lee (NTHU, Taiwan)

(b) Task Force: JSNS (domestic advisory committee for JSNS)

Arai (J-PARC/JAEA), Kakurai (JAEA), Kanaya (Kyoto U), Kawabata (Kyoto U), Murakami (KEK), Shibayama (U Tokyo), Niimura (Ibaraki U), Suzuki (NIMS, JSNS), Seto (KEK), Takahashi (Ibaraki Pref.), Iwasa (Tohoku U.)

(c) Executive Committee

Chair: Mitsuhiro Shibayama (ISSP, U. Tokyo)

Vice Chair: Masatoshi Arai (J-PARC/JAEA)

Secretary: Kenji Nakajima (J-PARC/JAEA)

Program: Takashi Kamiyama (J-PARC/KEK)

Public Information: Toshiya Otomo (J-PARC/KEK)

Treasurer: Nobuaki Takahashi (J-PARC/JAEA)

Computing environment: Takeshi Nakatani (J-PARC)

Amenity: Mitsutaka Nakamura: (J-PARC)

6. Program (tentative)

a. Lectures: material (science oriented)

7. General Introduction
8. Neutron source (reactor, pulse)
9. Neutron optics/polarization, neutron detection
10. Overview of material science
11. Overview of soft matter science
12. Industrial applications

b. Parallel courses (methodology)

Diffraction (powder)
Inelastic scattering (chopper, triple axis)
SANS & Reflectivity
Residual stress/radiography
Biological Crystallography

c. Laboratory Course (tutorial; candidates)

(to be selected from the following candidate experiments)

- * Powder diffraction: SHRPD (BL08; Kamiyama)
- * Inelastic scattering: 4 SEASONS (BL01; Kajimoto)
or AMATERAS (BL14; Nakajima)
- * Small-angle scattering: SANS-U (JRR-3; Shibayama) or TAIKAN (BL15; Suzuki)
- * Reflection: ARISA-II: (BL16; Yamada)
- * Neutron Spin Echo (JRR-3; Endo)
- * Residual stress: TAKUMI: (BL19; Aizawa, Harjo)
- * Biological Crystallography: iBIX (BL03; Kusaka)

d. Presentation

group presentation in an auditorium

e. Excursion

?

Appendix 8

2010.05.08

Plan for The 1st AONSA Conference (AOCNS)

1. Dates and Place

Date: November 19th - 23rd, 2011 (Welcome party on Nov. 19th)

- AONSA School will be held prior to AOCNS from November 14th to 18th, 2011 in Tokai
- Annual meeting of Japanese Society for Neutron Science (JSNS) will be simultaneously held with AOCNS.
- International Symposium on Pulsed Neutron and Muon Science (IPS) will be simultaneously held with AOCNS.

Place: JAEA, Tokai (tentative)

Expected number of participants: 300- 350

2. Preparatory Committee (which will move to the Organizing Committee with a chair person of the next President of JSNS whose term is from Apr. 2011 to Mar. 2013.)

Chair: Toshiji Kanaya (Kyoto Univ.)

Members: Masa Arai (JAEA), Takashi Kamiyama (KEK), Yukio Morii (Hitachinaka Techno Center), Toshiharu Fukunaga (Kyoto Univ.), Hideki Yoshizawa (ISSP, Univ. Tokyo), Fujio Maekawa (JAEA), Yukio Noda (Tohoku Univ.), Susumu Ikeda (KEK), Michihiro Furusaka (Hokkaido Univ.), Jun-ichi Suzuki (JAEA), Hiroyuki Suzuki (NIMS)

Observers: Kazuyoshi Yamada (President of JSNS, Tohoku Univ.), Mitsuhiro Shibayama (Principal of AONSA School, Univ. Tokyo)

Local Executive Committee will be formed shortly.

3. International Advisory Board

- Not yet organized. The members will be decided according to the decision of the next EC of AONSA.

4. International Scientific Program Committee

- Not yet organized. The members will be decided according to the decision of the next EC of AONSA.

Appendix 9

Guide Lines for AOCNS

The conference of AONSA, which tentatively terms Asia-Oceania Conference for Neutron Scattering (AOCNS), is in principle held every 4 years staggered to ICNS in a country belonging to AONSA.

The host country is decided in Executive Committee (EC) of AONSA.

General Issues

1. AONSA member countries and observer countries must make all possible efforts to have participants to AOCNS as many as possible.
2. AONSA encourages worldwide participation to AOCNS from countries not belonging to AONSA.
3. EC of AONSA will be held during AOCNS.

Scientific Issues

1. AONSA Awards: To be presented at AOCNS. Detailed procedure for selection will be established by EC of AONSA.
2. International Advisory Board: Member countries as well as observer countries will nominate members of International Advisory Board. Final selection of the members will be done by the host country.
3. International Scientific Program Committee: Member countries as well as observer countries will nominate members of International Scientific Program Committee. Final selection of the members will be done by the host country.
4. Recommendation of Invited Speakers: Members of International Scientific Program Committee have a right to nominate plenary speakers and invited speakers. The numbers of recommended speakers must be discussed. Final selection of the plenary speakers and the invited speakers will be done by the Organizing Committee.
5. Presentations: Oral presentations include AONSA award lectures, plenary lectures, invited lectures, and some lectures recommended by the Organizing Committee. Other contributions are in poster presentation. Number of oral presentations will be decided by the Organizing Committee.
6. Conference Proceedings: The conference proceedings will NOT be published at the moment due to the financial and scientific problems. However, EC of AONSA will continue the discussion about the publication of the conference proceedings.

Budget

1. Conference Budget: The host country must cover all the budget regarding the AONSA conference, except the travel fee and living expense for the invited speakers.
2. Support for Invited Speakers: AONSA/their home institutes can cover the travel fee and the living expense for some invited speakers.
3. Support for Developing Countries: AONSA financially supports some participants from developing countries, especially for young scientists to attend the AONSA conference and school on the basis of the AONSA budget.
4. Registration Fee: Registration fee can be collected from the participants. The fee will be determined by the Organizing Committee of the host country. Some waiver system on demand must be considered.

Appendix 10

Procedures to decide the host and location of Asia-Oceania Conference on Neutron Scattering (AOCNS)

<Basic Principles>

- The host and location of AOCNS will be circulated in the Asia-Oceania Region.
- Under normal circumstance, the host and location of AOCNS will be decided 4 years ahead of time and will be announced in the AOCNS just before it.
- The host and location of AOCNS will be decided in the AONSA EC meeting after reviewing the conference proposals submitted by neutron societies in the Region.
- Both paying regular member societies and non-paying societies can submit proposals.

<Procedure>

1. Call for conference proposals will be announced 6 months ahead of the AONSA EC meeting in which proposals will be reviewed and decided.
2. Conference proposals should be submitted to the AONSA Office by the application deadline specified in the call for proposals. Under normal circumstance, the deadline is 1 month before the AONSA EC meeting. Only one proposal is allowed for each society.
3. The submitted proposals will be reviewed and decided in the AONSA EC meeting specified in the call for proposals.
4. The host and location of the next AOCNS will be announced in the AOCNS just before it.

* If we apply these rules, we should announce Call for Proposals late this year and decide in the first face-to-face EC meeting in the next year. Or we can announce Call for Proposals early next year and decide in the EC meeting during the conference.

Appendix 11

Calendar of Major Events (Updated)

2010	
3/8-3/12	International Collaboration on Advanced Neutron Sources (Grindelwald, Switzerland)
3/13	AONSA Board Meeting(Tokyo, Japan)
5/22	<u>The 1st AONSA EC Meeting</u>
6/26-6/30	American Conference on Neutron Scattering (Ottawa, Canada)
7/5-7/8	8th International Workshop on Polarised Neutrons in Condensed Matter Investigations(Delft, Netherlands)
8/29-9/3	26th European Crystallographic Meeting(Darmstadt, Germany)
10/4-10/9	<u>3rdAONSA Summer School(India), The 5th AONSA EC Meeting (Mumbai, India)</u>
10/31-11/3	10th Conference of the Asian Crystallographic Association (Bussan, Korea)
11/1-11/2	HANARO International Symposium, In celebration of New Cold Neutron Facility. (Daejeon, Korea) <i>Informal AONSA EC Meeting during AsCa2010 or HANARO symposium (Korea)</i>
2011	
1/17-1/21	European Conference on Neutron Scattering (Prague, Czech)
8/23-8/31	XXII Congress and General Assembly of the International Union of Crystallography(Madrid, Spain)
11/14-11/18	<u>AONSA Neutron School (Tokai, Japan)</u>
11/19-11/23	<u>AOCNS (Tokai, Japan)</u>
2012	
11/18-11/23	15 th International Small-Angle Scattering Conference (Sydney, Australia) 12th Conference of the Asian Crystallographic Association(Adelaide, Australia)
2013	
7/7-7/11	10th International Conference on Neutron Scattering (Edinburgh)

Appendix 12

Directories and File Naming for AONSA Archive.

- Under AONSA-Archive, there are sub-directories for different subjects.
 - Here, YYYY-MM-DD specifies the year, month and date of occasion.
1. AONSA Articles
File Name:
AONSA Article-YYYY-MM-DD
Here, YYYY-MM-DD specifies the date of change.
 2. Board Meetings (this folder will include agenda and minutes)
File Name:
Board-YYYY-MM-DD-Agenda
Board-YYYY-MM-DD-Minutes
 3. EC Meetings (this folder will include agenda and minutes)
File Name:
EC-YYYY-MM-DD-Agenda
EC-YYYY-MM-DD-Minutes
 4. Informal Meetings (this folder will include agenda and minutes)
File Name:
IM-YYYY-MM-DD-Agenda
IM-YYYY-MM-DD-Minutes
 5. Newsletters
File Name:
NL-YYYY-MM-DD
 6. Working Group (this folder will include agenda, minutes and final reports)
File Name:
WG-XX-YYYY-MM-DD-Agenda
WG-XX-YYYY-MM-DD-Minutes
WG-XX-YYYY-MM-DD-Report
Here, XX are letters which specify working groups.
 7. AOCNS (this folder will include documents and posters related to the conference)
File Name:
AOCNS-YYYY-MM-DD-XXXX
Here, XXXX are letters which specify type of documents. A sub-directory for

each conference should be useful.

8. AONSA Award (this folder will include any documents related to the award)

Award-YYYY-MM-DD-XXXX

Here, XXXX are letters which specify type of documents.

9. Fee-Finance (will include documents for annual fee and other financial matters)

File Name:

AF-YYYY-XXXX-Invoice

AF-YYYY-XXXX-Receipt

Budget-YYYY-Plan

Budget-YYYY-Balance

Here, AF stands for annual fee and XXXX are letters which specify member society.

10. Others

Appendix 13 Association Reports

1. ANBUG (Brendan Kennedy)
2. INSS (S.M. Choi for Samrath Chaplot)
3. JSNS (Kazuyoshi Yamada)
4. KNBUA (Ki Bong Lee)
5. TWNSS (Chih-Hao Lee)
6. Indonesian Neutron Community (Edy Giri Rachman Putra)
7. Malaysian Neutron Community (Abdul Aziz Mohamed)
8. Chinese Neutron Community (S.M. Choi for Chun Loong)

ANBUG Executive Committee - 2009 and 2010



ANBUG Executive Committee
President: Brendan Kennedy
Vice President: Chris Ling
Secretary: James Hester
Committee: Andrew Nelson,
Craig Buckley (Past President)
Annemieke Mulders, Darren Goosens,
Duncan McGillivray,

- **Primary Role of ANBUG**
- Act as voice for Australian scientists and engineers who use neutron scattering in their work

<http://www.anbug.org/>

- Useful Information
- Links; Newsletters
- Constitution

Australian Neutron Scattering

ANSTO
Operate OPAL

AINSE
Travel and Conference Support
ISIS

ARC

ANBUG

Australian
Neutron
Beam
Users
Group

ANBUG

Activities

Correspondence:

Concern over operations at the Australian Synchrotron.
Problems of OPAL Schedule – “Flexible Fuel Management”
Building Works at Bragg Institute – User support
Support for Australian Students to attend AONSA School

Meetings:

ANSTO - AINSE Neutron School on Dynamics and Kinetics,
15 - 20 August 2010.
Neutrons and Food: *31 October — 3 November 2010*
9th AANSS Symposium: *1 – 3 December 2010*

Current Membership of ANBUG: 332. The membership includes scientists from Australia, New Zealand and 16 other countries

<http://www.anbug.org/>

Dynamics and Kinetics Neutron School 2010

August 15-20

General intro to neutron scattering in kinetics and dynamics **John White**
A day in the life of a neutron (neutron fundamentals) **Andrew Studer**
Overview of elastic neutron-scattering techniques **Michael James**
Overview of quasi-elastic neutron-scattering techniques **Nicholas de Souza**
Overview of inelastic neutron-scattering techniques **Mona Yethiraj**
Overview of polarised neutron-scattering techniques **Frank Klose**
Biomolecules in action **Andrew Whitten**
Writing a proposal and reporting results **Joseph Bevitt**
Powder diffraction and Rietveld analysis **Chris Ling**
Gas-storage materials and other recent work completed on WOMBAT **Vanessa Peterson**
Neutrons and multiferroics **Annemieke Mulders**
Use of *in situ* neutron diffraction for resolving reaction kinetics **Daniel Riley**
Single-crystal technique and its applications **Ross Piltz**
Lattice Dynamics **Mona Yethiraj**
Structural changes related to thermal mechanical processing **Klaus-Dieter Liss**
Understanding diffraction and inelastic neutron-scattering data via modelling **Don Kearley**



AANSS 2010

Neutron and X-ray Scattering – from Biology to Physics

Wednesday 1 December – Friday 3 December

AINSE, Lucas Heights

9th AANSS Symposium and includes the AINSE AGM.

The topics of AANSS 2010 include:

- o Condensed Matter Physics
- o Biological Sciences
- o Soft Condensed Matter
- o Instrument Concepts/Techniques/Developments
- o Chemistry/Earth Sciences
- o Engineered and Applied Materials
- o Medical and Imagery
- o Software

<http://www.anbug.org/>



Report from INSS (12 May 2010)

Indian Neutron Scattering Society*

It is quite satisfying that the strength of the INSS membership has crossed past 100.



Photograph during the XIV Neutron School/Workshop held in BARC, Mumbai, 5-10 October 2009

C/o Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai 400085, India
Email: neutron@barc.gov.in

Report from National Facility for Neutron Beam Research, Dhruva reactor, BARC, India

In the National facility of Neutron Beam Research at the Dhruva reactor at BARC, two of the powder diffractometers have been upgraded with higher efficiency (higher pressure) He³ position sensitive detectors.

In addition, one of the 'day-1' instrument at Dhruva, at the end of one side of the through tube, is being upgraded with several new detectors. It is designed specifically for study of magnetic systems. The new detector shield has been recently delivered.

Design of a new instrument for Residual Stress analysis has been approved and its fabrication is being taken up.

About 30 projects continue to run by users from various Indian universities and institutions under the aegis of University Grants Commission-Department of Atomic Energy Consortium for Scientific Research (UGC-DAE CSR). This is apart from projects supported by other agencies and the in-house research.

The Japanese Society of Neutron Science, JSNS

K. Yamada



1. Activities 2010

Annual Meeting
Election (every two year)
Special committees

2. Issue

Saturation of member

10th Annual Meeting

Dec 9~11, Tohoku University, Sendai

- 2001 1st Sendai (Tohoku University)
- 2002 2nd Kumatori (Kyoto University)
- 2003 3rd Tokai (University of Tokyo)
- 2004 4th Sapporo (Hokkaido University)
- 2005 5th Sitma (ICNS2005)
- 2006 6th Mito (JAEA)
- 2007 7th Fukuoka (Kyushu University)
- 2008 8th Nagoya (Nagoya University)
- 2009 9th Tokai (Ibaraki University)
- 2010 10th Sendai (Tohoku University)
- 2011 11th Tokai/Mito (7th AONSSC7)

Organizing and Local Committee:
Prof. Noda (Tohoku Univ.) (Chair)



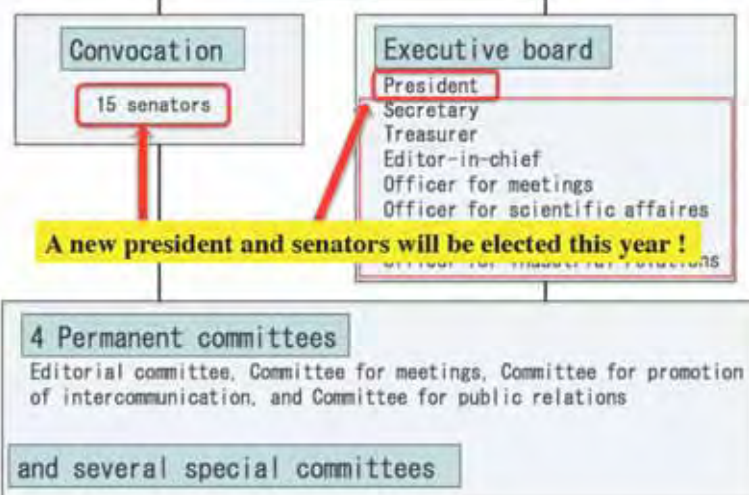
Program Committee
Prof. Ohoyama (Tohoku Univ.) (Chair)



Organization

General Assembly

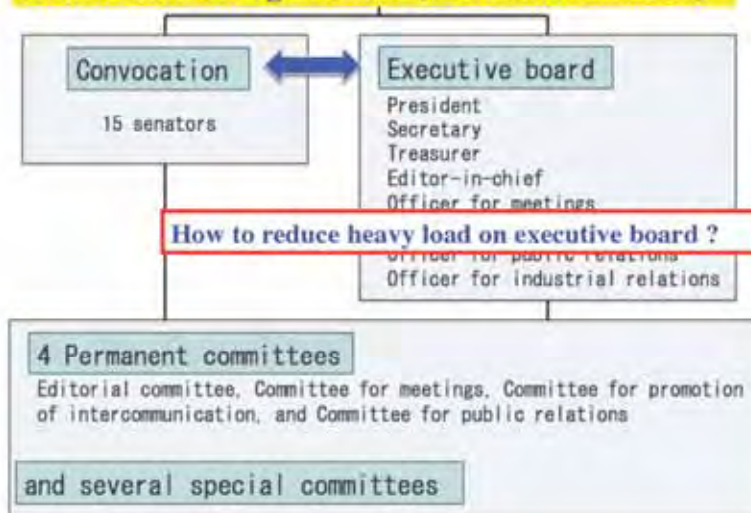
Election



Current Special Committees in JSNS

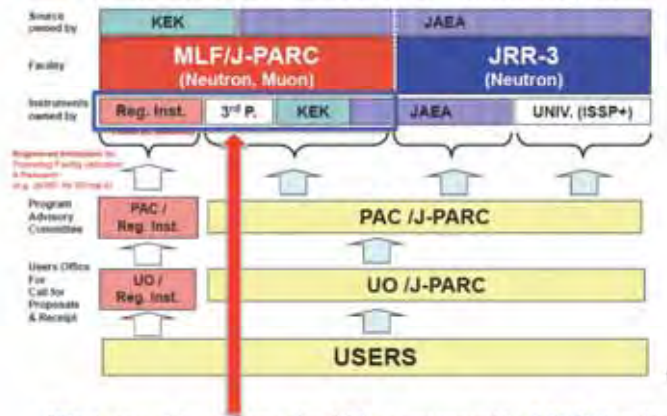
- 1) Committee for AONSA Neutron School (Sibayama(Tokyo))
- 2) Committee for AONSA Conference (Kanaya(Kyoto))
- 3) Committee for Neutron Lecture and School (Kakurai(JAEA))
Setup for restart of neutron school organized by JSNS
- 4) Committee for Reformation of JSNS (Ohtomo(KEK))
Reconsider relation between convocation and executive board
- 5) Committee for Big Science Facilities (Kanaya(Kyoto))
What type of instrument should be constructed under the complicated organization scheme in J-PARC ?

Reformation of organization (Ohtomo Committee)



USERS PROGRAMS (2011 ?-)

Law for Promotion of Public Utilization of the Specific Advanced Large Research Facilities
(currently applied to SPring-8 in operation, to XFEL, under construction, and to J-PARC in 2009)

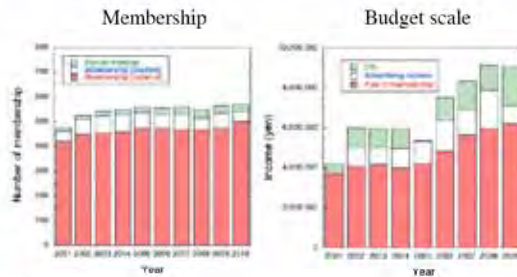


What type of instrument should be constructed in J-PARC under such complicated organization scheme ?

An issue, which can be common among other associations

How to increase number of member ?

Saturation seems to occur even after the operation of J-PARC, why?



Annual membership
8000 yen (general member)
3000 yen (student)
10000*5N(supporting member)

A possible reason

What is the advantage to be a member ?

(We can use neutron beam without the membership of JSNS)

Particularly among young people !

“Phase separation” between academic and industrial users (?)

Ibaraki Prefectural Research Society for Industrial Application of Neutron Science

Objective:
Promotion of industrial use of J-PARC/MLF

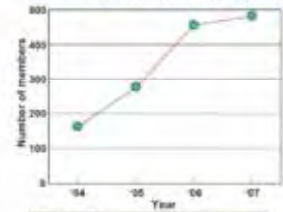
Member:
412 persons(111 Companies and 37 Institutes)

Committee for Bio-molecular Structure Analysis
Professor Emeritus of TIT, Dr. Y. Ohashi

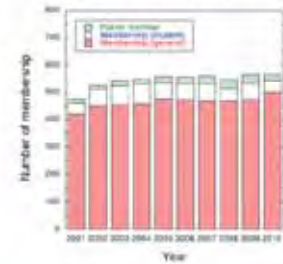
Committee for Material Structure Analysis
Dr. Y. Morii

Committee for Industrial Application of Neutron
Prof. K. Oshima (Tsukuba Univ.)

Transitive of Number of Members



About half of members belong companies.



There is no correlation between the two.

Case 1. Most members of Society for Industrial Application already belong to JSNS

Case 2. Most members of Society for Industrial Application are not member of JSNS

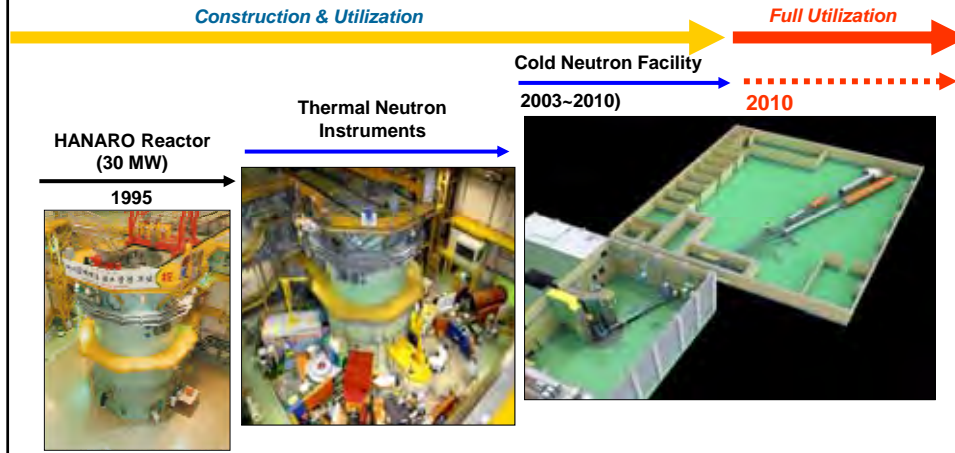
The Korean Neutron Beam Users Association



Ki Bong Lee
Department of Physics
POSTECH

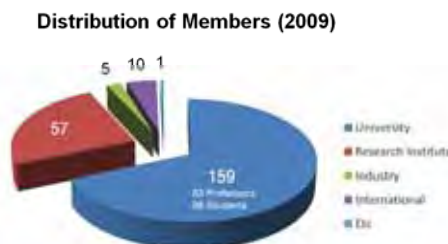
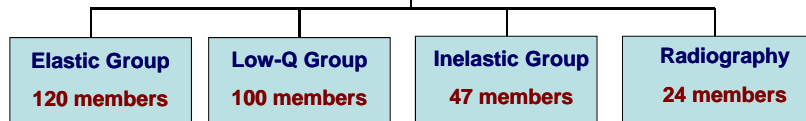
Neutron Facility and User Group in Korea

- 1998 **Informal User Program**
- 1999 **Formal User Program (MOST)**/small grants for HANARO users
- 2000 **HANARO Users Association**
(Neutron Special Interest Group)
- 2003 **Korean Neutron Beam Users Association**



Korean Neutron Beam Users Association (KNBUA)

President : Ki Bong Lee
(POSTECH)
Secretary : Sung-Min Choi
(KAIST)

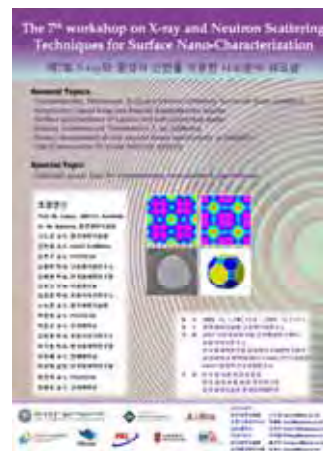


KNBUA Meetings

- **KNBUA Annual General Assembly**
(14 May, KBL elected as a new president)
- * The HANARO Symposium scheduled in November
 - Neutron Beam Applications
 - Materials Irradiation Test
 - Radioisotopes
 - Activation Analysis
 - Research Reactor
- **KNBUA Steering Committee Meetings (3-4 times/yr)**
- **Workshops and Schools sponsored by KNBUA**

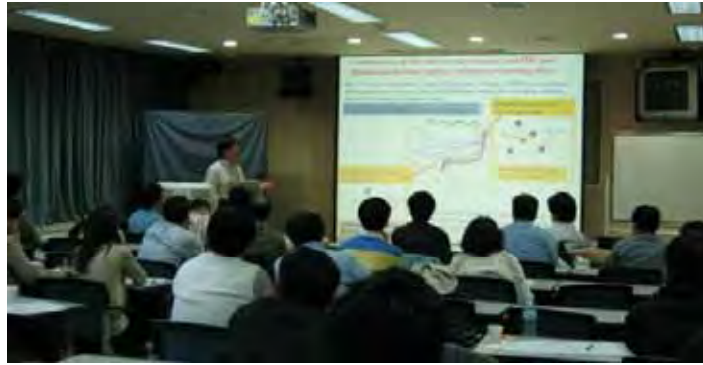
The 7th Workshop on X-ray and Neutron scattering techniques for Surface Nano-characterization

- December 1-2, 2009, GIST, Gwangju



**Tutorial on Neutron Diffraction and SANS Techniques
for Materials Science**

October 20 -21, 2009, KAERI, Daejeon



**The 5th International Symposium on the Characterization of Metals and
Nanostructured Materials by Neutron and X-ray Scattering**

October 22, 2009, EXCO, Daegu



**The 1st Special Summer Lectures on Neutron Physics,
Optics, and Precision Measurements.**

August 24-26, 2009, KAERI, Daejeon



The 10th Korea-Japan Meeting on Neutron Science

January 14-15 2010, Tohoku U., Sendai



KNBUA Supports Students to Attend International Neutron Schools & Conferences.

- The 2nd AONSA Neutron School, 2009, Sydney, Australia
: 5 Students and 2 Lecturers (S.M. Choi and K. Shin)
- The Neutron Scattering Laboratory Course, 2009, Germany
: 1 Student
- The 10th Korea-Japan Meeting on Neutron Science, 2010, Japan
: 5 Students



Activities of TWNSS by Chih-Hao Lee

- ▶ Members : 123 people
 - W.H.Li (president): Chih-Hao Lee (secretariate)
- ▶ Neutron experiments: 27 person-times
- ▶ Neutron workshops(school)
 - Nov., 2009: 119 people attended
 - June, 2010: 120 people registered
- Taiwan - Japanese neutron scattering on soft matter, March, 2010: 80 people
- ▶ International conference of neutron and X-rays scattering in 2011.

Workshop on Neutron Scattering Science 2009

Time :
20/11/2009~22/11/2009

Place :
Nantou HanShe Forest
Education Centre , Taiwan
<http://ntu.nantou.com.tw/>

Attendant	Number
Invited speakers	7
Researchers	26
Postdoctoral Fellow	8
Students and Research Assistants	78
Total	119

(Number of Registers : 152)

2009中子散射研習課程
Workshop on Neutron Scattering Science 2009

課程時間: 2009.11.20(五)~2009.11.22(日)

主辦地點: 南澗和社森林教育中心
<http://www.ntu.ntu.edu.tw/ntuand5555/>

課程主題:
中子散射及反射原理
NIST中子散射儀器介紹
高解析度中子散射與數據分析
高信噪比中子散射數據分析
中子散射數據分析
ASLTO實驗儀器介紹

邀請專家:
曹文輝 教授 (中山大學)
周 輝 教授 (中山大學)
楊仲基 教授 (中山大學)
高勝光 教授 (東華大學)
李志浩 教授 (清華大學)
林昭中 教授 (台灣大學)
張乃祥 教授 (清華大學)

主辦單位: 國立中山大學 中子散射研究中心
協辦單位: 臺灣中子科學學會
指導單位: 教育部 行政院國家科學委員會 行政院國家科學委員會

Workshop on Neutron Scattering Science 2009



2010 Taiwan Neutron Scattering Science Conference

Time : 27/06/2010~29/06/2010

Place : Taichung Hui - Sun Forest Station , Taiwan

<http://ntu.nantou.com.tw/>

Attendant	Number
Invited speakers	7
Researchers	17
Postdoctoral Fellow	4
Students and Research Assistants	92
Total	120

(Number of Registers : 120)

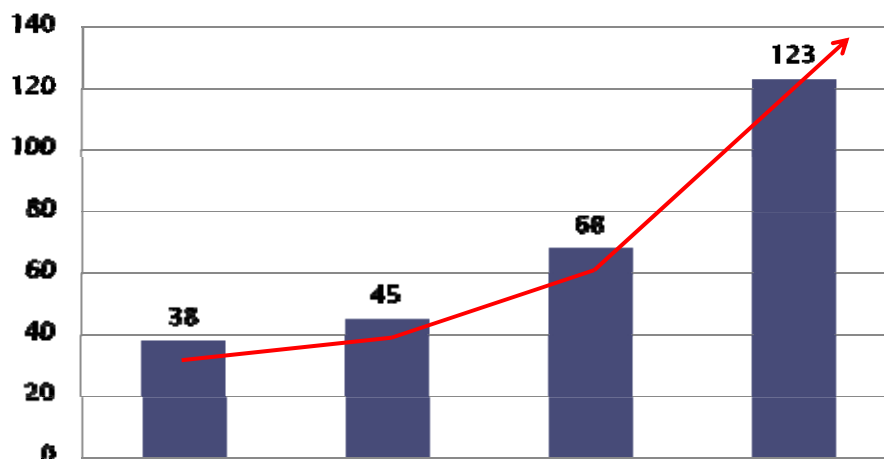
2010台灣中子科學學會年會
暨
2010台灣中子散射科學研討會
2010 Taiwan Neutron Scattering Science Conference

地點：嘉義林場
時間：2010/06/27(週一)~29(週三)
學期(會費)：研資人員(含博士後) 1000元、學生500元
報名方式：請於6/27前至<http://www.neutron.ncu.edu.tw/seminar/sign.html> 線上報名
洽詢電話：(03)4227151#65381 趙小姐
研討會場：

- 1.會員大會
- 2.研討專會議
- 3.邀請演講：Problems solved using neutrons
- 4.壁報展示：Proposed experiments
- 5.學術討論
- 6.中子散射講習課程：散射機與、ANSTO儀器介紹、
磁場中實驗應用、小角度散射實驗應用
- 7.中子散射衍射軟體操作：Diffraction and SANS
8. ANSTO beam line申請心得交流

主辦單位：國立中央大學中子科學研究中心
協辦單位：台灣中子科學學會
承辦單位：嘉義縣
行政院國科會

The member of TWNSS



Neutron Activities since May, 2009

27 (person -times) PI and students went abroad for neutron experiments “officially”.

(22 ANSTO, 3 JPARC, 1 ILL, 1 NIST)

Eight young scientists attended the AONSA summer school last year.

One visiting scientist, Dr. Lieh-Jeng Chang (National Tsing Hua University), visiting JPARC for one year. He-3 polarizer.

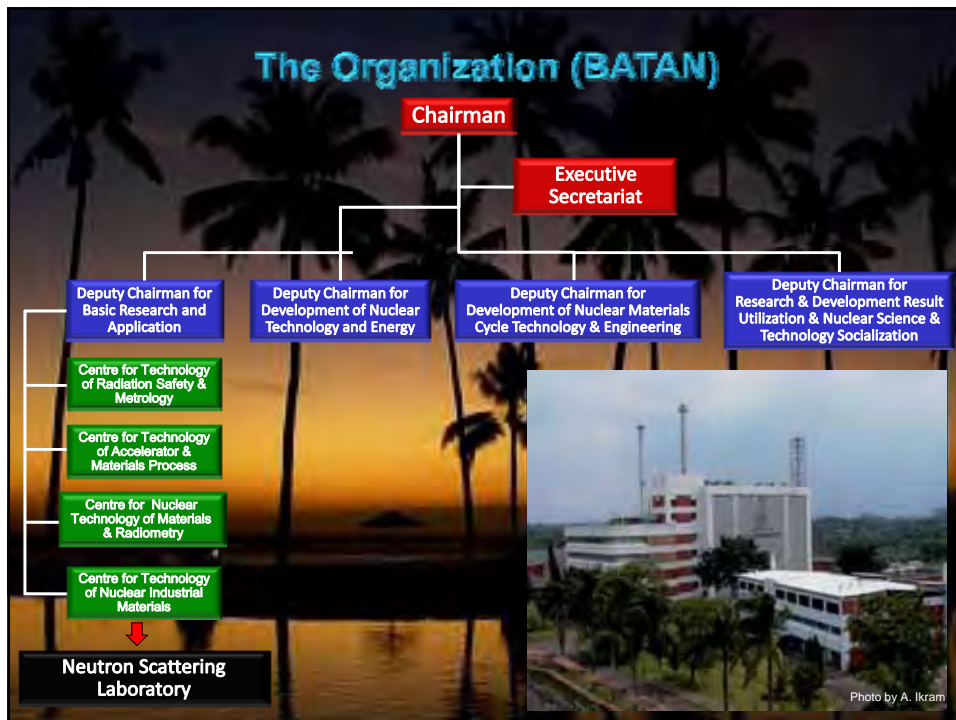
Neutron Activities in Taiwan

- ▶ He-3 polarizer was commissioned at W-3 port of Tsing Hua Open Pool Reactor (2 MW)
- ▶ First Patient to be treated in July 2010 at BNCT station at THOR reactor.
- ▶ 4th Taiwan-Japanese neutron scattering on soft matter, March, 2010: 3-days at Yi-Lan, 80 people.
- ▶ ICNX 2011 meeting to be held at National Tsing Hua University. (June27-July 2)
Chaired by Prof. Shih-Lin Chang
- ▶ The SIKA beamline to be commissioning in Oct. 2010.

Neutron Scattering Community in Indonesia

Edy Giri Rachman Putra
Neutron Scattering Laboratory
National Nuclear Energy Agency of Indonesia (BATAN)

Sunset in Bali



BATAN's Neutron Scattering Facilities

Triple Axis Spectrometer
(dimensionless)

Diffractometers:
HRPD, FCD/TD,
RSM
(atomic scale ~ Å)

36 m SANS
(nano scale ~ nm)

HRSANS/DCD
(micro scale ~ μm)

Neutron Radiography
(macro scale ~ mm)

Staff member

- 7 instrument scientists
- 5 scientists
- 10 technicians

Under repair

- Triple Axis Spectromete
- High Resolution SANS

BATAN's Neutron Scattering Facilities

Vol. 17. No. 4, 2006

Vol. 18. No. 1, 2007

Facilities
Current status
Activities

TAS & HRSANS (DCD)
were still out of orde

Local Users

HRPD

Dept. of Physics, University of Indonesia (UI), Jakarta
Dept. of Engineering Materials, University of Indonesia (UI), Jakarta
Dept. of Physics, 10 November Institute of Technology (ITS), East Java
Dept. of Chemistry, Bandung Institute of Technology (ITB), West Java
Indonesian Sciences of Institute, Centre for Physics, Serpong, West Java

Residual Stress Measurement Diffractometer

Dept. of Mechanical Eng., University of Diponegoro, Central Java
Dept. of Mechanical Eng., University Sebelas Maret, Central Java

SANS

Dept. of Physics, 10 November Institute of Technology (ITS), East Java
Indonesian Sciences of Institute, Center for Biotechnology, Bogor, West Java
Dept. of Physics, University Lambung Mangkurat, South Kalimantan
Dept. of Chemistry, Gadjah Mada University (UGM), Central Java

FCD/TD

Dept. of Engineering Materials, UI, Jakarta

Regional & International Users

HRPD

Dept. Materials Sci. & Eng., Nanyang Technology of University, Singapore
Dept. Materials Res. & Education Centre, Auburn University, USA

Residual Stress Measurement Diffractometer

Dept. of Mechanical Engineering, Tokushima University, Japan
Dept. of Mechanical Engineering, Kobe City College of Technology, Japan

SANS

Nuclear Malaysia
Dept. of Chemistry, Univ. South Gujarat, India
Centre for Biomolecular Engineering, University of Queensland, Australia(*)

Publications

research papers

Journal of
Applied
Crystallography

ISSN 0021-8898

Received 1 October 2009
Accepted 3 March 2010

Cation distribution in spinel $(\text{Mn,Co,Cr})_3\text{O}_4$ at room temperature

A. Purwanto,^{a*} A. Fajar,^a H. Mugirahardjo,^a J. W. Fergus^b and K. Wang^b

^aCenter for Technology of Nuclear Industrial Materials, National Nuclear Energy Agency (BATAN), Gedung 40, Kawasan Puspipstek, Serpong Tangerang 15314, Indonesia, and ^bMaterials Research and Education Center, Auburn University, AL 36849, USA. Correspondence e-mail: purwanto.agus@gmail.com

As part of a study of the long-term operation of solid-oxide fuel cells, three $(\text{Mn,Co,Cr})_3\text{O}_4$ samples have been synthesized and characterized. X-ray and neutron diffraction patterns from the powder samples at room temperature were measured and the data were co-refined. The neutron data were indispensable in locating Mn, Co and Cr within the crystallographic unit cell with their respective atomic occupancies. Two of these samples have been identified as cubic $\text{Mn}_{0.76}\text{Co}_{0.58}\text{Cr}_{1.66}\text{O}_4$ and $\text{Mn}_{1.28}\text{Co}_{1.72}\text{O}_4$. The third is a two-phase sample containing cubic $\text{Mn}_{1.66}\text{Co}_{1.34}\text{O}_4$ and tetragonal $\text{Mn}_{2.05}\text{Co}_{0.91}\text{O}_4$ in a 59.1 (6):40.9 (6)% mass fraction ratio. Cr, which might be introduced from reaction with chromia during oxidation of interconnect materials, exhibits a preference for the octahedral site rather than the tetrahedral site. Without Cr, Mn dominates the octahedral site.

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Publications

Materials Science Forum Vols. 490-491 (2005) pp 239-244
Online available since 2005/Jul/15 at www.scientific.net
© (2005) Trans Tech Publications, Switzerland
doi:10.4028/www.scientific.net/MSF.490-491.239

Internal stress measurement of fiber reinforced composite by Neutron diffraction with in-situ low temperature stress measurement system

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2-1 Minamiousaniima-cho. Tokushima 770-8650, Japan.

Publications



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

Journal of Physics and Chemistry of Solids 68 (2007) 2349–2352

JOURNAL OF
PHYSICS AND CHEMISTRY
OF SOLIDS

www.elsevier.com/locate/jpcs

Microstructural studies of nanocrystalline α -alumina powder produced from Al_{13} -cluster

Megat Harun Al Rashid Megat Ahmad^{a,*}, Abdul Aziz Mohamed^a, Azmi Ibrahim^b,
Che Seman Mahmood^a, Edy Giri Rachman Putra^c, Rafhayudi Jamro^a,
Razali Kasim^a, Muhammad Rawi Muhammad Zin^a

^aMaterials Technology Group, Industrial Technology Division, Agensi Nuklear Malaysia, 43000 Kajang, Selangor, Malaysia

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Publications

Nuclear Instruments and Methods in Physics Research A 600 (2008) 288–290



Contents lists available at ScienceDirect

Nuclear Instruments and Methods in
Physics Research A

journal homepage: www.elsevier.com/locate/nima



A 36 m SANS BATAN spectrometer (SMARTer): Probing *n*-dodecyl- β -*d*-maltoside micelles structures by a contrast variation

Edy Giri Rachman Putra^{*}, Abarrul Ikram

Neutron Scattering Laboratory, National Nuclear Energy Agency of Indonesia (BATAN), Gedung 40 Kawasan Puspispek Serpong, Tangerang 15314, Indonesia

ARTICLE INFO

Available online 27 November 2008

Keywords:

SANS
Micellar solutions
Micelle structures

ABSTRACT

The performance of a 36 m small-angle neutron scattering (SANS) BATAN spectrometer (SMARTer) in Serpong, Indonesia, was explored in investigating a micelle structure by a contrast variation technique, changing the H_2O/D_2O ratio as aqueous solution. Micellar solution of *n*-dodecyl- β -*d*-maltoside was chosen for its sensitivity in various concentrations of 0% D_2O , 50% D_2O and 100% D_2O to reveal the detail structures of the micelle. At first, a spherical lognormal model calculation was employed and fitted on the experimental data to obtain the size range of the micelle. The refinement of the micelle structure was then completed using an oblate-core shell ellipsoid model calculation. The results show that the micelle is composed of 4–9 Å thick disaccharides group as a shell or corona layer, while over all the oblate ellipsoid micelle structure has major-axis and minor-axis of 34 and 18 Å, respectively.

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Publications

Nuclear Instruments and Methods in Physics Research A 800 (2008) 291–293



Contents lists available at ScienceDirect

Nuclear Instruments and Methods in Physics Research A

Journal homepage: www.elsevier.com/locate/nima



Micelle structural studies on oil solubilization by a small-angle neutron scattering

Edy Giri Rachman Putra^{a,b,*}, Baek Seok Seong^a, Abarrul Ikram^b

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^b Neutron Scattering Laboratory, National Nuclear Energy Agency of Indonesia (BATAN), Gedung 40 Kawasan Puspisrek Serpong, Tangerang 15314, Indonesia

ARTICLE INFO

Available online 27 November 2008

Keywords:
SANS
Solubilization
Micelles
Micellar structures
Correlation peaks

ABSTRACT

A small-angle neutron scattering (SANS) technique was applied to reveal the micelle structural changes. The micelle structural changes of 0.3 M sodium dodecyl sulfate (SDS) concentration by addition of various oil, i.e. *n*-hexane, *n*-octane, and *n*-decane up to 60% (v/v) have been investigated. It was found that the size, aggregation number and the structures of the micelles changed exhibiting that the effective charge on the micelle decreases with an addition of oil. There was a small increase in minor axis of micelle while the correlation peak shifted to a lower momentum transfer *Q* and then to higher *Q* by a further oil addition.

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Neutron Scattering Community in Indonesia

Indonesian Physical Society
Indonesian Chemical Society
Indonesian Polymers Association
Indonesian Nano-Technology Profession Society

Society

Association of Indonesian Nuclear Society
(NGO)

User group

Neutron Scattering

Regular users ~ 5

Users ~ 20

Conference & Workshop

1. Seminar Nasional Hamburan Neutron dan Sinar-X ke-1 (1998)
2. Seminar Nasional Hamburan Neutron dan Sinar-X ke-2 (1999)
3. Seminar Nasional Hamburan Neutron dan Sinar-X ke-3 (2000)
4. Seminar Nasional Hamburan Neutron dan Sinar-X ke-4 (2001)
5. Seminar Nasional Hamburan Neutron dan Sinar-X ke-5 (2003)
6. **The 6th National Seminar on Neutron and X-Ray Scattering (2005); ICTP, IUCr, IAI**
7. **The International Conference on Neutron and X-Ray Scattering (2007); ICTP, IUCr, IAEA**
8. Seminar Nasional Hamburan Neutron dan Sinar-X ke-7 (2009)

- a. The ICNX (biannually)
- b. The AONSA Neutron School (annual)
- c. Asia-Oceania Conference on Neutron Scattering (every 4 years)



The 6th National Seminar on Neutron and X-Ray Scattering

2 days Workshop

SANS
Residual Stress

1 day Symposia/Seminar

Soft matter & polymers
Alloys



The International Conference on Neutron and X-Ray Scattering

5 days Workshop

Small-Angle Scattering
Residual Stress
Diffraction – HRPD
Neutron Radiography
Protein Crystallography

2 days Symposia/Seminar

Instruments & Facilities
Solid State Physics & Chemistry
Alloys
Biology, Protein
Polymers



The International Conference on Neutron and X-Ray Scattering



Aims:

1. To promote neutron, together with X-ray scattering applications for local and regional scientists
2. To provide collaboration opportunities at national as well as regional level
3. To increase the quality of research
4. To build **neutron user groups**
5. To establish neutron scattering facility "in Serpong"

The International Conference on Neutron and X-Ray Scattering



The International Conference on Neutron and X-ray Scattering (ICNX)

(A story behind the inspiration)

The International Conference on Neutron and X-ray Scattering (ICNX) which is planned in Taiwan in 2011, known as ICNX2011 has been formally announced. This conference runs biannually and was held previously in Kuala Lumpur, Malaysia in 2009 and in Serpong and Bandung, Indonesia in 2007.

The first ICNX in Indonesia was initiated with a long-historical story of the local seminar, "Seminar Nasional Hamburan Neutron dan Sinar-X" (National Seminar on Neutron and X-Ray Scattering) organized by neutron scattering laboratory (NSL) in the National Nuclear Energy Agency of Indonesia (BATAN). This seminar has been organized yearly started in 1998 and then biannually since 2001

class neutron scattering scientist for instrument development and also research activities will be inspiring and tempting the young and enthusiastic neutron scattering scientist to accelerate the neutron scattering activities in Indonesia. Then, it could be understood that in 2005, the local seminar entitled the 6th National Seminar on Neutron and X-Ray Scattering dramatically changed. This one-day seminar which focused on neutron and X-ray scattering in macromolecules has attracted the participants including the speakers from around the world. A two-day workshop for practical training has been held prior to this seminar. [IUCr Newsletter 13(3) 2005 & Neutron News 17(1) 2006].

Neutron School

ICNX, AONSA

- a. Workshop on Neutron and X-Ray Scattering in Materials Science and Biology, the International Conference on Neutron and X-Ray Scattering 2007 (**ICNX2007**), BATAN, July 23 – 28, 2007, Puspiptek Serpong, Indonesia (~ **60 local students/scientists and 9 international participants**)
- b. The 1st AONSA Neutron School, KAIST, August 18 – 23, 2008, Daejeon, Republic of Korea (**Sistin Asri Ani, Dwi Hudyanti**).
- c. The 2nd AONSA Neutron School, ANSTO, August 16 – 21, 2009, Sydney, Australia (**Arum Patriati, Arief B. Witarto**).
- d. The International Conference on Neutron and X-Ray Scattering 2009 (**ICNX2009**), Malaysian Nuclear Society, June 28 – July 1, 2009, Kuala Lumpur, Malaysia.
- e. The 3rd AONSA Neutron School, ANSTO, October, 2010, Mumbai, India (**Student1, Student2**).
- f. The International Conference on Neutron and X-Ray Scattering 2011 (**ICNX2011**), 2011, Taiwan.
- g. The 4th AONSA Neutron School, 2011, Japan (**Student1, Student2**)
- h. AOCNS, 2011, Japan (**Student1, Student2, Student3**)





NEUTRON
 <SCIENCE, ENGINEERING & TECHNOLOGY>
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**NEUTRON SCATTERING & IMAGING
 ACTIVITIES IN MALAYSIA**

NEUTRON SET EXCELLENCE



**ABDUL AZIZ MOHAMED¹, MEGAT HARUN AL RASHID MEGAT
 AHMAD¹, AZRAF AZMAN² AND FARIDAH MD IDRIS³**


*¹Materials Technology Group, Industrial Technology Division
²Integrity and Plant Assessment Group, Technical Services Division
³Reactor Interest Group, Technical Services Division
 Malaysian Nuclear Agency, 43000 Kajang, Selangor, Malaysia*



*Presented at
 AONSA EC meeting Nat Univ Singapore,
 SINGAPURA
 22 Mei 2010*

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Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society


Komplek NuklearMalaysia

Blok Reaktor




2010

Reaktor TRIGA MARK II PUSPATI (RTP)



1990



ENERGY PLANNING FOR A TIME BEYOND...




1990

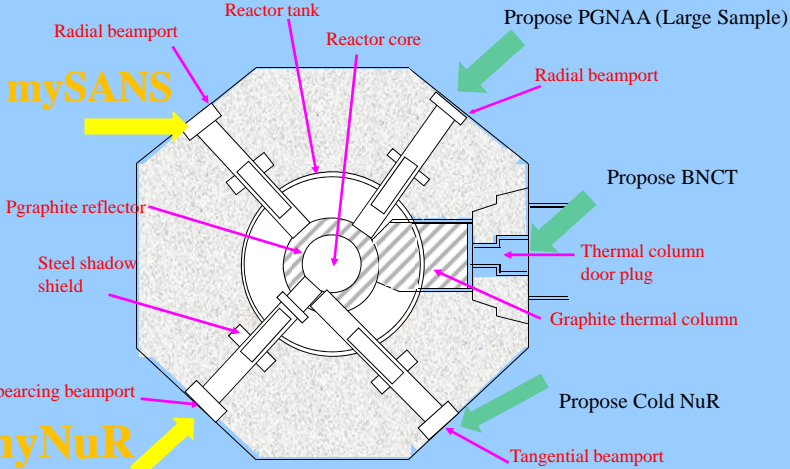
Before 2002

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Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society



mySANS

myNuR

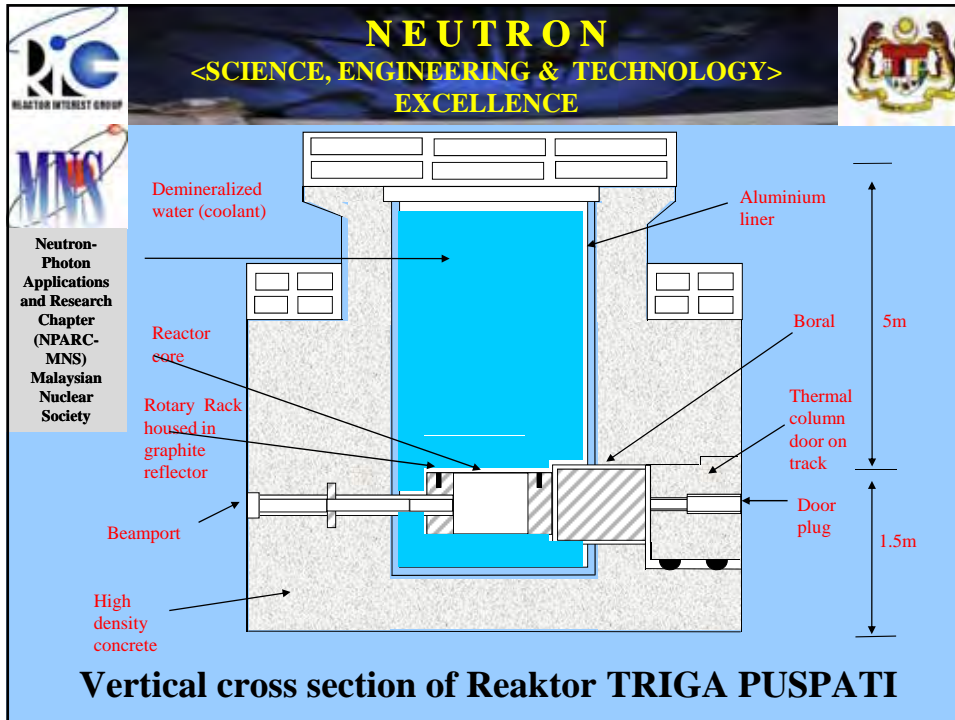
Existing and Propose Neutron Instruments at Reaktor TRIGA PUSPATI (1MW)

Propose PGNAA (Large Sample)

Propose BNCT

Propose Cold NuR

Reactor tank
Reactor core
Radial beamport
Radial peacing beamport
Tangential beamport
Pgraphite reflector
Steel shadow shield
Graphite thermal column
Thermal column door plug






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RESEARCH THEMES UNDER RIG ASSISTED BY NBA INIATIVE (SINCED 2002)

- NEUTRON FUNDAMENTAL STUDIES (NFS)*
- NEUTRON SCATTERING (NAS)*
- NEUTRON RADIOGRAPHY (NUR)*
- NEUTRON (BORON)-CAPTURED THERAPY (NCT)*

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

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Neutron Beam Areas of Interest

Scientific & Engineering Scopes

Neutron scatterer materials (nano-structured)

Neutron conditioning




Neutron shielding

Neutron modelling

Neutron detection instrumentation

Neutron scattering analysis

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

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<SCIENCE, ENGINEERING & TECHNOLOGY>
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UNDER THIS FRAMEWORK
4 LONG TERM OBJECTIVES

TO DEVELOP PROTOCOL FOR OPTIMISATION OF NEUTRON BEAM FOR INDUSTRIAL USAGE


TO DEVELOP NEUTRON BASED NANOLEVEL MICROSCOPIC ANALYTICAL INSTRUMENTATIONS

TO DEVELOP MULTIPURPOSE NEUTRON IMAGING SYSTEMS

TO DEVELOP NEUTRON THERAPY PROTOCOL/SYSTEM


(BOTH EXPERIMENTAL AND SIMULATION/MODELING TO BE EXPLORED)


Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society



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Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

PROJECTS WITH UNIVERSITY OF SCIENCE

Advanced Imaging Technique for Materials Using High Flux Neutron Computed Tomography (2005-2008)


Beam Parameters and Dosimetric Characteristics for Neutrons From the MINT TRIGA Reactor Thermal Column (2002-2005)


BNCT Design and Calculation Using MCNP and McSTAS (2009-present)



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Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

PROJECTS WITH UNIVERSITY TECHNOLOGY


Characterisation of Neutron Beam Quality and Port Optimizations (2004-2007)

Determination of Neutron Beam Quality and Evaluation of Image Quality (Neutron Radiography Technique) (2005-2007)

Development of Imaging System for Thermal Neutron Radiography (2006-2008)


Dosimetry Determination on Tangential Beam Port for Development of a New Thermal Neutron Radiography Facility (2006-2008)


Reevaluation of mySANS Using McSTAS (2008-present)



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<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society


PROJECTS WITH UNIVERSITY NATIONAL MALAYSIA

Characterisation of Neutron Beam Quality and Port Optimizations (2005-2007)

Determination of Neutron Beam Quality and Evaluation of Image Quality (Neutron Radiography Technique) (2005-2007)


Reevaluation of mySANS Shielding Performance Using MCNP (2009-present)


Boronated Polymeric Materials Study Using SANS and SAXS (2008-present)



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<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE






Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

PROJECTS WITH UNIVERSITY MALAYA


Upgrading of mySANS Data Acquisition Using IGOR PRO (2009-present)


SANS and SAXS Study on Multilayer Materials for Electronic Applications (2009-present)



NEUTRON

<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society


IAEA's CRP project - Micro-focus SANS:

Scopes

Sample preparation and SANS preliminary measurement (using BATAN's Smarter) complemented with other radiation analytical techniques (TEM, XRD). Samples include ceramic powder and solid, surfactant, composite, wood.


Instrument set-up and experimental work: beam alignment, Q and intensity calibration, program on data acquisition, improvement of signal shape and PSD conditioning.


Analysis of data involving models to obtain materials properties using available computational tools such as Igor, Fortran, Materials Studio



NEUTRON

<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE






Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

Why focussing

Low neutron flux from small research reactor
Neutron flux can be increased by focusing it
The size of the focus beam should allow analysis that represent bulk sample size
If the structures of interest is of micron size; the beam size should be mili-size
Development of materials for reflectometer (Ni/Ti)
New detector system; μ -strip based

‘New’ Technique
Neutron microscopy
(give not just surface but subsurface information)





REACTOR INTEREST GROUP

NEUTRON

<SCIENCE, ENGINEERING & TECHNOLOGY>

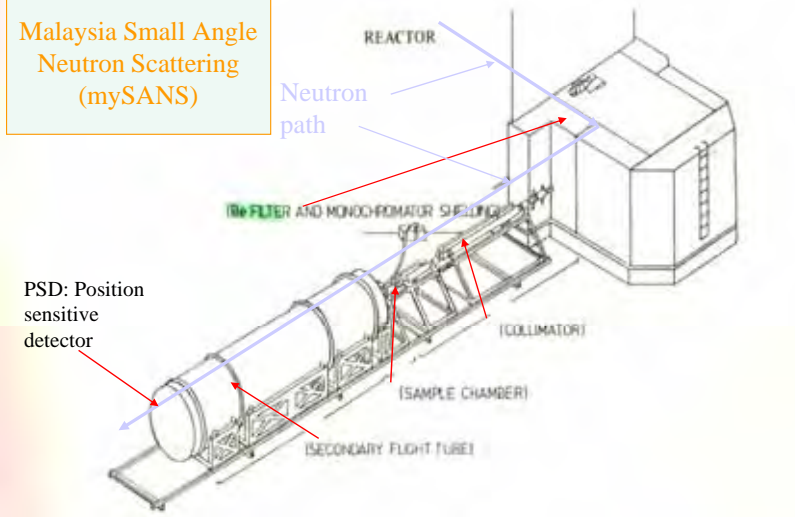
EXCELLENCE





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

Malaysia Small Angle Neutron Scattering (mySANS)



Neutron path

REACTOR


COLLIMATOR

(SAMPLE CHAMBER)

(SECONDARY FLIGHT TUBE)

PSD: Position sensitive detector

Filter and monochromator





REACTOR INTEREST GROUP

NEUTRON

<SCIENCE, ENGINEERING & TECHNOLOGY>


EXCELLENCE






Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

Malaysia Small Angle Neutron Scattering (mySANS)



Neutron path

2D-PSD (Position sensitive detector)



REACTOR INTEREST GROUP

NEUTRON

<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE







Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

mySANS since 1995

- Neutron and gamma biological shielding system-monochromator and Be filter







REACTOR INTEREST GROUP

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<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE



Be/Cd block in SANS engineering design





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society



Cd

Be







REACTOR INTEREST GROUP

NEUTRON

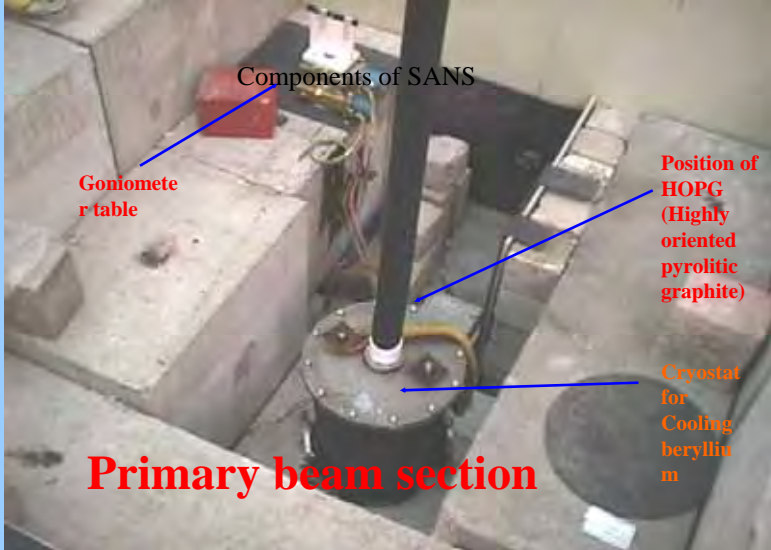
<SCIENCE, ENGINEERING & TECHNOLOGY>

EXCELLENCE





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society



Primary beam section

Components of SANS

Goniometer table

Position of HOPG (Highly oriented pyrolytic graphite)

Cryostat for Cooling beryllium



REACTOR INTEREST GROUP

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<SCIENCE, ENGINEERING & TECHNOLOGY>

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Cryostat & Monochromator



REACTOR INTEREST GROUP



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<SCIENCE, ENGINEERING & TECHNOLOGY>


EXCELLENCE








Detector -Counting system



REACTOR INTEREST GROUP




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NEUTRON


<SCIENCE, ENGINEERING & TECHNOLOGY>

EXCELLENCE




2D-Position Sensitive Detector (He gas) output display
(DOS-Quickbasic 4.5 program)






REACTOR INTEREST GROUP

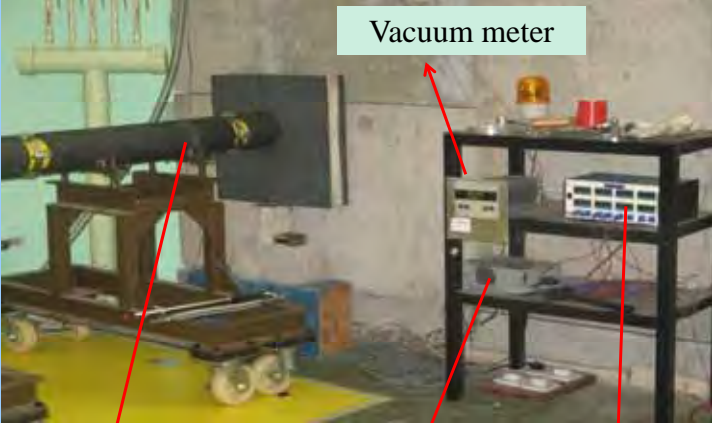


Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

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Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society


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EXCELLENCE



Flight tube (front view) – after Oct 2009







REACTOR INTEREST GROUP

NEUTRON


<SCIENCE, ENGINEERING & TECHNOLOGY>

EXCELLENCE

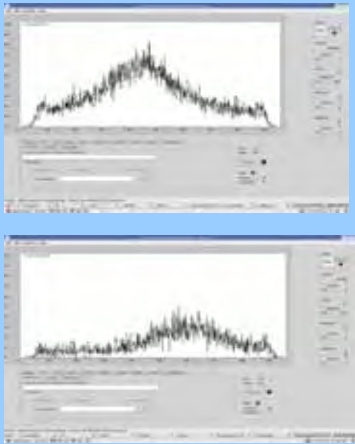





Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society



1-PSD set-up



Results 1D-psd with mystec DAQ system Linux Enterprise





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Ethernet comm.

1-PSD data acquisition
Linux OS





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Crystal Strip Bender –
Provided By Prof
Mikula of Inst of
Nuclear Czech (2009)






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EXCELLENCE



Neutron radiography irradiation room (since 1987)



RIC
REACTOR INTEREST GROUP

NEUTRON
<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE

MNS

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

NR sample position on irradiation trolley




RIC
REACTOR INTEREST GROUP

NEUTRON
<SCIENCE, ENGINEERING & TECHNOLOGY>
EXCELLENCE

MNS

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

NR 'camera'






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Neutron attenuation study 'chamber'





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EXCELLENCE



NBA-Resource Persons

NuclearMalaysia

Dr. Abdul Aziz Bin Mohamed

Dr. Azali Bin Muhammad

Dr. Yusof Abdullah

Mohammad Rawi Bin Mohamed Zin

Rafhayudi Bin Jamro

Megat Harun Al-Rashid

Azraf Azman

Mohd Rizal Mamat

Anwar Abdul Rahman

Julia Abdul Karim

Khairiah Yazid

Norlida Mohamad

Local Universities

Dr Noordin Ibrahim

Dr Husin Wagiran

Dr Wan Sharidan Ramli

Dr Mohd Zaid


Dr Junita Mohamad

Dr Redzwan


Dr Aziz Tajuddin

Dr Nor Azlan

Dr Badrul



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EXCELLENCE



2010 WORK - ON-GOING : UPGRADING CRYOSTAT HIGH-PERFORMANCE INSULATOR SHEETS WRAPPED AROUND LN TANK / 4 TEMPERATURE MONITORING POINTS





2010 WORK - PLANS

1. BENDER COMPUTER CONTROLLED MODULE DESIGN AND FABRICATED
2. NEUTRON EXPERIMENT USING BATAN SMARTER (SANS) AND ND - TENTATIVE END MAY ; BEAM TIME PROPOSAL HAS BEEN SUBMITTED TO DR EDI GIRI
3. SAXS INSTRUMENT PROCUREMENT AND FINANCIAL REQUEST



REACTOR INTEREST GROUP



Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

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a



RESEARCHERS AT WORK

SUPPORT US

HAVE A NICE JOURNEY










NEUTRON
 <SCIENCE, ENGINEERING & TECHNOLOGY>
 EXCELLENCE

HAVE A FUN MOMENT
 &
 NICE JOURNEY

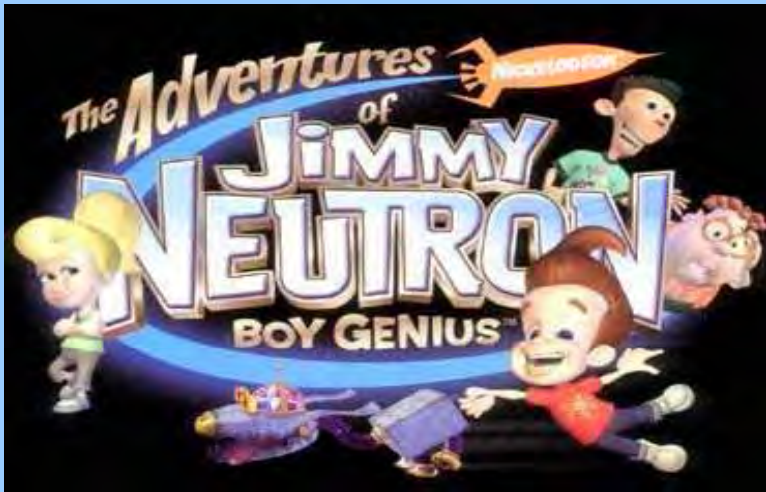
KUDOS TO ALL US

THANK YOU

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

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 EXCELLENCE



The Adventures of
 of
JIMMY NEUTRON
 BOY GENIUS™

Neutron-Photon Applications and Research Chapter (NPARC-MNS) Malaysian Nuclear Society

An Update of Neutron Activities in China Since Feb 2009

Chun Loong ckloong@gmail.com

Reported as an observer from China

Neutron Sources

CARR-Neutron Scattering Laboratory of China Institute of Atomic Energy (CIAE)

CPHS-Dept. Engineering Physics of Tsinghua University (THU)

CNS-Inst. High Energy Phys. (IHEP) & Inst. Phys (IoP) of Chinese Academy of Sciences (CAS)

Major Participants

CAS: Inst. Chem. (IoC), Inst. Modern Phys. (IMP), Graduate School

Chinese University of Hong Kong: Phys. Dept.

Jinan University, Guangzhou: Phys. Dept.

Peking University, Beijing: College of Chem. & Mol. Engineering, and Phys. Dept.

Shandong University, Jinan: State Key Lab. Crystal Materials

Sun Yat-Sen University, Guangzhou: School of Phys. & Engineering.

University of Hong Kong: Phys. Dept.

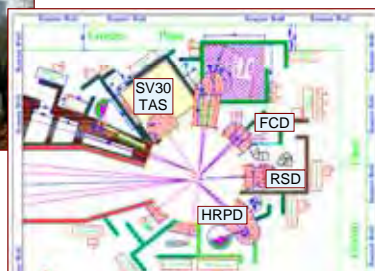
AONSA Executive Committee Meeting, Singapore, May 22, 2010

China Advanced Research Reactor (CARR) DF Chen & YT Liu



◆ **Reactor criticality achieved 2010-5-13, 16:58**

◆ SV30-TAS & FCD (Jeulich), RSD (Studsvik), & HRPD (in-house) being assembled



◆ Neutron guides installed

◆ Reflectometer & SANS (IoC) installed C Han

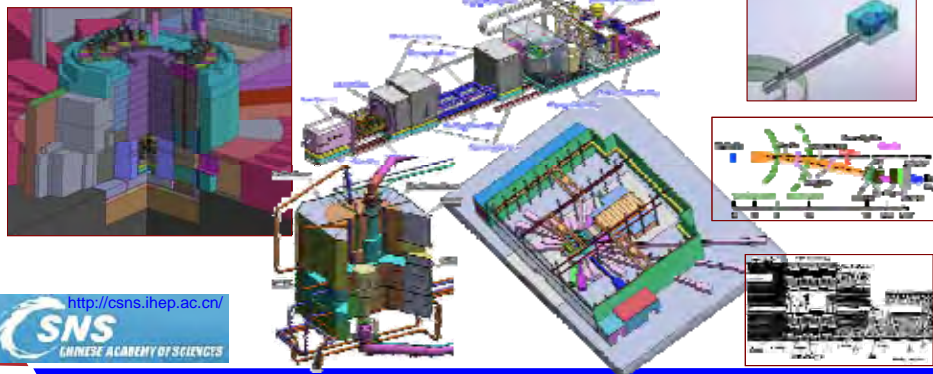


AONSA Executive Committee Meeting, Singapore, May 22, 2010

88

China Spallation Neutron Source (CSNS) HS Chen

- ◆ Review of accelerator system: Jan 21-23, 2010 by the International Accelerator Technology Advisory Committee (ATAC).
- ◆ Review of neutron target & instrumentation: May 6-8, 2010 by the International Neutron Technology Advisory Committee (NTAC).
- ◆ A series of meetings between the upper management of CAS, the CSNS project teams led by IHEP, and the Guangdong provincial & Dongguan municipal government agencies were held in late 2009 and early 2010 for the preparation of the commencement of the CSNS construction.
- ◆ **Ground-breaking construction is scheduled to start on Sept 1, 2010.**



<http://csns.ihep.ac.cn/>

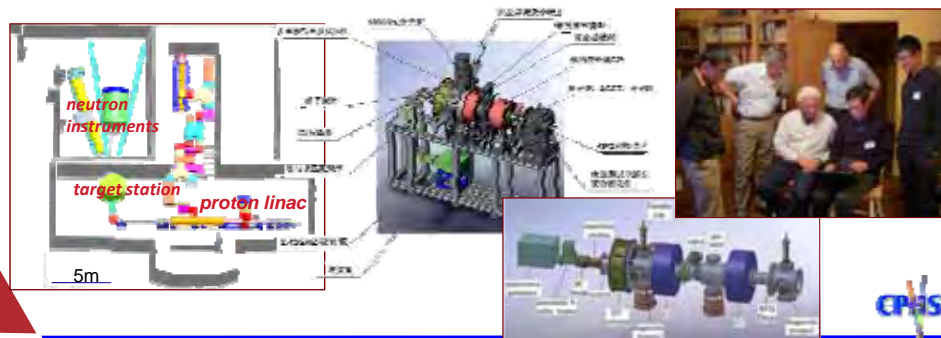


AONSA Executive Committee Meeting, Singapore, May 22, 2010

89

Compact Pulsed Hadron Source (CPHS) J Wei, XW Wang, XL Guan, CK Loong

- ◆ The neutron/proton source project approved by Tsinghua University, May 2009
- ◆ The First International Mini-Workshop, June 2009
- ◆ Reviews of accelerator system, Aug 2009 & Feb 2010
- ◆ Reviews of Target-Moderator (TRM) & instrumentation, Nov 2009 & May 2010
- ◆ Many mutual visits: LENS-Indiana U., Hokkaido U., PSI-Switzerland, LBL-USA, SLAC-USA, BNL-USA, Kyoto U., ORNL-USA, PEFP-KAERI, Korea, PSI, Tech. U. Munich, ...
- ◆ Outreach of domestic users: IMP, AE, IHEP, IoP, IoC, Peking U, Xi'an Jiaotong U, SYSU, HKU, CUHK, ...
- ◆ Additional building/structure peripheral to experimental hall approved, Mar 2010
- ◆ Accelerator components now under construction, TMR, SANS & Imaging beamlines engineering and prototyping just begun. **Expect to produce first protons in 2011.**



AONSA Executive Committee Meeting, Singapore, May 22, 2010

90

User Outreach Activities

- ◆ Annual User Meeting: Nov 18-20 2009, IoP, Beijing DS Wang, SY Zhang
- ◆ Guangdong-Hong Kong Joint Workshop: Dec 11, 2009, HKU MC Chu, J Leung, CK Loong, J. Pun
- ◆ School of Neutron Scattering & Reflectivity for Soft Matter Science, April 19-21, 2010, IoC, Beijing C Han, GC Yuan



Neutron Science and Technology: Research & Education at Modern User Facilities
 4th J004 James H. Lee Science Building, 9/35, Dec 11, 2009
 The University of Hong Kong, Hong Kong

Invited Talks:
 Prof. Massimo Chen (I-3), ORNL-CAB: The Compact Pulsed Neutron Source (CPNS) in Dongguan, Guangdong
 2. Prof. Bao Wang (I-6), IISU: An introduction of Tsinghua Institute of Nuclear Engineering and Technology, Tsinghua University
 3. Prof. Ai Wei (I-7), Tsinghua University: Compact Pulsed Hadron Source Project & Opportunities
 4. Prof. H Q Liu (I-8) (I), OMR: Outreach of neutron users from accelerator in Hong Kong
 5. Prof. Fengsheng Dai (I-9) (I), Oak Ridge National Lab, USA: Neutron scattering studies of novel materials: achievements and recent progress in construction of a modern state-of-the-art spectrometer at OMR, Beijing
 6. Dr. Julian Tao (I-10) (I), ORNL-CAB: Small Angle Neutron Scattering at Soft Matter Investigation

This Focused Session provides an informative update of the development of China's major neutron user facilities in Dongguan and Beijing, and a new nuclear SRT institute in Zhuhai. It also intends to be a forum to discuss the opportunities of cooperation among university users/researchers and the neutron facilities and nuclear science and engineering school.

YOU ARE COURTEOUSLY INVITED TO ATTEND

<http://www.physics.hku.hk/~ngli@hku.hk/ncst09>

From ICANS to UCANS



UCANS-I The First Meeting of The Union for Compact Accelerator-driven Neutron Sources

Background

During the course of design, construction and initial operation of the Low Energy Neutron Source (LENS), scientists and engineers of Indiana University have worked closely with the counterparts from the US pulsed neutron sources. In June 2009 the International Mini-Workshop not only kicked off the Compact Pulsed Hadron Source (CPHS) at Tsinghua University, China Project but also fermented the notion of cooperation among accelerator-based-compact-source enthusiasts in many places in the world. A series of subsequent exchanges, contacts, and teleconference attested to the common desire for collaboration. The recent ICANS-XIX Meeting (March 2010, Grindelwald, Switzerland) offered an opportune occasion to consolidate an alliance; and, in a satellite meeting in Kloten on March 13, 2010 participants unanimously acceded to the establishment of the **Union for Compact Accelerator-driven Neutron Source (UCANS)**. The eight initial members—those in attendance—are: from the USA Argonne National Lab (ANL) and Indiana University, from Japan the High Energy Accelerator Research Organization (KEK), Hokkaido University, Kyoto University and RIKEN, from China Peking University and Tsinghua University, with additional potential members from elsewhere. Jack Carpenter of ANL will serve as a spokesperson of UCANS. In view of the actively ongoing works on accelerators, target-moderators, instruments and optics, all members felt a genuine need for frequent meetings (every ~6 months rather than 2 years like ICANS). Positively, UCANS is not exclusive of but complementary to ICANS. **The first meeting is scheduled to be held at Tsinghua University in Beijing, August 15-18, 2010.**

Scope and Objectives

The scope of the UCANS-I Meeting encompasses technical and scientific issues pertinent to compact accelerator-driven neutron sources. The objectives include

1. To consolidate the UCANS organization and membership,
2. To identify areas of cooperation,
3. To determine near-to-long term R&D goals and schemes of collaborations among member institutes, and
4. To clarify the roles of UCANS in the development and utilization of neutron-sources and related accelerator-driven technologies.

The official language of the meeting is English.

Focused topics include, but not limited to, accelerator & beam optics, target radiation damage & heat removal, moderator neutronics, optics devices & detectors, innovative instrumentation, and emerging science and novel applications that are relevant to long-pulse medium-flux neutron sources.

Organizers

Meeting Organizers: Paul Sokol (Indiana), Jie Wei (Tsinghua), and Yoshiaki Kiyonagi (Hokkaido)
 Program Committee: David Baxter (Indiana), Chun Loong (Tsinghua), Hirohiko Shimizu (KEK), Yoshihisa Iwashita (Kyoto)
 Local Organization Committee: Chun Loong (Tsinghua), Zhiyu Guo (Peking U), Xialing Guan & Beibei Shao (Tsinghua)
 Spokesperson: Jack Carpenter (Argonne)
 Administrative secretary: Dong Xu (Tsinghua) xudong83@tsinghua.org.cn, Phone: +86-(0)10-62792533

Registration, Abstract Submission, Lodging & Venue, ... please see <http://www.indiana.edu/~lens/UCANS/>

Expect Increasing Interactions with AONSA

- ◆ To Join the AONSA Schools.
- ◆ Universities in South China (Guangdong, Hong Kong & Macau) hope to prompt neutron-scattering research through interactions with neutron facilities in Asia-Oceania region so that the learned skills and experiences will benefit the CSNS Project. , e.g., a student from SYSU is pursuing a PhD degree at KEK/J-PARC. *B Wang*

The Graduate University for Advanced Studies
International Student Admission, 2009 O

Applying for Japanese Government Scholarship
If you do not apply for scholarship, go this page

1. Conditions for Applicants:
The MEXT/JASNAI Application Guidelines 2009 PDF
The MEXT/JASNAI Application Guidelines 2009 PDF

2. Documents to be Submitted by Applicants: the guidelines for the...

International Science Linkage
Australia-China Special Fund for S&T C
(Australia-China Special Fund)

Round 8 of the Australia-China Special Fund for S&T will open in April 2009. The online application will start on 1st April 2009 at 17:00 (UTC+8). The online application will close on 31st March 2009 at 17:00 (UTC+8). The online application will be available in Chinese and English. Australia-China Special Fund applications are invited from all eligible entities.

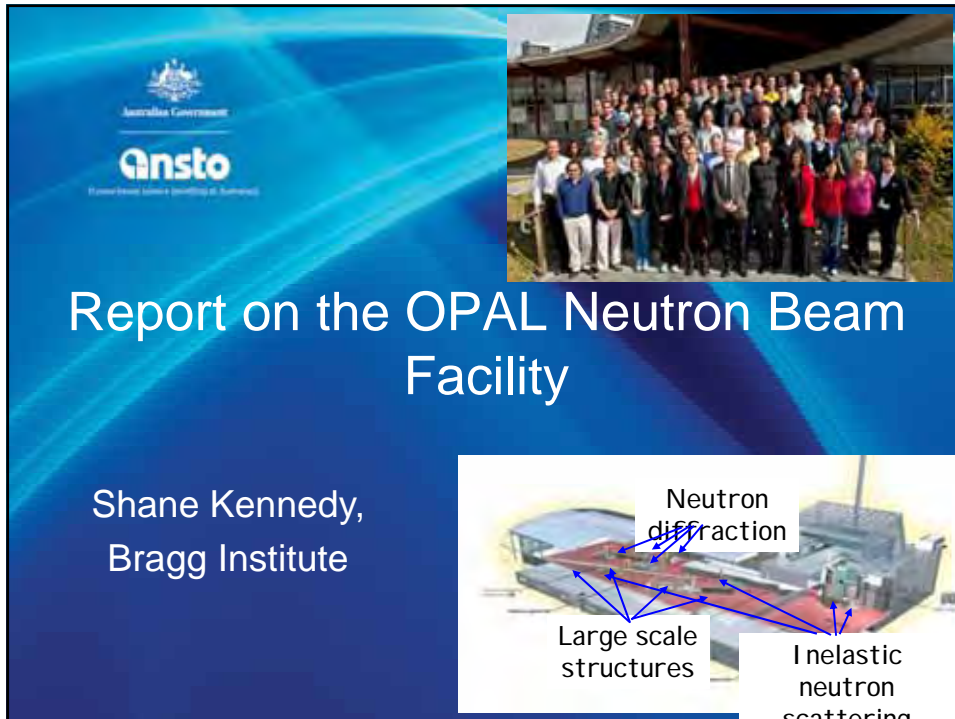
www.JCJG.AC.UK

Appendix 14 Facility Reports

1. ANSTO (Shane Kennedy)
2. BARC (S.M. Choi for Samrath Chaplot)
3. J-PARC & JRR-3 (Masatoshi Arai & Mitsuhiro Shibayama)
4. HANARO (Kye Hong Lee)
5. SIKKA (Chih-Hao Lee)
6. BATAN (Edy Giri Rachman Putra)
7. CSNS (M. Arai for Fangwei Wang)
8. CARR & CPHS (S.M. Choi for Chun Loong)



Note:

- Facility reports from CARR & CPHS (which is combined with association report) are included in the Appendix 13 Association Reports.
- Facility report from Malaysia (which is combined with association report) is included in the Appendix 13 Association Reports.





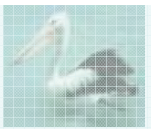



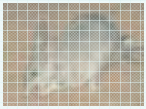


The cover of the report features the ANSTO logo at the top left, which includes the Australian Government crest and the text 'ANSTO Plasma based science and technology at Opal'. To the right is a group photograph of many people standing in front of a building. The main title 'Report on the OPAL Neutron Beam Facility' is centered in large white text. Below the title, the author's name 'Shane Kennedy, Bragg Institute' is displayed. At the bottom right, there is a schematic diagram of the facility layout with three labels: 'Neutron diffraction', 'Large scale structures', and 'Inelastic neutron scattering', each with arrows pointing to specific areas of the facility.

Opal's ^{current/funded} suite of neutron beam instruments

Diffraction	Inelastic scattering	Large scale structures
<p>Echidna <i>high resolution powder</i></p> 	<p>Taipan <i>thermal triple axis</i></p> 	<p>Quokka <i>Pinhole SANS</i></p> 
<p>Wombat <i>high intensity powder</i></p> 	<p>Pelican <i>Cold time-of-flight</i></p> 	<p>Platypus <i>reflectometry</i></p> 
<p>Kowari <i>residual stress</i></p> 	<p>Sika <i>cold triple axis</i></p> 	<p>Kookaburra <i>ultra-SANS</i></p> 
<p>Koala <i>single crystals</i></p> 	<p>Emu <i>backscattering</i></p> 	<p>Bilby <i>2nd pinhole SANS</i></p> 
<p>I maging</p>	<p>Dingo <i>radiography</i></p> 	

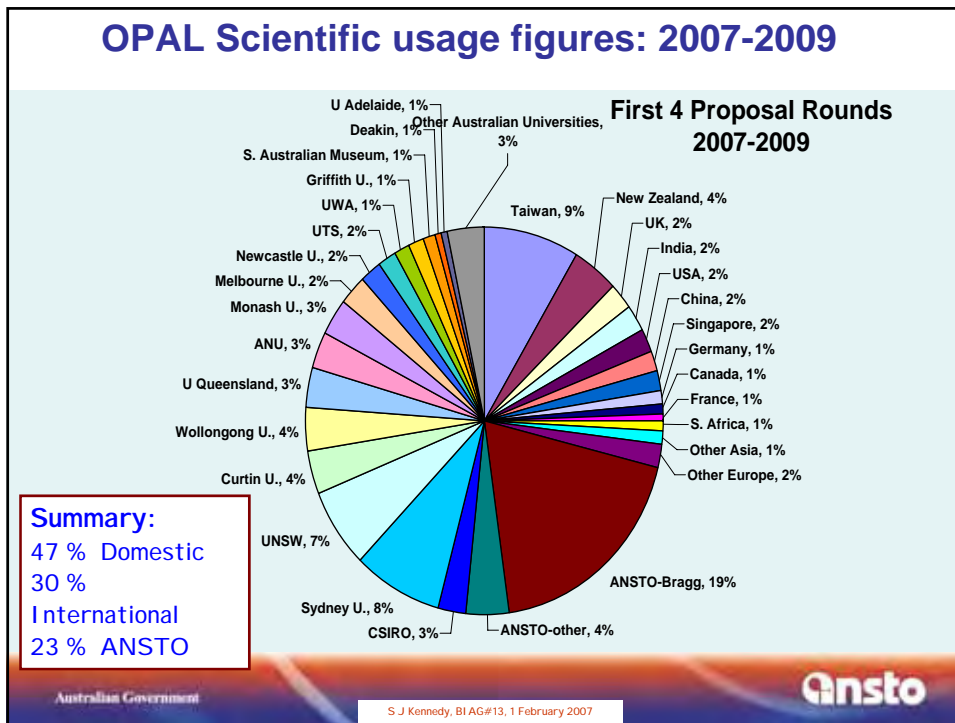
AG#13, 1 February 2007

Opal's current suite of neutron beam instruments

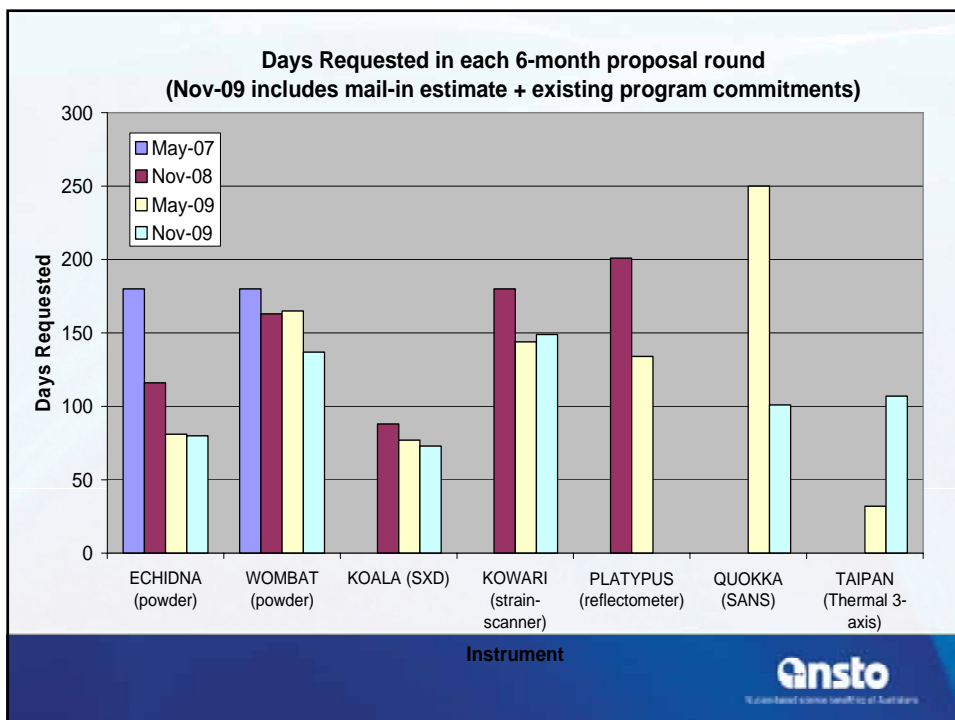
Diffraction	Inelastic scattering	Large scale structures
<p>Echidna <i>high resolution powder</i></p> 	<p>Taipan <i>thermal triple axis</i></p> 	<p>Quokka <i>Pinhole SANS</i></p> 
<p>Wombat <i>high intensity powder</i></p> 	<p>Pelican <i>Cold time-of-flight</i></p> 	<p>Platypus <i>reflectometry</i></p> 
<p>Kowari <i>residual stress</i></p> 	<p>Sika <i>cold triple axis</i></p> 	<p>Kookaburra <i>ultra-SANS</i></p> 
<p>Koala <i>single crystals</i></p> 	<p>Emu <i>backscattering</i></p> 	<p>Bilby <i>2nd pinhole SANS</i></p> 
<p>I maging</p>	<p>Dingo <i>radiography</i></p> 	

AG#13, 1 February 2007

OPAL Scientific usage figures: 2007-2009

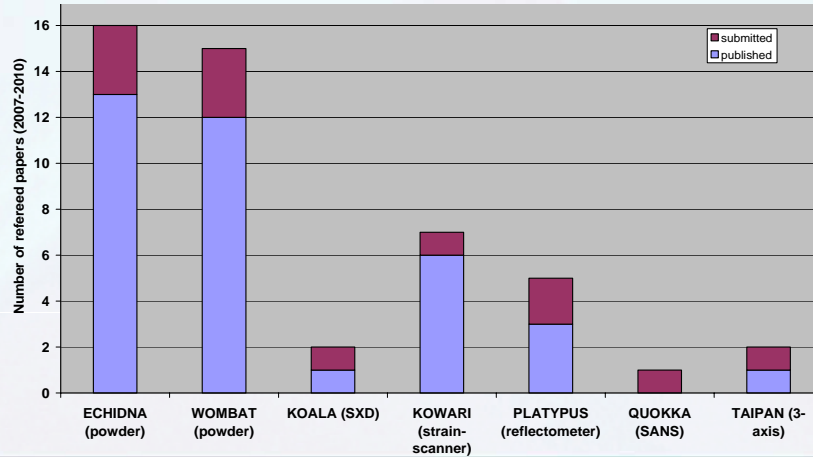


Days Requested in each 6-month proposal round (Nov-09 includes mail-in estimate + existing program commitments)



Scientific papers so far from OPAL NBF

36 papers from 6 instruments (+12 submitted)



Ansto

Unleash science through neutron beams

The NBI-2 project; from July 2009
funded through Australia's Economic Stimulus Plan (\$37M)

Instrument/ subproject	Nominal Budget	Allocated budget	Approval date
High-Resolution Spectrometer (Backscattering)	\$10 M	?	June 2010
Small-Angle Scattering Instrument	\$10 M	\$ 7.3 M	Apr 2010
Radiography/Tomography Instrument	\$ 5 M	\$ 3.2 M	Dec 2009
split Cold Neutron Guide (i.e. 2 guides)	\$ 5 M	?	Aug 2010
Sample Environments (12 Tesla, 15 mK, etc.)	\$ 5 M	\$ 3.2 M	Dec 2009
Total	\$ 37 M		

Government Condition: "**spend the money within four years**"
(July 2009 to June 2010)

Ansto

Unleash science through neutron beams

The NBI-2 Planning Workshops

Scoping Workshop
(ANSTO, 27-28 August, 2009)



Workshop report on Bragg web pages:

http://www.ansto.gov.au/research/bragg_institute/current_research/conferences_and_workshops/workshop_on_instruments_2009

Conceptual Design Workshop
(NIST-NCNR; 9 Nov – 4 Dec 2009)



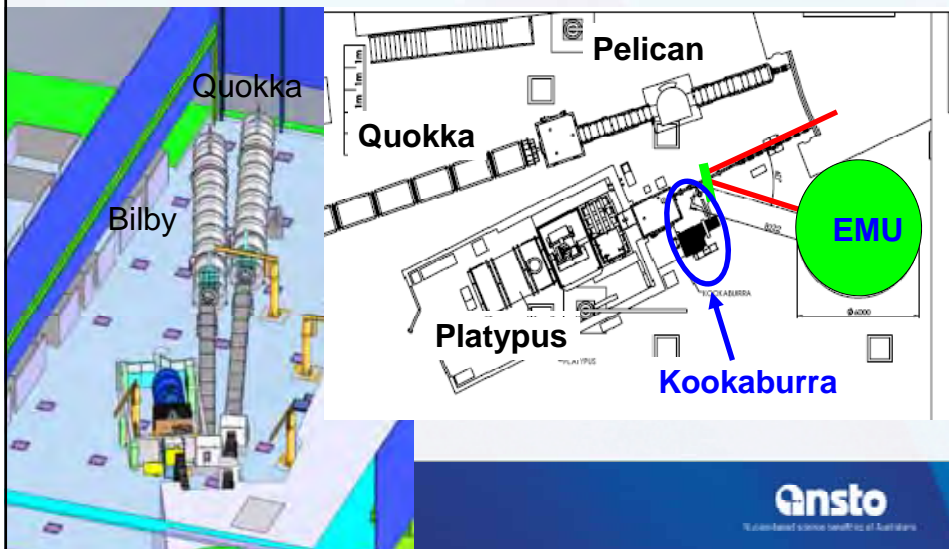
Figure 1. Photo in front of the HFBS spectrometer, NCHT, ~11th of Nov., 2009. Front row (L-R) Phil Bentley, Robert Knott, David Milder, John Barker, Anna Solovova, Jeremy Cook. Stairs (L-R) Dan Neumann, Shane Kennedy, John Copley, Nicolas de Souza

(54 page workshop report was released on 18 January 2010)



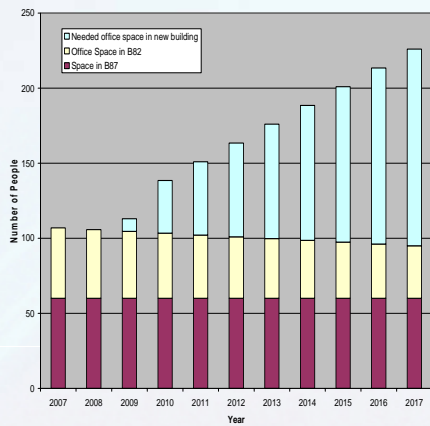
Unleashing science benefits of fuel stars

Locating *Bilby* & *Emu* in the neutron guide hall



Unleashing science benefits of fuel stars

Growth of the Bragg Institute; 2007 to 2017



The Bragg Institute Extension - Sketches

Ansto

Unleashing science benefits of Australia

Conclusions

- We are in full operational mode on 6 instruments
 - Next proposal deadline (#5) 30th May 2010
 - Goal to run 300+ days per year (255 days in 2009)
- 7 more instruments funded, in installation, awaiting licenses
- Demand from Australia, NZ, Asia is growing
- Asia-Oceania is in a healthy position
 - J-PARC, OPAL, HANARO + facilities in China

Ansto

Unleashing science benefits of Australia



Report from INSS (12 May 2010)

Indian Neutron Scattering Society*

It is quite satisfying that the strength of the INSS membership has crossed past 100.



Photograph during the XIV Neutron School/Workshop held in BARC, Mumbai, 5-10 October 2009

C/o Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai 400085, India
Email: neutron@barc.gov.in

Report from National Facility for Neutron Beam Research, Dhruva reactor, BARC, India

In the National facility of Neutron Beam Research at the Dhruva reactor at BARC, two of the powder diffractometers have been upgraded with higher efficiency (higher pressure) He³ position sensitive detectors.

In addition, one of the 'day-1' instrument at Dhruva, at the end of one side of the through tube, is being upgraded with several new detectors. It is designed specifically for study of magnetic systems. The new detector shield has been recently delivered.

Design of a new instrument for Residual Stress analysis has been approved and its fabrication is being taken up.

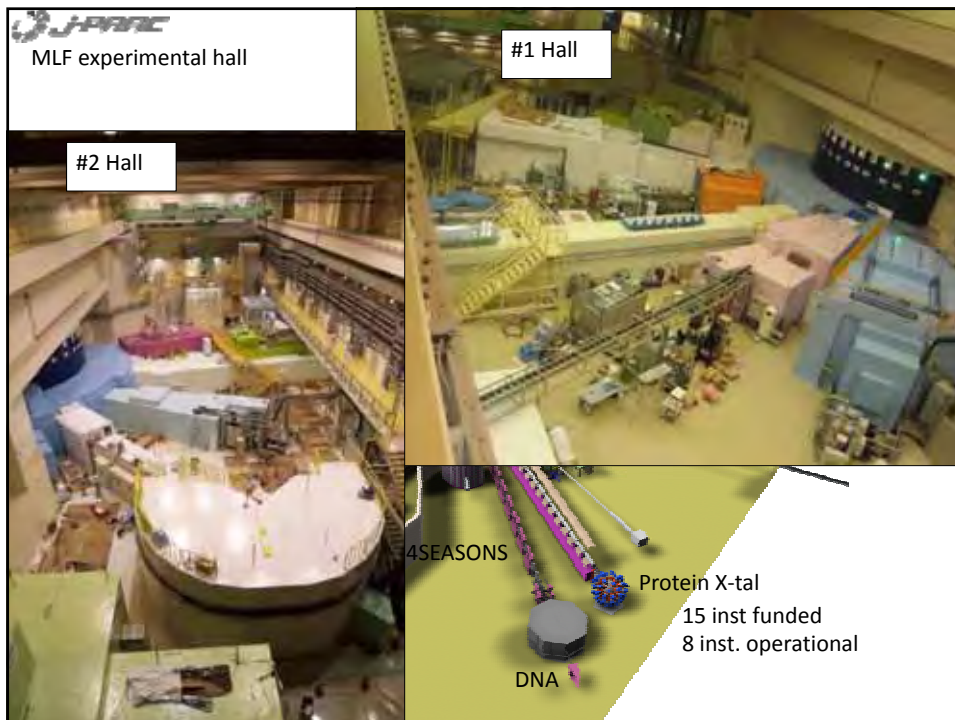
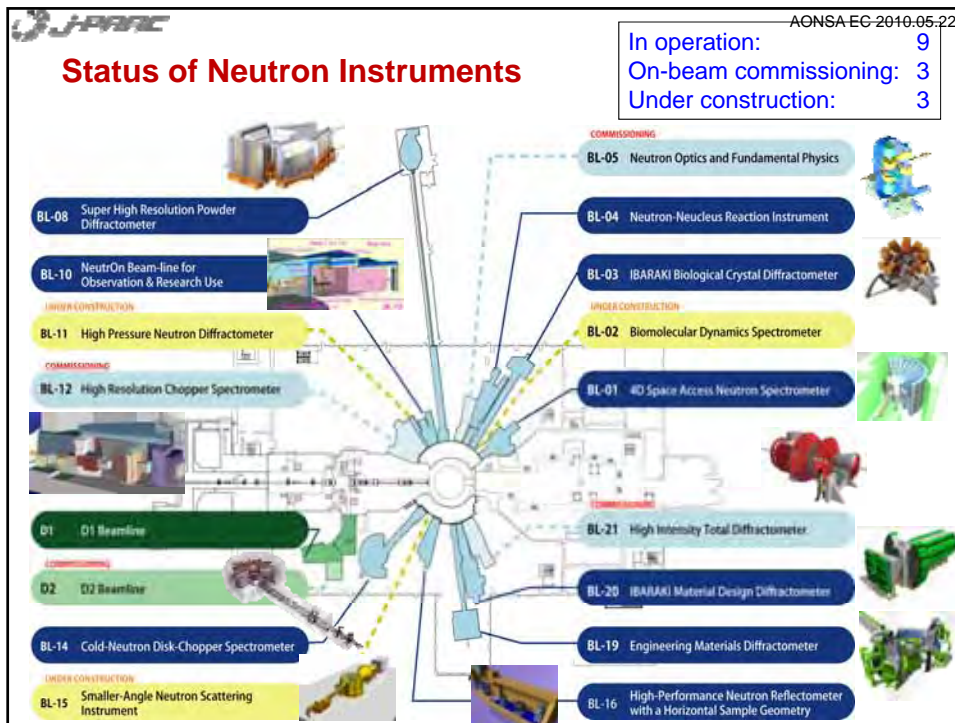
About 30 projects continue to run by users from various Indian universities and institutions under the aegis of University Grants Commission-Department of Atomic Energy Consortium for Scientific Research (UGC-DAE CSR). This is apart from projects supported by other agencies and the in-house research.

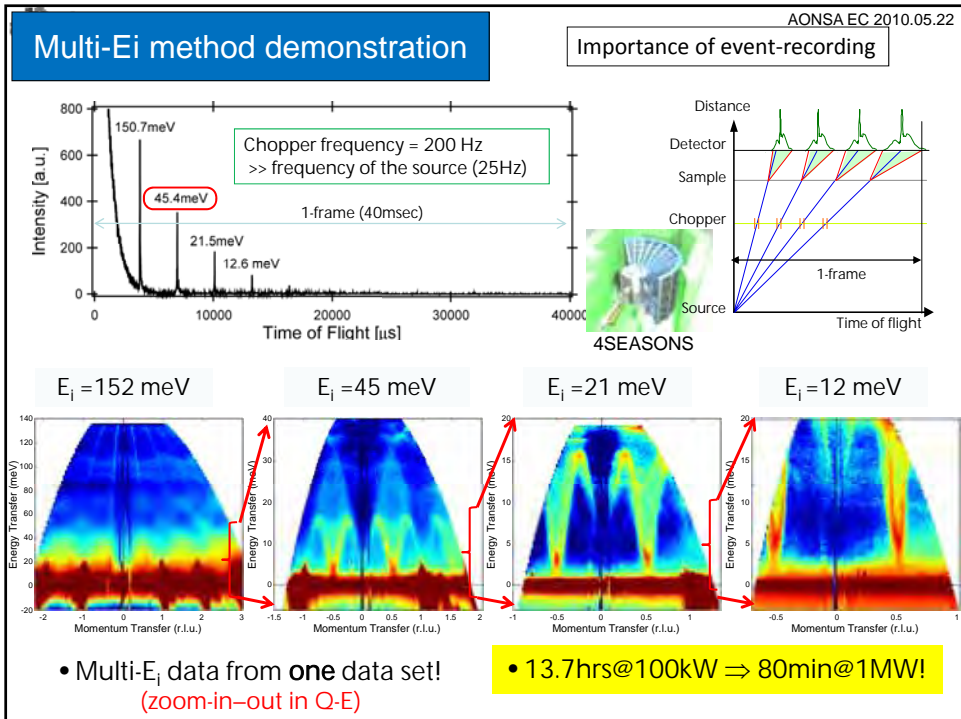
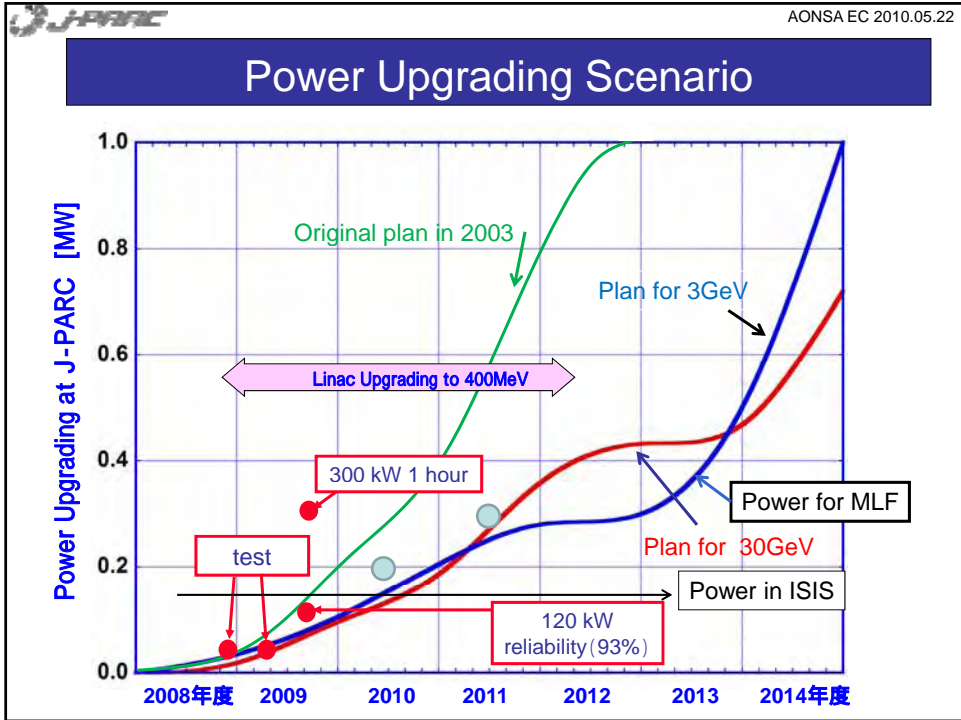


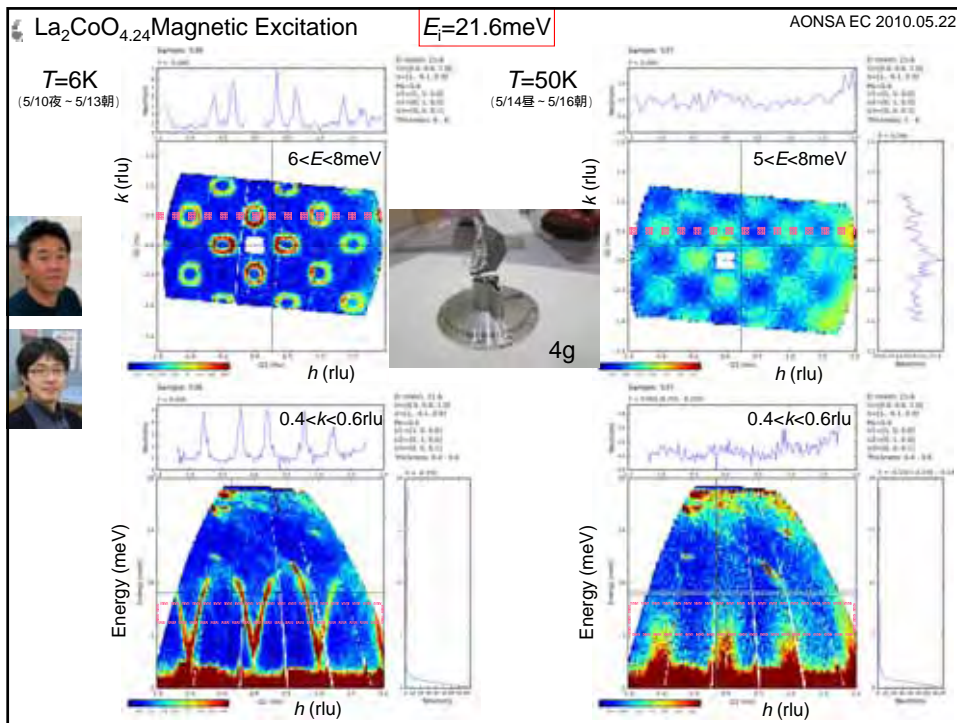
J-PARC Neutron Facility Report

J-PARC Center Materials and Life Science Facility

Masatoshi Arai







Detector Developments AONSA EC 2010.05.22

1-d scintillation detector with large area

Collaboration with ISIS

spatial resolution: 3mm
360 channel / detector
detection efficiency: 70% @ 1.8Å

200 1370

2-d scintillation detector with large area

Amplifier / discriminator cards

2D-Det. 30x30 cm²

Encoder

To be used in X-tal Diff.

Radial Collimator
North Detector
Sample Unit
South Detector
Loading machine

2-d scintillation detector with Wave Length Shift read out

Det. efficiency: 50% @ 1.8Å
 $\Delta r: 1\text{mm}$

256ch x 256ch imaging detector with WLS readout

High speed amplifier discriminator module

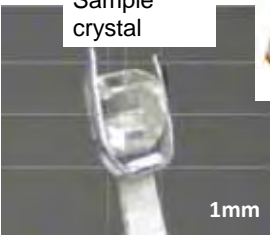
Signal processing module with FPGA

AONSA EC 20

Protein Diffractometer iBIX(BL03)


-Protein structural molecule glutamic acid α phase -

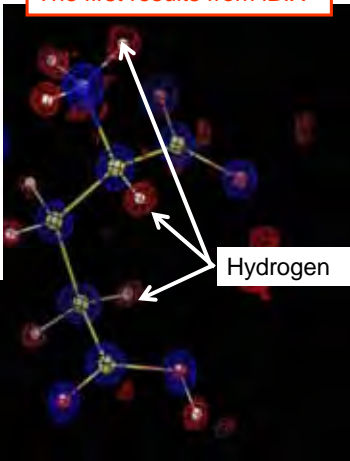
Sample: glutamic acid α -phase
 Lattice constants $a=7.03$ $b=8.78$ $c=10.32$
 Number of setting 20
 Time :102 hrs ~4days
 4.0h/setting
 Total beam power : 120kW



Sample crystal

1mm




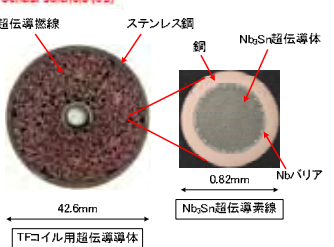


The first results from iBIX

Hydrogen

By Kasiwagi (Ajinomoto inc)

Residual Stress in the ITER TF cable





Toroidal Field (TF) Coil
 Poloidal Field (PF) Coil
 Central Solenoid (CS)
 超伝導導線 (CS)
 ステンレス鋼
 銅
 Nb₃Sn超伝導体
 Nbバリア
 Nb₃Sn超伝導素線
 42.6mm
 TFコイル用超伝導導体
 0.82mm

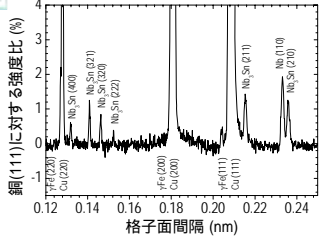
Superconducting characters are strongly depend on internal stresses in cables.

Successfully observed internal stresses of Nb₃Sn in the TF cable

- Cable contains only Nb₃Sn of 6%
- neutron transmitted length of 60mm
- good statistics of peaks in several hours at 120kW
- the observation can bring improvements on Nb₃Sn filaments



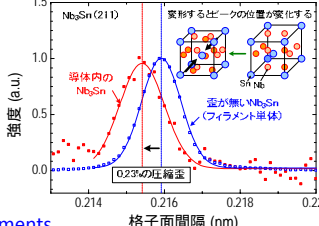
中性子
検出器
7 × 2 × 15mm³



網(111)に対する強度比 (%)

格子面間隔 (nm)

Peaks along axial direct.



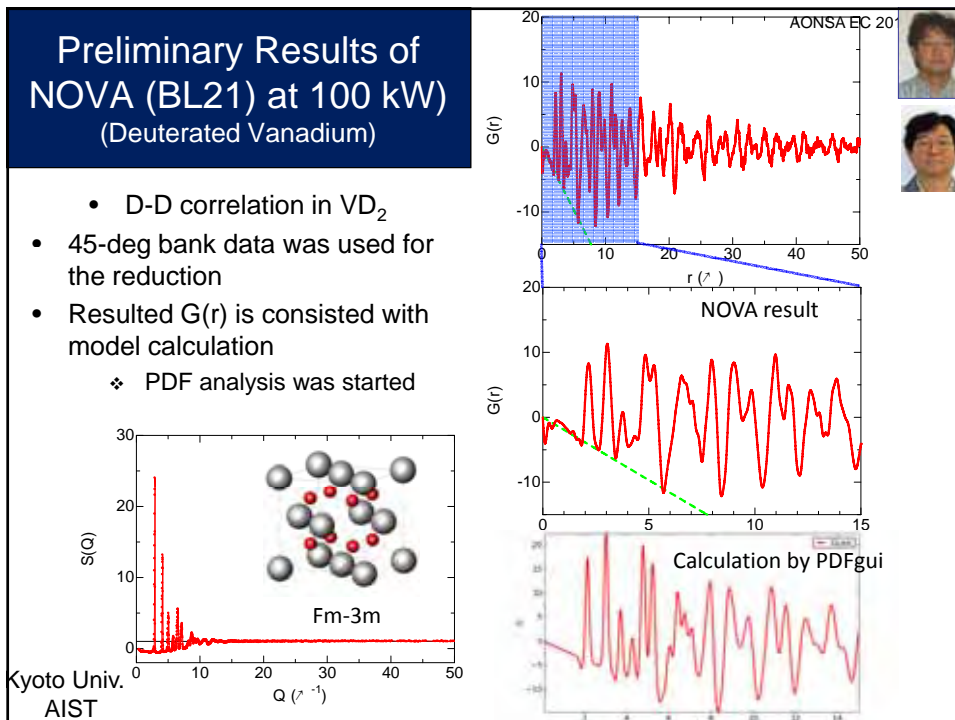
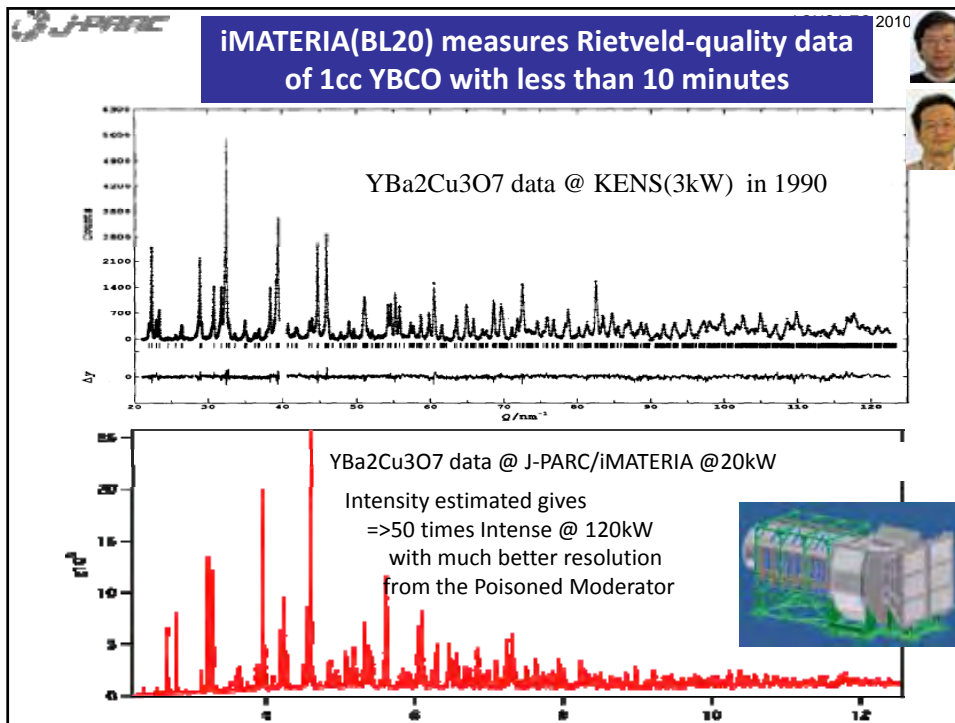
強度 (a.u.)

格子面間隔 (nm)

0.23%の収縮量

収縮するピークの位置が変化する

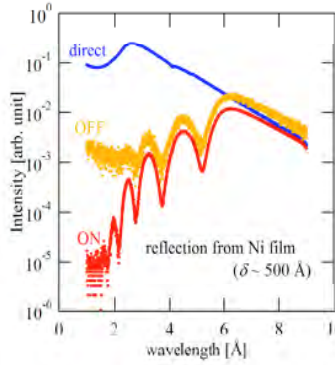
収縮 of 0.23% along axial direct.



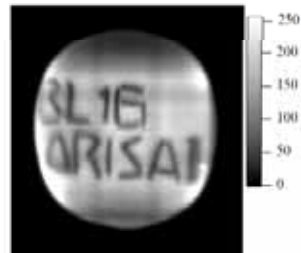
Neutron reflectometer with horizontal-sample geometry (BL16, REFL)

In Summer of 2009, A, B, C and D were installed.

- A. Disc chopper
- B. Mirror stage
- C. Collimators
- D. First Slit



Test of ZnS/⁶LiF 2D detector 1mm resolution, and pixel size 0.125mm (RPMT) for the Future GI-SANS experiments

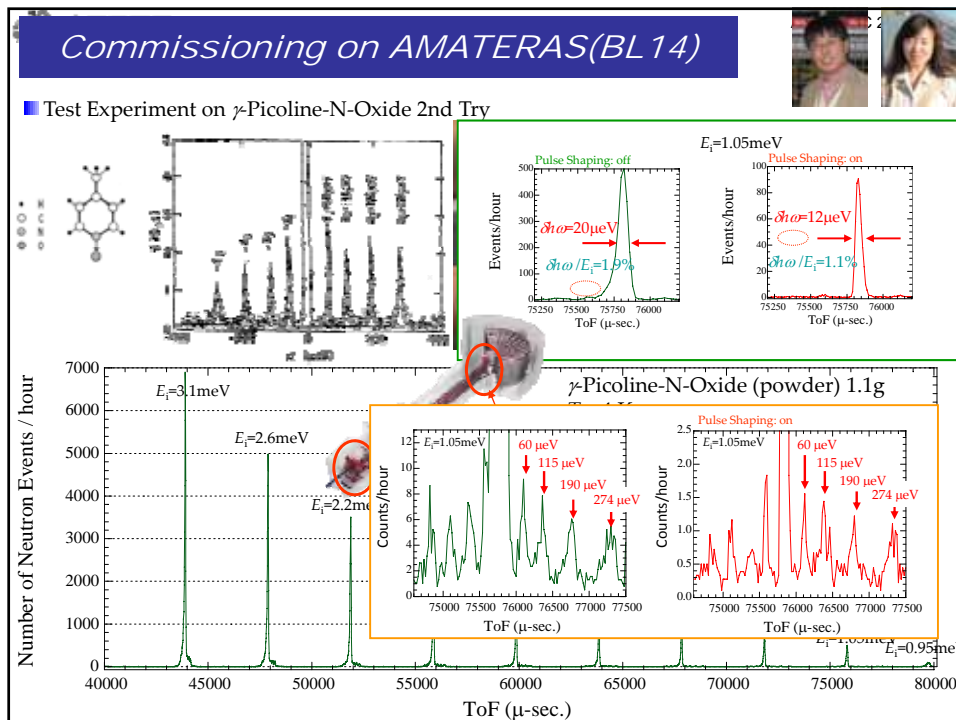


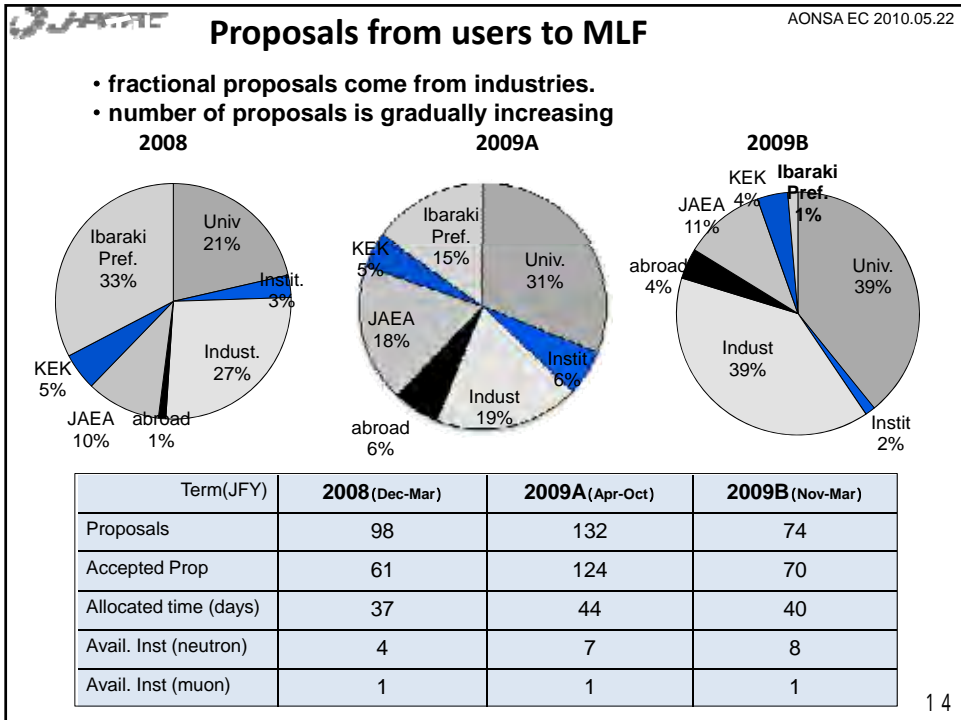
Ni film on Si with thickness of 500Å
Effect of Disk Chopper



Summary

1. Accelerator runs at very high reliability, 94%, at 120kW.
2. 8 out of 15 instruments are under operation for the user programme.
3. Commissioning is going well.
4. Experimental outputs are coming out reasonably.
5. User programme is fairly going well.
(about 300 proposals in a year at 120kW)





14

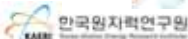
2010. 5. 22 AONSA EC Meeting at IMRE, Singapore

HANARO Neutron Beam Facility Status



Kye Hong LEE

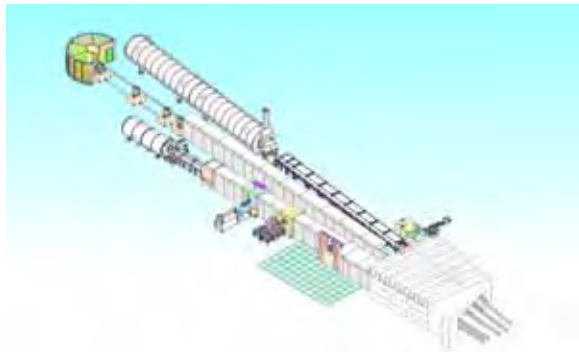
Neutron Science Division
Korea Atomic Energy Research Institute



CNRF Project

Completion of Cold Neutron Research Facility Project ('03-'10)

- Cold source
- Cold Neutron Exp Bldg with 3 new instruments and 3 upgrade instruments
- Neutron Science Div Bldg
- One year extension for TAS and DC-ToF



He-3 Problem

- Try to add He-3 extraction facility in the Tritium Removal Facility in CANDU reactor
- Persuading KHNP showing the strong intend of commercial demand
- MEST is organizing meetings and start a policy project
- Contacting Russia
- Less than 2 panels of 11 for DC-ToF

HANARO Symposium 2010 to celebrate the inauguration of CNRF

Daejeon, Rep. of Korea

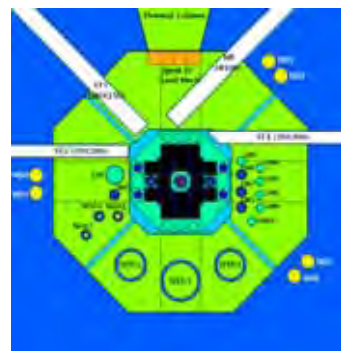
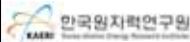
Nov. 1-2, 2010

Embedded Meetings

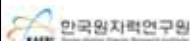
- IAC meeting
- IAEA MEETING



<http://hanarosymposium.kaeri.re.kr>



Promoting New Research Reactor Projects



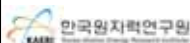
37

Neutron Science for Energy

- Government Project for Li battery development
- Diffraction and imaging
- LG Chem, Samsung SDI, Hanwha
- Fuel cell research with Hyundai Motors, Samsung SDI
- Study for Hydrogen storage



Naro, the second launch



Switchable Ferroelectric Diode and Photovoltaic Effect in BiFeO₃

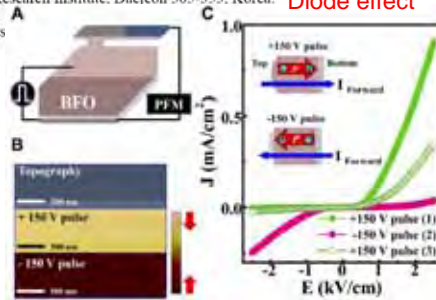
T. Choi, S. Lee,* V. J. Choi, V. Kiryukhin, S.-W. Cheong*

Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University, Piscataway, NJ 08854, USA.

*Present address: Neutron Science Division, Korea Atomic Energy Research Institute, Daejeon 305-353, Korea. Diode effect

†To whom correspondence should be addressed. E-mail: sangc@phys

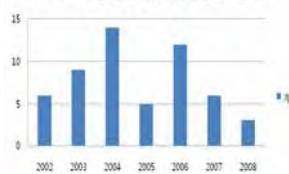
Single crystal



Science 2009

Statistics of journals from SANS

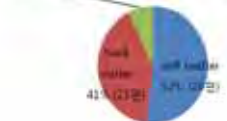
SANS 장차 연차별 게재 논문 수 (Scopus)



2002-2008 논문 발표수 (총 55편)



이종분야별 논문수 (총 55편)



Higher impact & Higher cited papers

○ Higher Impact Factor papers:

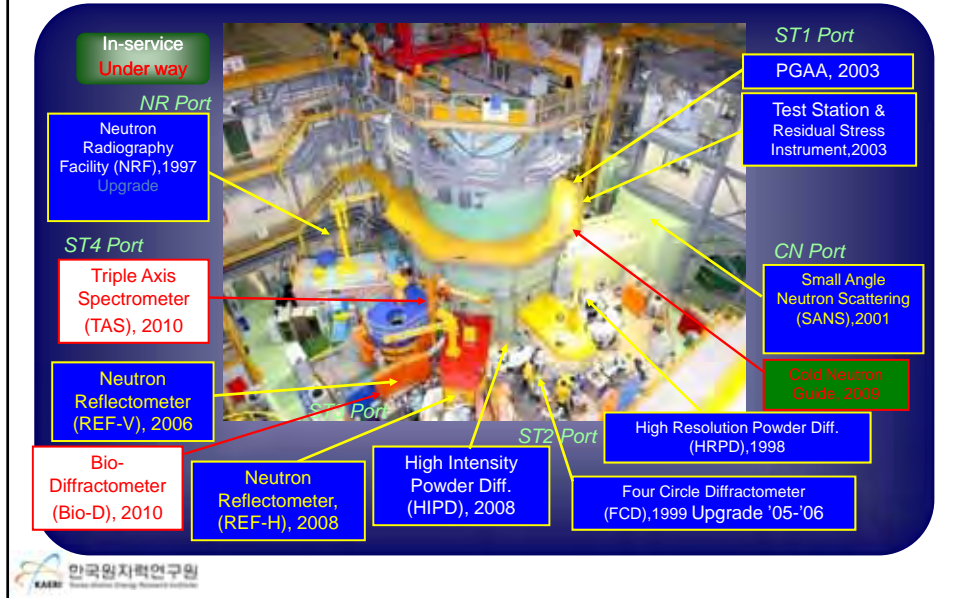
- Advanced material [IF 6.8] (1) : Yoon, Dong Ki (KAIST) / PRL [IF 7.3233] (1) : Ryu, Du Ryul (POSTECH) / Macromolecular [IF 3.75] 6
- Langmuir [IF 3.248] 2 / Journal Applied Crystallography [IF 3.5] 3

○ Higher cited papers:

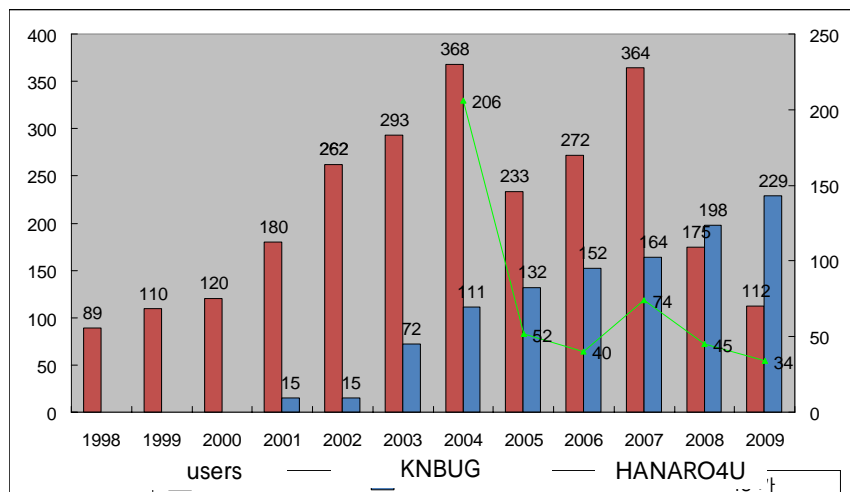
- Kim, J., Kim, B., Jung, B. (KIST), "Proton conductivities and methanol permeabilities of membranes made from partially sulfonated polystyrene-block-poly(ethylene-ran-butylene)-block-polystyrene copolymers" (2002), Journal of Membrane Science, 207 (1), p129-137(2002). Cited 98 times [IF 1.96].

- Ryu, D.Y., Lee, D.J., Kim, J.K., Lavery, K.A., Russell, T.P., Han, Y.S., Seong, B.S., Lee, C.H., Thiyagarajan, P. "Effect of hydrostatic pressure on closed-loop phase behavior of block copolymers", (2003) Physical Review Letters, 90(23), pp.235501/1-235501/4. Cited 34 times [IF 7.323].

Reactor Hall



Number of users, KNUBUG members, HANARO4U members



Oper days:	158	159	169	170	210	218	184	111	140	145	103	110
Instruments:	3		4				5			4		

High Resolution Neutron Powder Diffractometer (HRPD)



Team Member

- S. S Lee
- K.P Hong
- S.J Kim (post doc.)

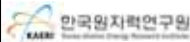


Instrument Characteristics

Part	Characteristic
Monochromator Wavelength Resolution Neutron Flux at sample	Ge(331), Ge(335) 1.836 d/d > 2.0% ~ 3.5 x 10 ⁸ n/cm ² /sec
Multi-detectors PSD (position sensitive detectors) Take off angle	32 He-3 proportional counters (tube: dia. 50mm) 1-D (100mm 200mm and 200mm 100mm), 2-D (200mm 200mm) 90°
Collimators	In-pile RSC (rotating shutter collimator) : 20', 30', open (~50') FCU (first collimator unit) : 6', 10', 20', open (~50') Second collimator : 30', open

Sample Environment

- High Temp. vacuum chamber : up to 950 K
- Low Temp. CCR : RT to 4.5 K
- Magnetic Field : Max. 0.8 T, Electromagnet
Max. 500G, Helmholtz Coil
- Dilution refrigerator & Super conducting magnet : coming soon

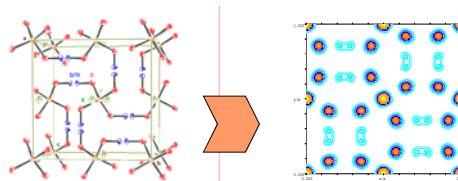


Four Circle Diffractometer (FCD)



Team Member

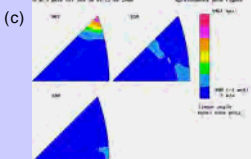
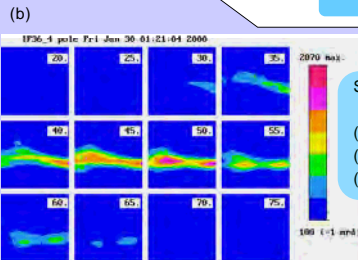
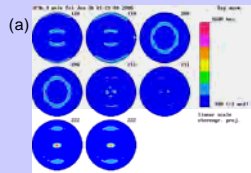
- S.A Kim, C.H Lee, I.H Oh
- (E.J Shin: texture)



ORTEP drawing of packing for DKDP

The projected nuclear density map

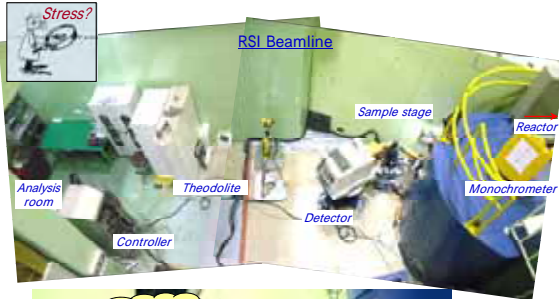
Single crystal



Sample : Cold Rolled and Recrystallized Interstitial Free steel (bcc)
(a) Measured and calculated pole figure
(b) Orientation distribution function
(c) Inverse pole figure

Texture

Residual Stress Instrument (RSI)



Team Member

- W.C Woo
- V.T.Em
- J.D Joo (M.S)
- M.H Kang (Ph.D)



characteristics

- sample: Steel, Stainless Steel, Al, Mg, metals & alloys (~ 20mm penetration)
- Sample size: min 5x5x5 - max 800x800x800 mm³ (max 700Kg)
- Max 20 kN and 800 °C
- Sample volume: θ - 120 mm³ (mainly 2x2x2 mm³)
- Max thermal flux: 2.6×10^6 n/cm²s
- accuracy (d/d) : ~ 6×10^{-3}

bsseong@kaeri.re.kr, chuckwoo@kaeri.re.kr

Neutron Radiography Facility (NRF)



Team Member

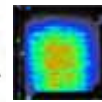
- C.M Sim
- T.J Kim

1. Neutron Flux: $2 \times 10^6 \sim 10^7$ n/cm²s
2. L/D ratio: 200 ~ 260
3. Temporal Resolution: max. 30 fps
4. Spatial Resolution: 20 μ m (Film method), 70 μ m (CCD camera method)
5. Utilization: fuel cel, air-craft, missile, detonator, explosive, ginseng

Landing gear crack



dinosaur



Fuel cell automobile

Ex-core Neutron Facility (ENF)



Team Member

- S.W Lee

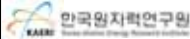


application

- boron neutron capture therapy
- auto-radiography for boron distribution measurement
- phase contrast image
- grating based neutron interferometer
- dark field image
- high resolution neutron image
- dynamic neutron image
- neutron detector development station

	characteristics
Beam filter	Si(D20cm, L40cm), Bi(D10cm, L15cm)
Max thermal flux	1.49×10^9 n/cm ² -s
Gamma dose	80cGy/h
Cd ratio	152
Internal space	5.5m(length)x3.5m(height)x 4m(width)
detectors	science CCD (Andor DW936N-BV) Image plate Photo multiplication CCD
options	Cold neutron extraction Double monochromator High resolution revolution hole Si gratin gfor phase imaging Neutron polarizer

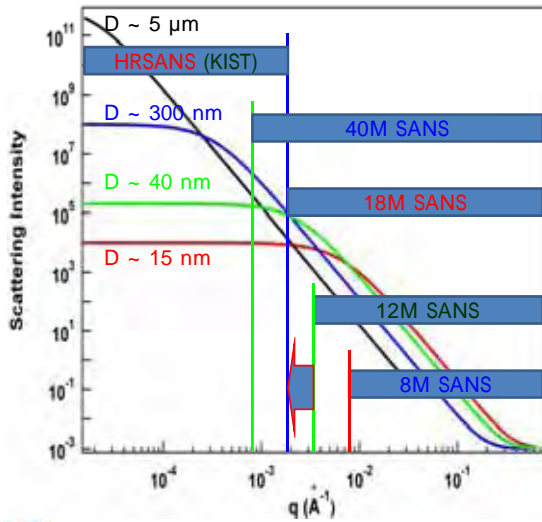
S.W. Lee, sw@kaeri.re.kr



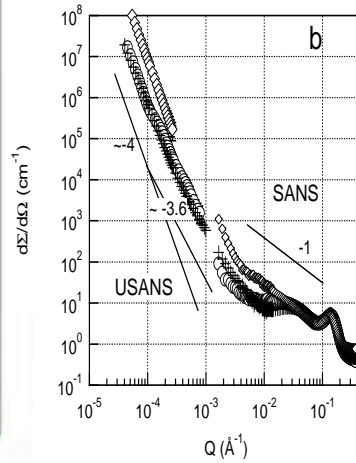
SANS



Q range of SANS



With the thickness of Nafion Membrane



Macromolecules (2006), 39, 4775

40M SANS



Sample Environments Available
Automatic Sample Exchange
Circulation Bath (Temperature Control)

specifications	40M-SANS	18M-SANS
guide length	20 m	9 m
detector	ORDELA 21000N 2D-PSD (100 x 100 cm)	ORDELA 2660N 2D- PSD (64.5 x 64.5 cm)
Monochromator	NVS	NVS
Q-range(/)	0.0015(0.0008) ~ 1.0	0.002 ~ 1.0
Neutron polarizer	YES	YES
scale	1 ~ 400 nm	1 ~ 150 nm

40M SANS monochromator shield



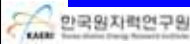
Floor shield



Monochromator shield



Lead shield assembling



nvs



guide



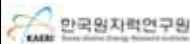
Bunker parts



shutter



Quick shutter



18M SANS major components



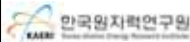
NVS shield
(25~40cm high density concrete)



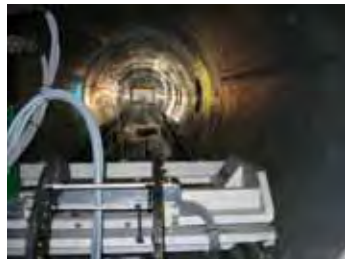
Quick Shutter and shield



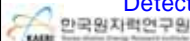
Collimator and NVS installation



18M SANS installation



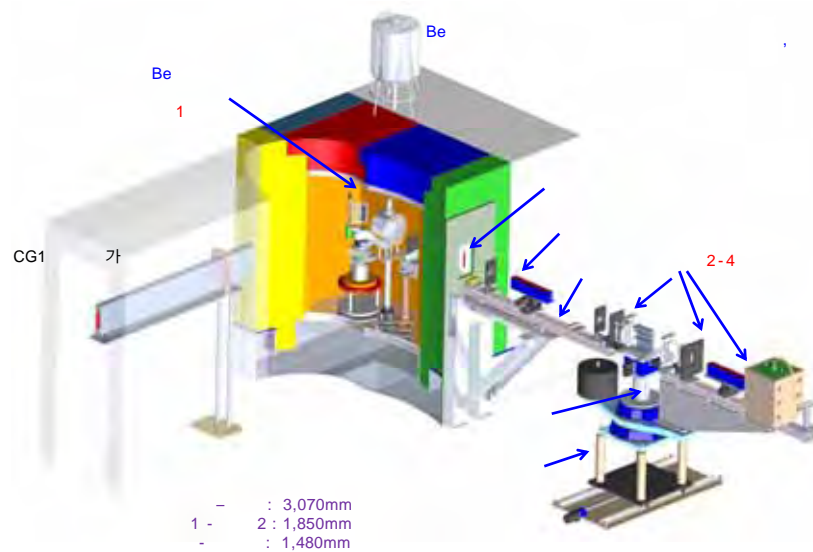
Detector chamber, motor controller, detector transport system



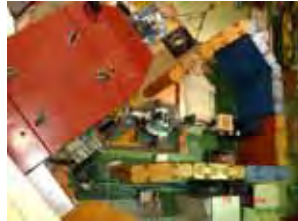
SANS Operation

- 4 staff for instrument operation
- 2 more years for good shape ('10.3~'12.2)
 - . Installation of Polarizer, Lens, and HR-Detector
 - . Development of circulation Bath and else

Vertical type Refelctometer



REF-V Specification



Rx REF REF-V (2006/6 User Open)



CN REF-V (2010/4 relocation)

Instrument Characteristics

Part	Characteristic
Monochromator	Vertical focusing PG(002)
Wavelength	4.75 \AA , $2 \theta_M = 90^\circ$
Wavelength Resolution	$\Delta \lambda / \lambda < 1.0\%$
Filter system	LN ₂ , Cooled Be
Neutron Flux at sample	$\sim 3.5 \times 10^6 \text{ n/cm}^2/\text{sec}$
Single detector	He ³ 6 atm.
1-D PSD (plan)	8 x 12 cm, efficiency 90% at 4
Polarizer, Analyzer	Fe/Si super mirror (m=3) Mezei type, FR=>0.98
Spin flipper	P =>0.9
Polarization Efficiency	
Sample Environment Facility	
Chamber	Vacuum Chamber, 2650-K
Temp. Control	Low Temp. CCR : 10-K ~ 4K
Magnetic Field	Max. 0.8 T, Electromagnet
reflectivity	Max. 500G, Helmholtz Coil
Cryo-Furnace	: Plan



REF-V relocation



Guide and monochromator



sample stage and optical slit stage



1t Jib crane



REF-V shield



Monochromator and shutter



Shutter and beam plug



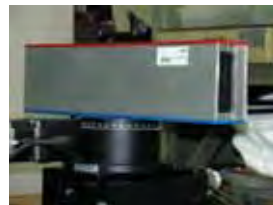
REF - V sample environment



Helmholtz coil (500G)



magnet (0.8T), power supply



polarizer (m=3)



Sample Stage

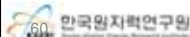


Liquid Cell(sogang univ)



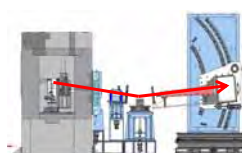
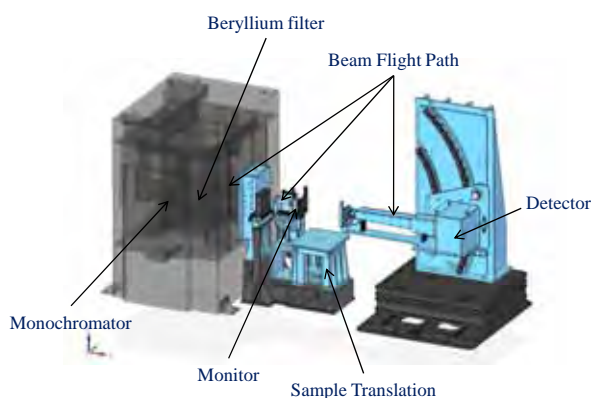
Vacuum Furnace (650K)

CCR (<10K)



Bio-REF Features

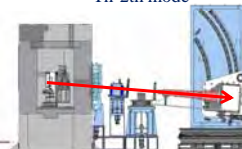
An engineering schematic of the Bio-Reflectometer



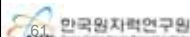
Th-th mode



Th-2th mode



Alignment mode

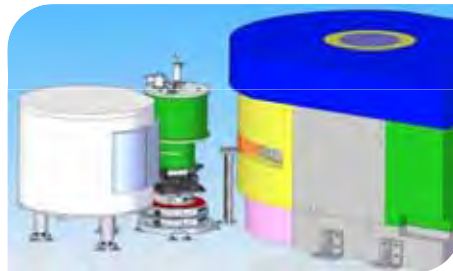


General Bio-REF Specifications

Instrumental Parameter

Monochromator	Pyrolytic Graphite (002); 0.4° mosaic
Incident neutron wavelength	$\lambda = 4.75 \text{ \AA}$
Wavelength resolution	2 % λ/λ
(n λ) Filter	Beryllium filter; 60 mm(w) x 50 mm(h) x 50 mm(l)
Beam size (continuously variable)	0.01 x 50 mm to 5 x 50 mm
Q range (th-th mode)	0.03 to 0.23 \AA^{-1}
(th-2th mode)	0.03 to 0.6 \AA^{-1}
Beam size (continuously variable)	0.01 x 50 mm to 5 x 50 mm
Monochromator-to-sample distance	2 m
Sample-to-detector distance	2 m
Detector	Linear detector, He ₃ 6atm

Thermal TAS development



Th-TAS development

2005.6 2005.8 2007.2 2008.11

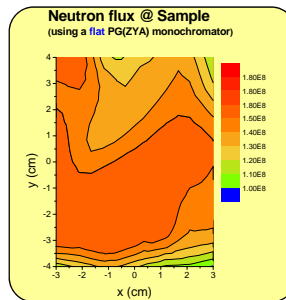
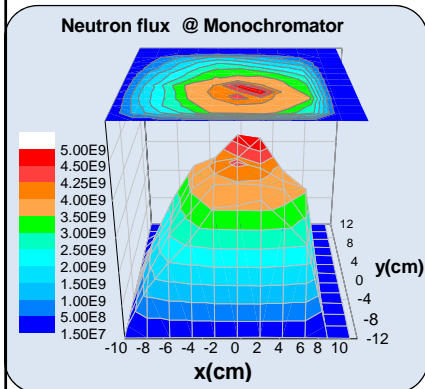
RSC(C1) VSS BGU Sample Table

DFM & DFA Instr. Ctrl. System

2010.1

Thermal TAS neutron flux

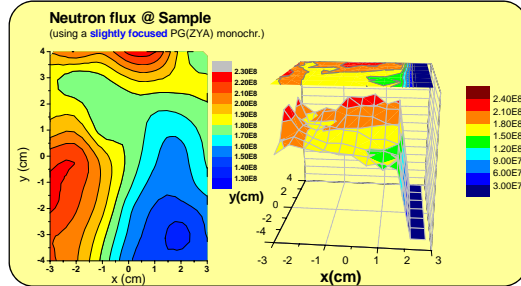
gold-wire measurement
 - $4\sim 5 \times 10^9 \text{ n/cm}^2/\text{s}$ at monochromator
 - (HOPG-ZYA)
 : & \rightarrow



$E_n = 14.7 \text{ meV}$
 (w/o PG-filter)

$> 10^8 \text{ n/cm}^2/\text{s}$

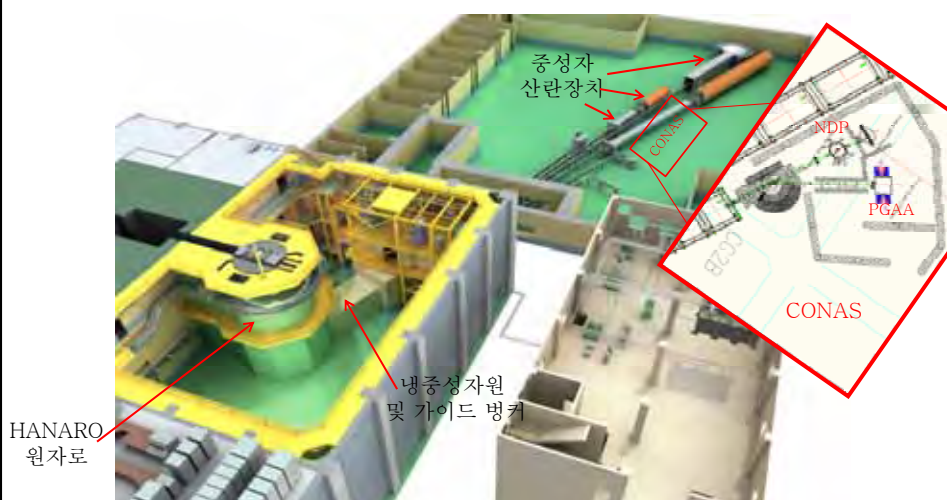
$2.3 \times 10^8 \text{ n/cm}^2/\text{s}$



Cold Neutron Triple-Axis Spectrometer Installation Plan

- 2010. 05: Major Components Being Ordered
- 2010. 12: Completion of Hardware
- 2011. 04: Completion of Commissioning
- 2011. 05: (Official) Use of the Instrument Begins.

CN-PGAA (CN-Prompt Gamma Activation Analysis)



Neutron Depth Profile in the world

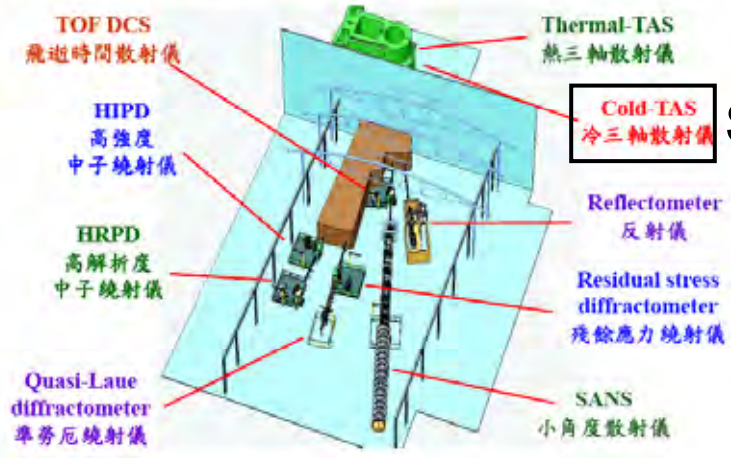
Institution	Reactor	(neutron/cm ² s)	Neutron beam
NIST (USA)	NBSR	1.2×10 ⁹	Cold/guide
KAERI (Korea)	HANARO	>1.0×10 ⁹ (predicted for CG4A line)	Cold/guide
ILL (France)	Grenoble, France	1.0×10 ⁹	Cold/guide
NIST (USA)	NBSR	4.0×10 ⁸	Thermal/guide
BNL (USA)	HFBR	2.3×10 ⁸	Cold/guide
KAERI (Korea)	HANARO	1.6×10 ⁸ (predicted for CG2B line)	Cold/guide
HZB (Germany)	BER II	~10 ⁸	Cold/guide
University of Texas-Austin	TRIGA Mark II	~10 ⁷	Thermal/direct
Texas A&M University	Mark II research reactor	1.4×10 ⁷	Thermal/direct
University of Michigan	Ford Nuclear Reactor	1.4×10 ⁷	Thermal/direct

The Sika project

Project Leader: Wen-Hsien Li
 Project Manager: Chun-Min Wu
 Consultant: Peter Vorderwish
 Project period: 2005.10-2009.7
 Initial budget requested:
 NT\$0.183 billion
 Project budget spent: NT\$0.25 billion (might be)

Neutron instruments at ANSTO

7+2+3 散射儀



SIKA

SIKA project

Formosan sika deer



Triple-axis spectrometer

→ Inelastic scattering, analyzing k-space.

Cold TAS : $\Delta E \sim 0.1$ to 1 meV

Spin-polarized Inelastic K-space Analyzer

Ultra-high energy resolution

→ resonance spin echo technique

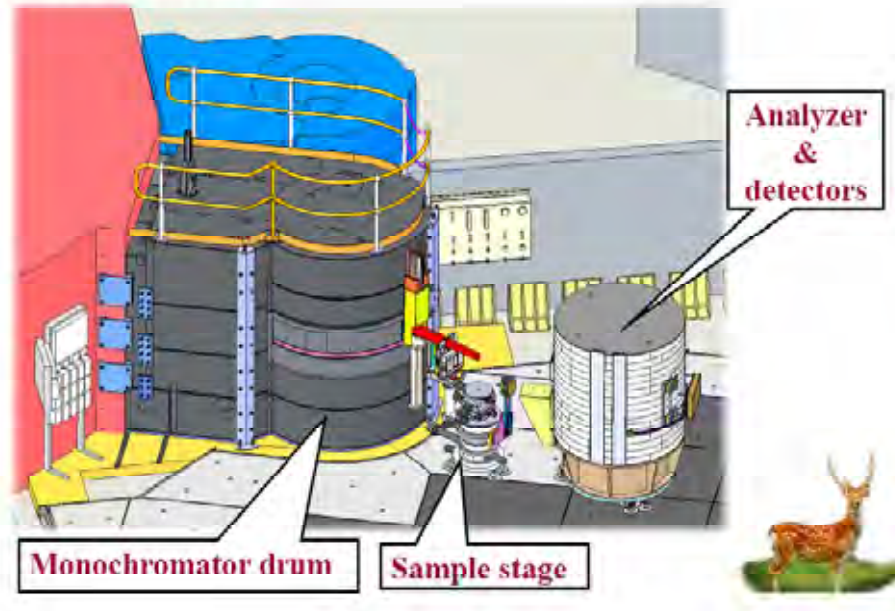
With RSET : $\Delta E \sim 1$ to $100 \mu\text{eV}$ (not in present project)

Spin-echo Inelastic K-space Analyzer

Spin-echo cold neutron triple-axis spectrometer

SIKA overview

SIKA



SIKA primary spectrometer specification

Beam port	CG4
Size of beam at reactor face	50 x 200 mm ² (W x H)
Take-off angular range $2\theta_{\text{M}}$	$30^\circ \leq 2\theta_{\text{M}} \leq 135^\circ$
Monochromator crystals	HOPG, $\eta = 24^\circ$, double focusing, Si(111)
Monochromator dimensions	220 x 340 mm ² (Width x Height)
Useful wavelength range	$1.74 \text{ \AA} \leq \lambda \leq 5.8 \text{ \AA}$ (PG 002)
Correspond. wave-vector range	$3.6 \text{ \AA}^{-1} \leq k_i \leq 1.0 \text{ \AA}^{-1}$ (PG 002)
Correspond. incident energy range	$2.4 \text{ meV} \leq E_i \leq 27 \text{ meV}$ (PG 002)
Virtual source aperture	$0 \leq W \leq 65 \text{ mm}$; H = 220 mm
<u>Distances</u>	
- cold source - monochromator	6715 mm
- reactor face - monochromator	2300 mm
- virtual source - monochromator	2100 mm
- monochromator - sample	2100 mm
<u>Collimators</u>	
α_1 (pre-monochromator)	20°, 40°, 60°, open
α_2 (post-monochromator)	20°, 40°, 60°, open
<u>Incident beam filters</u>	
- Be cooled (10 cm) $E_i < 5 \text{ meV}$	Higher order suppression
- PG (8 cm) $E_i = 13.7 \text{ \& } 14.7 \text{ meV}$	Higher order suppression
- Sapphire (8 cm) $E_i > 15 \text{ meV}$	Fast neutron suppression

設置
雙向聚焦
PG及 SI
單色晶體

$2.4 \text{ meV} \leq E_i \leq 31 \text{ meV}$
with (Si 111)

SIKA monochromator

PG & Si

SIKA



- 法國AZ-System 承製
- $20 \times 22 \text{ mm}^2$ HOPG
- 11×11 crystals
- 雙向聚焦
- 已抵ANSTO

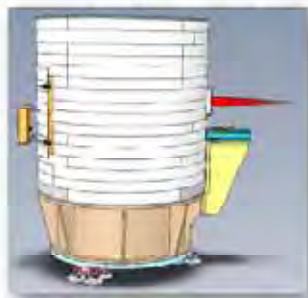


- 瑞士Swiss Neutronics 承製
- $17 \times 210 \times 10 \text{ mm}^3$ Si(111)
- 13 crystals
- Double focusing

SIKA secondary spectrometer

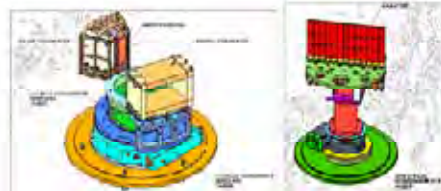
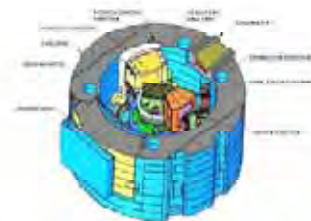
SIKA

13 analyzers + 1 PSD
+ 1 single detector

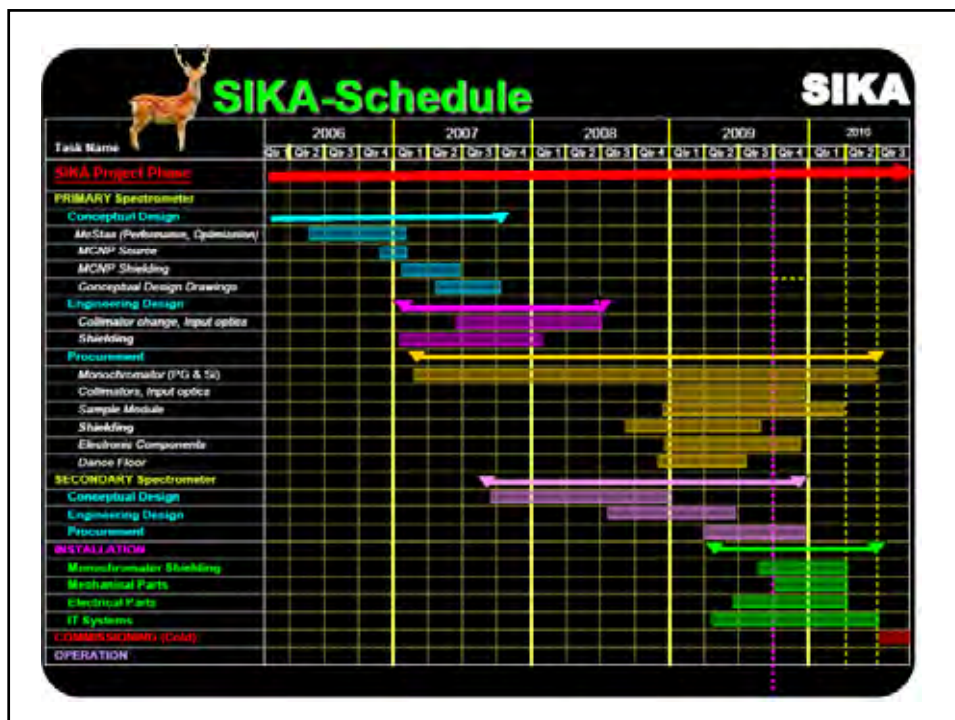


- 概念設計已完成
- 工程設計需再1個月
- PSD、SD、Collimator採購中
- 整體組裝工程預計2010年3月進行，工時預估3月

次散射儀：能量解析與偵測系統



13組能量解析晶體



SIKA project

Formosan sika deer



Triple-axis spectrometer

→ Inelastic scattering, analyzing k-space.

Cold TAS : $\Delta E \sim 0.1$ to 1 meV

Spin-polarized Inelastic K-space Analyzer

Ultra-high energy resolution

→ resonance spin echo technique

With RSET : $\Delta E \sim 1$ to 100 μ eV (not in present project)

Spin-echo Inelastic K-space Analyzer

Spin-echo cold neutron triple-axis spectrometer

BATAN's Neutron Scattering Facilities in Serpong, Indonesia

Edy Giri Rachman Putra

Neutron Scattering Laboratory
National Nuclear Energy Agency of Indonesia (BATAN)

Serpong near BEF-GAS, Serpong, Indonesia

BATAN's Neutron Scattering Facilities in Serpong



Photo by A. Ikram

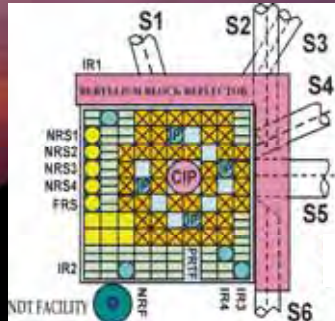


The scope of neutron scattering activities:

- Material testing/materials characterization
- Applied materials research
- Condensed matter research

Commissioned in 1992

The Reactor: G.A. Sivabessy (RSG-GAS)



Descriptive parameters of RSG – GAS

Power : 30MW (15MW)
 Neutron Flux at core : $2.5 \times 10^{14} \text{ cm}^{-2} \text{ s}^{-1}$

Core

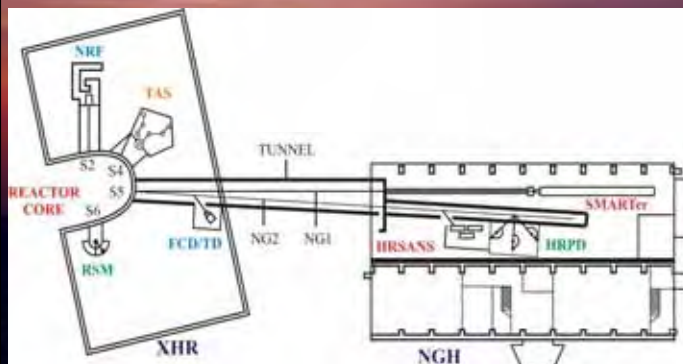
Active core volume (dm³) : 180
 Active core height (cm) : 60
 Loading (Kg ²³⁵U) : 8.675
 Number of fuel elements : 40
 Number of control elements : 8
 Fuel type : U₃SiAl - MTR
²³⁵U enriched (%) : 19.75
²³⁵U density (g cm⁻³) : 2.96
 Moderator / coolant :



Neutron Beam ports : 6 (2 Tangential & 4 Radial)

Commissioned in 1987

The Reactor: G.A. Sivabessy (RSG-GAS)



Coating
 Ni-58

Cross section
 33 x 90 mm²

Radius of curvature
 3926 m (NG1)
 6979 m (NG2)

Neutron beam instruments

(DN1-M) RSM : Diffractometer for Residual Stress Measurement
 (DN2) FCD/TD : Four Circle Diffractometer/Texture Diffractometer
 (SN1) TAS : Triple Axis Spectrometer
 (RN1) NRF : Neutron Radiography Facility
 (DN3) HRPD : High Resolution Powder Diffractometer
 (SN2) SANS : Small-Angle Neutron Scattering Spectrometer (SMARTer)
 (SN3) HRSANS : High-Resolution Small-Angle Neutron Scattering Spectrometer

Total length
 49 m (NG1)
 77.5 (NG2)

Diffractometer for Residual Stress Measurement (DN1-M)

Status : Running

Mode :

- Monochromator double focused, bent Si (311)
- Monochromator take-off angle $0 - 90^\circ$
- Neutron wavelength $\lambda = 1.836 \text{ \AA}$
- Collimation $40'$ (before monochromator)
- Collimation $40'$ (after sample)
- Detector scanning range $-5^\circ < 2\theta < +115^\circ$
- X-Y-Z translator goniometer 140, 140, 50 mm
- Tensile rig $0 - 1000 \text{ N}$
- Point detector

Development :

- N/A

Utilization :

- Stress measurement of industrial alloys & steel
- Nuclear materials research (CRP - IAEA)



M. Rifai Muslih

JICA - 1987 (PD)

1995 (RSM)

Four Circle Diffractometer/Texture Diffractometer (DN2)

Status : Running

Mode :

- Texture measurement
- Monochromator bent Si (311)
- Neutron wavelength $\lambda = 1.278 \text{ \AA}$
- Max neutron flux $\sim 3.8 \times 10^5 \text{ cm}^{-2} \text{ s}^{-1}$
- Collimation system $20'$ and $30'$
- $\theta - 2\theta$ range $0^\circ - 130^\circ$
- ϕ range $0^\circ - +360^\circ$
- χ range $-40^\circ - +90^\circ$
- Materials Analysis Using Diffraction (MAUD)

Development :

- Flight tube from first collimator
- Beam alignment (focused beam)
- Mini furnace for in situ experiment

Utilization :

- Aluminum & brass, steel (industrial products)



Tri Hardi Priyanto

1998 (2000 - 2002)

Triple Axis Spectrometer (SN1)

Status : Running

Mode :

- Unpolarised neutron
- Double-axis measurement
- Monochromator Ge (111)
- Neutron wavelength $\lambda = 1.4 \text{ \AA}$
- Max neutron flux $\sim 10^5 \text{ cm}^{-2} \text{ s}^{-1}$
- Collimation system $20'$ and $30'$
- Sample table $-5^\circ < 2\theta < +100^\circ$

Development :

- Inelastic measurement (current setting)
- Micro-controller for mechanical movement
- Background reduction
- Polariser (long term)

Utilization :

- Low resolution diffractometer (testing)

Dr. Iwan Sumirat
Dr. Agus Purwanto



1996 (2004 – 2006)

Neutron Radiography (NR)

Status : Running

Mode :

- Film & real time method
- Neutron flux $\sim 10^6$ to $10^7 \text{ n cm}^{-2} \text{ s}^{-1}$
- Beam size at sample 30 cm in diameter
- Collimator L/D ratio 83
- Cadmium ratio 6.4
- Neutron/Gamma ratio $> 10^5 \text{ n cm}^{-2} \text{ mR}^{-1}$
- Gd & X-ray film converter screen scintillator detector, ICCD based electronic imaging system

Development :

- Initial work for developing tomography method

Utilization :

- Engine, plant, soils, electronic components (testing)
- Nuclear materials research (CRP - IAEA)

Dr. Sutiarso



High Resolution Powder Diffractometer (DN3)

Status : Running

Mode :

- Diffraction measurement
- Monochromator hot-pressed Ge (331)
- Take off angle $2\theta_M = 89^\circ$
- Neutron wavelength $\lambda = 1.822 \text{ \AA}$
- Max neutron flux $\sim 10^3 \text{ cm}^{-2} \text{ s}^{-1}$
- Collimation system 1st collimator NG2 (23.4')
2nd collimator 20'
3rd collimator 6'
- Scattering angle $-170^\circ < 2\theta < +10^\circ$

Development :

- Asymmetric monochromator
- Vertical focusing monochromator

Utilization :

- Magnetic materials, superconductor, solid state chemistry



Dr. Andika Fajar

2001 (2002 – 2003)

Small-Angle Neutron Scattering Spectrometer (SMARTer)

Status : Running

Mode :

- Preset time measurement
- Neutron wavelength $\sim 3 - 6 \text{ \AA}$ (10 – 20%)
- Maximum neutron flux $7.4 \times 10^6 \text{ cm}^{-2} \text{ s}^{-1}$
- Effective Q range $0.005 - 0.6 \text{ \AA}^{-1}$
- 2D-PSD (1.3 – 18 m & 0.1 m)
- GRAPS, Igor NIST, SASfit, ATSAS.

Development :

- Preset count system (hardware & software - absolute scale)
- Automatic sample exchanger & refrigerated heating circulator
- Simultaneous mechanical movement
- Focusing lenses (F-SANS) under CRP - IAEA

Utilization :

- Fuel cell & hydrogen storage materials (CRP - IAEA)
- Protein & biological materials (TWAS)
- Colloids, polymers, ceramics, magnetic materials, micellar solutions,



Dr. Edy Giri Rachman Putra

1996 - 1997 2003 (2005 – 2007)
2008 - 2009

High Resolution SANS (SN3)

Status : Running

Mode :

- Preset time measurement
- Monochromator PG (004)
- Take-off angle 60°
- Neutron wavelength $\lambda = 1.667 \text{ \AA}$
- Double perfect crystals Si(311)
- Neutron flux before monochromator $\sim 6.5 \times 10^7 \text{ cm}^{-2} \text{ s}^{-1}$
- Neutron flux at crystal-1 $\sim 1.13 \times 10^4 \text{ cm}^{-2} \text{ s}^{-1}$

Development :

- Preset count system (software)
- Automatic sample exchanger movement

Utilization :

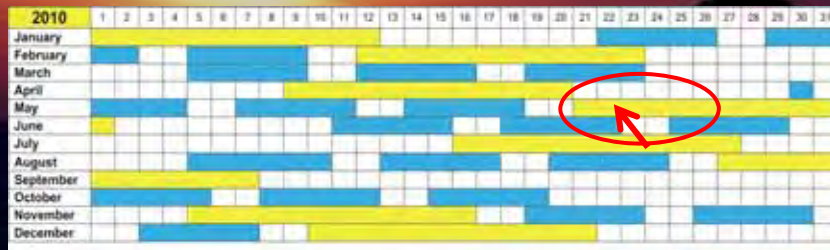
- N/A

Dr. Alan Maulana



2000 (2008 – 2009)

RSG-GAS Operation Schedule



Mode :

3 x 4 days + 1 x 11 days

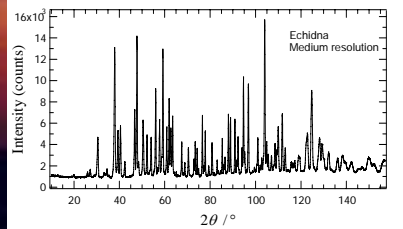
Total :

~ 160 - 170 days per year (2004)

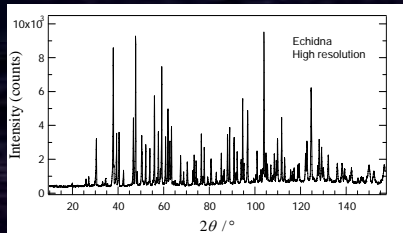
Under utilized!
Under developed!

Inter-laboratory Comparison - HRPD

Echidna – medium resolution (2 hr)

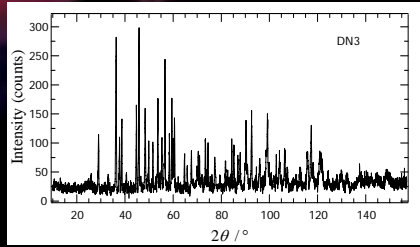


Echidna – high resolution (12 hr)



$\text{La}_{9.56}\text{Si}_{5.5}\text{B}_{0.5}\text{O}_{26}$ & $\text{La}_{9.58}\text{Si}_6\text{O}_{26.38}$

BATAN's HRPD (39 hr)



Silico-alumino-boro-apatites series for SOFC electrolyte

Timothy John White & Tom Baikie, Nanyang Technology University,

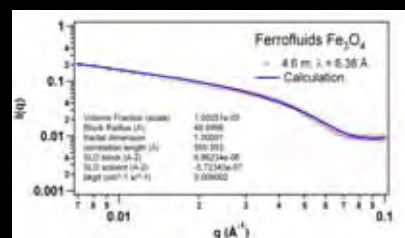
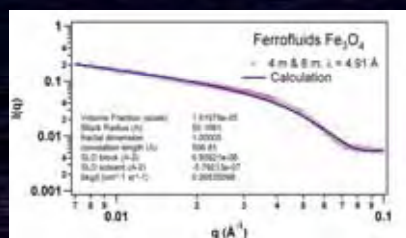
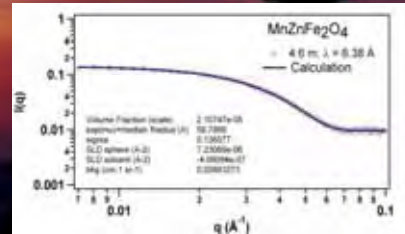
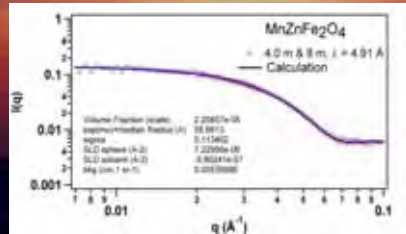
Inter-laboratory Comparison - HRPD

	Echidna	BATAN's HRPD
Composition x	$\text{La}_{9.58}\text{Si}_6\text{O}_{26.38}$	$\text{La}_{9.56}\text{Si}_{5.5}\text{B}_{0.5}\text{O}_{26}$
Space Group	$P6_3/m$	$P6_3/m$
a (Å)	9.7157(1)	9.6781(5)
c (Å)	7.1831(1)	7.1940(4)
V (Å ³)	587.20(1)	583.55(6)
GOF	2.44	1.12
R_{exp} (%)	3.24	16.42
R_{wp} (%)	7.91	18.32
R_p (%)	6.08	14.03
R_b (%)	3.04	3.62

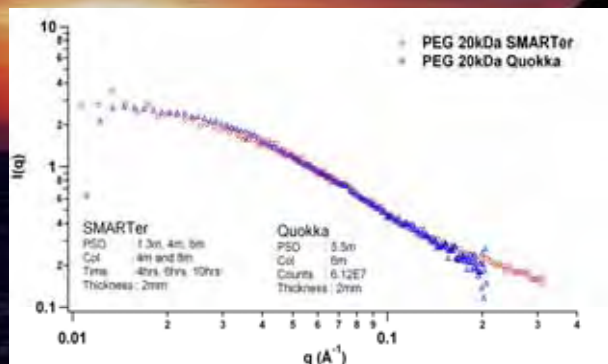
Inter-laboratory Comparison - SANS

SANS BATAN

SANS HANARO




Inter-laboratory Comparison - SANS



Strategic Planning on BATAN's Neutron Scattering Facilities (2010 – 2014)

- All neutron scattering instruments are working properly and functionally.
 - Triple-Axis spectrometer (TAS) has to be in full operation for inelastic experiment and phonon measurement.
 - High Resolution SANS (HRSANS) has to be in full operation for covering a wide Q-range, together with SANS (SMARTer) for nanostructure studies.
 - Revitalization & development of other instruments to maintain and improve their performance.
- International collaboration or networking, such as under the IAEA CRP, RCA, TC, TWAS, etc. on several instruments (ANSTO – IAEA Collaborating Centre, KAERI – RCARO); FNCA (JAEA)
- Neutron scattering applications on life sciences (Biology: Protein, virus, etc.)
- The Indonesian neutron user group has to be established (society).

Conclusions



What we have

1. A 30 MW Research Reactor operates at (only) 15 MW
2. Seven neutron beam instruments (with very different condition) – 5 running well.
3. Young and eager personnel needed to be exposed to any established Neutron Scattering instruments and facilities

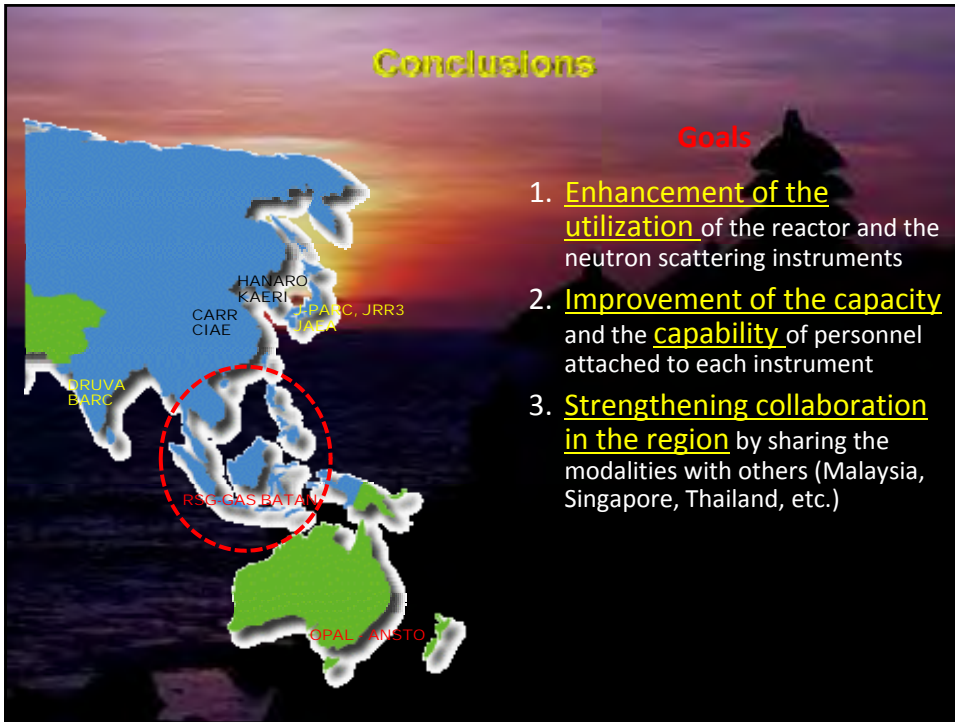
What we offer

1. 170 days yearly of beam time
2. Open for regional users - based on the scientific interest (research collaboration)
3. To train the postgraduate students, young scientists from the region (educational prog.)
4. Preliminary studies on neutron scattering experiment using; RSM, SMARTer, HRPD, FCD/TD, and NRF.

Conclusions

Goals

1. Enhancement of the utilization of the reactor and the neutron scattering instruments
2. Improvement of the capacity and the capability of personnel attached to each instrument
3. Strengthening collaboration in the region by sharing the modalities with others (Malaysia, Singapore, Thailand, etc.)



BATAN's Neutron Scattering Facilities in Serpong (Science and Technology Research Centre Complex)



Guest house

CSNS Project Overview

Fangwei Wang

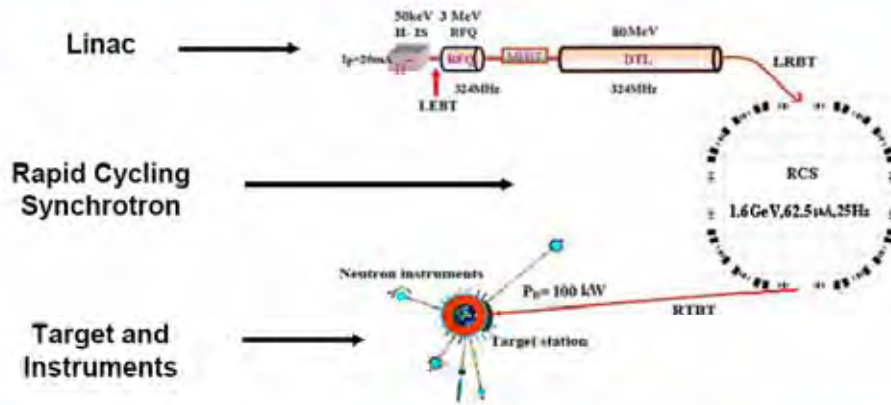
on behalf of CSNS Experiment System



散裂中子源
China Spallation Neutron Source

Project Overview

Facility Layout



- The phase-I CSNS consists of an 80MeV H⁻ linac, a 1.6GeV RCS, beam transport lines, a target station, and 3 instruments.

Page 3

Design Parameters

The 3D rendering shows the internal structure of the target station, including the **User Lab**, **30T CRANE**, **Hot Cell**, **No. 1 Instrument Hall**, **Walkway**, **Target Station Hall**, **Platform**, **Gas Room**, **Helium Compressor Room**, **No. 2 Instrument Hall**, and **Passage**. A **PROTON BEAM** is shown entering from the left.

Parameters	Phase I	Phase II
Beam power on target (kW)	100	200
Proton energy on target (GeV)	1.6	
Average beam current (μA)	62.5	125
Pulse repetition rate (Hz)	25	
Service Area	Target	
Equip. Passage	Moderators	
Basement	3; LH2(C), LH2(DP), H2O(D)	
Auxiliary Service Area	Reflector	
	Be	
	Beam ports	
	18	
	Neutron instruments	
	3	18
	Dose control in hall (μSv/h)	
	2.5	
	Operation (hrs/yr)	
	5000	

Page 4

Site Selection



- The site of CSNS has been selected at Dongguan, Guangdong Province.
- CSNS is the first large scientific facility in southeastern part of China. It can balance the present uneven distribution of the facilities, and promote advanced researches in the economic developed zone of Guangdong-Hongkong.

Page 5

CSNS Facility Layout



Page 6

Schedule

Prototyping R&D:	January 2006 – July 2010 (4.5 years)
Construction start:	September 2010
Civil construction:	September 2010 – September 2013 (3 years)
Component fabrication:	September 2010 – September 2014 (4 years)
Installation & tests:	May 2013 – May 2015 (2 years)
Integrated system commissioning:	Sept. 2014 – March 2015 (1.5 years)
1st beam on target:	March 2015
Project complete/operation start:	March 2016 (6.5 years from construction start)

Budget

- **Baseline**
 - 1.4B CNY (agreed) from central government for project construction
 - 0.5B CNY and land (committed) from Guangdong/Dongguan local government for additional supports
- **R&D**
 - 30M CNY (received) from CAS for R&D 1
 - 40M CNY (received) from Dongguan government for R&D 2 (included in 0.5B CNY from Guangdong/Dongguan)
- **Operation**
 - 0.14B CNY per year from central government

Human Resources

- CSNS in Guangdong will be a new branch of IHEP, with 400 new positions.
- Over 70 new staffs have been hired for CSNS.
- More experienced accelerator staffs are transferred to CSNS from BEPCII which was completed in July of last year.
- Experienced and high quality staffs in some area are urgently required, especially for target station, control, engineering etc.
- An attractive package for employee policy is needed.
- Full-time or short-time experts from home and abroad are welcomed.

Members of International Advisory Committee

CSNS International Accelerator Technology Advisory Committee (ATAC)

D.Findlay/RAL (chair)
I.Gardner/RAL
W.T.Weng/BNL
John D.Galambos/ORNL
R.Garoby/CERN
T.Hardek/ORNL
Stuart Henderson/ORNL
S.Holmes/Fermilab
David Gurd /ORNL
H.Kobayashi/J-PARC
Yoshishige Yamazaki/J-PARC
Takeshi Toyama/J-PARC
Mike Seidel/PSI

CSNS International Neutron Technology Advisory Committee (NTAC)

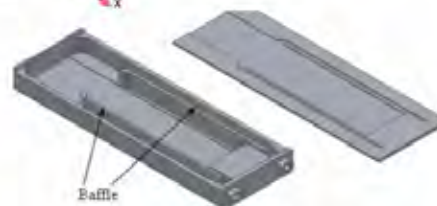
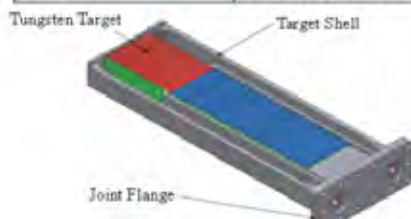
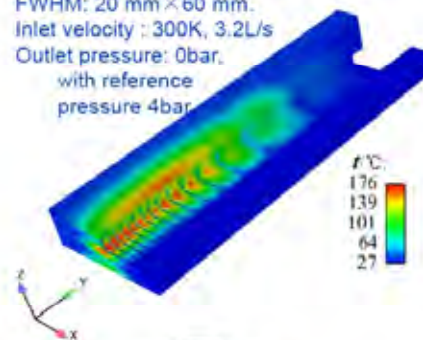
I.Anderson/ORNL (chair)
M.Arai/J-PARC
Takashi Kamiyama/KEK
Stephen Bennington/RAL
C.K.Loong/Argonne
Robert Robinson/ANSTO
Guenter Bauer/Juelich
W.Wagner/PSI
Y.Ikeda/J-PARC
Tom McManamy/ORNL

Design and R&D for neutron scattering

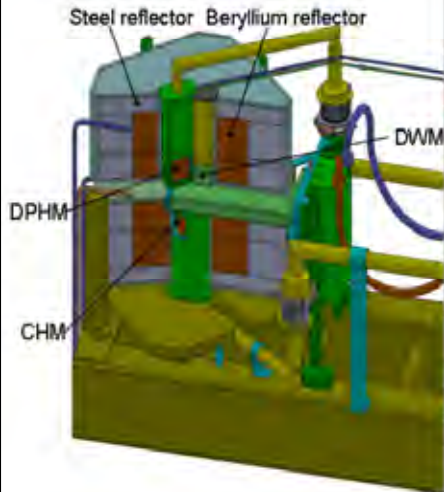
Target Design

Material	Tungsten cladded by 0.5 mm tantalum
Length	607.5 mm (tungsten: 570 mm; tantalum: 15 mm; heavy water: 22.5 mm)
Cross section	50x130 mm
Coolant	D2O/H2O, 1.5mm channel
Target container	8mm SS316 (2/4mm for incident window)

Beam footprint: 40 mm × 120 mm,
Gauss distribution in two direction,
FWHM: 20 mm × 60 mm.
Inlet velocity : 300K, 3.2L/s
Outlet pressure: 0bar.
with reference pressure 4bar



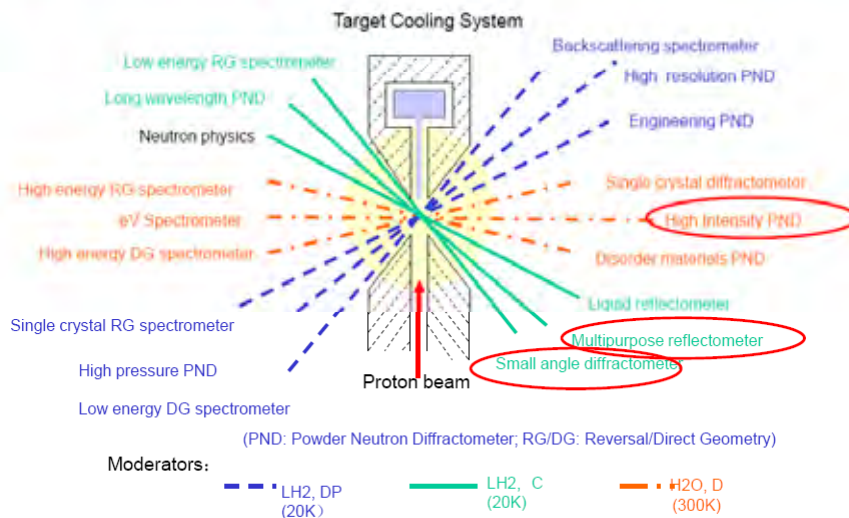
Moderator and Reflector



CHM	hydrogen volume	Φ150x100mm 20K
	Hydrogen vessel thickness	9mm except 5mm for view surface
	water premoderator thickness	20mm
DPHM	view surface VxH	100x102.2 mm
	hydrogen volume	120x120x50 mm 20K
	hydrogen vessel thickness	7mm
DWM	view surface VxH	100x102.2 mm
	poison position offset from center	5mm
	poisoner	Cd/Gd 0.5mm
	decoupler	Cd/ B4C 0.5-2mm
Reflector	water volume	110x110x50 mm
	water container thickness	4mm
	decoupler	Cd/ B4C 0.5-2mm
	Be reflector	Φ700x800mm
	Fe reflector	1000x1000x1000mm
	coolant	D2O/H2O, 10% volume fraction

Page 13

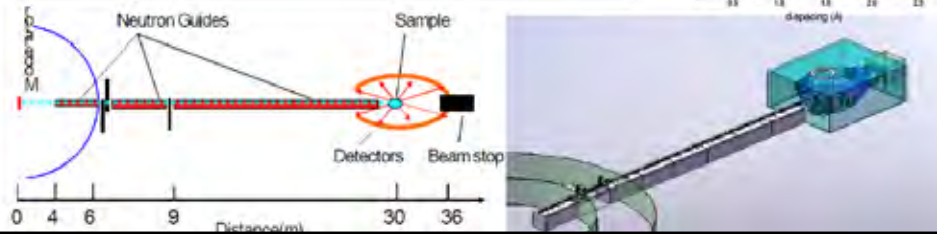
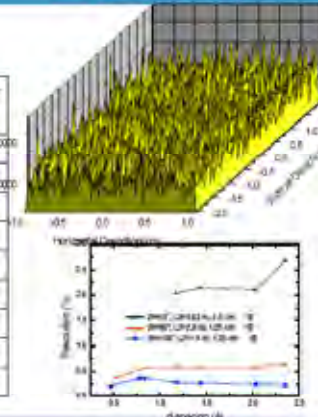
CSNS instrument layout



Page 14

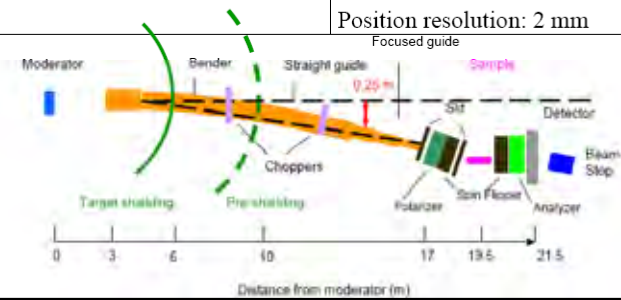
Neutron instrument: HIPD design

Moderator	decoupled water moderator (300 K)	
Bandwidth($\Delta\lambda$)	4.5 Å	
Max. Beam Size	40(h) × 20(w) mm	
Flux at sample position	~10 ⁷ n/cm ² /s	
Best Resolution($\Delta d/d$)	0.2 % at $2\theta=150^\circ$	
Guide	Taper focus, m=3	
Source to sample distance L1	30 m	
Sample-detector distance L ₂	$2\theta=150^\circ$	1.5 m
	$2\theta=90^\circ$	2.0 m
	$2\theta=15^\circ$	3.8 m



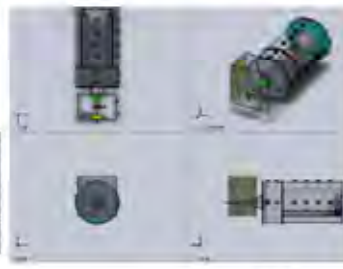
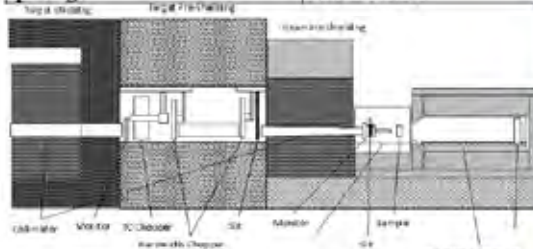
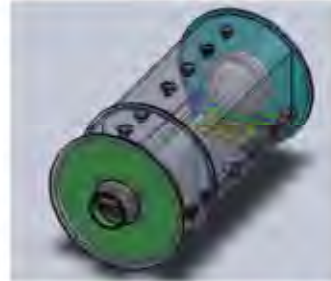
Neutron instruments: REFL design

Moderator	Coupled liquid H ₂ (20 K)
Bandwidth ($\Delta\lambda$)	6 Å
Guide	Bender+Straight+Taper 40 × 60 → 20 × 30 mm ²
Source to sample distance L1	19.5 m
Sample to detector distance L2	2 m
Sample table	6-axis movements
Polarizer/analyzer	Supermirror type
Detector	2D position-sensitive detector Position resolution: 2 mm



Neutron instruments: SANS

Moderator	Coupled hydrogen (20K)
Moderator to sample distance	14 m
Sample to detector distance	5 m
Detector	
Effective area	50 × 50 cm ²
Resolution	1 cm (FWHM)
Distance to sample	1-5 m
Working wavelength range	0.4-8 Å
q range	0.004-3.4 Å ⁻¹



Page 17

Neutronics simulation tools

- **TMR neutronics optimization:**
 - MCNPx
 - database and scattering kernel from ENDF / Sab2002/ La150
- **Shielding:**
 - MCNPx, DOORS
 - Cross section library HILO2K/ HEST1.0
- **Activation and afterheat**
 - LAHET /MCNP4C or MCNPx:
 - spallation reactions and particle Transports;
 - CINDER'90: activity, afterheat and decay gamma rays of the radionuclide,
 - MCNP4C: the dose rate induced



Page 18

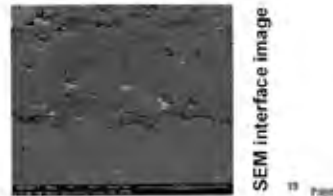
Target Materials

- **HIP**
 - temperature of 1500° C, pressure of 200Mpa
 - Good interface bonding achieved



W block Ta coated HIP Ta cladding SEM interface image

- **Plasma spraying**
 - Small gaps in μm order
 - further process underway



SEM interface image

Detector and electronics

- **LPSD array and its electronics**



8-tube column 4-column array preamplifier QTC DAQ test

- **2D MWPC and its electronics**



design fabrication MWPC strip readout MQ

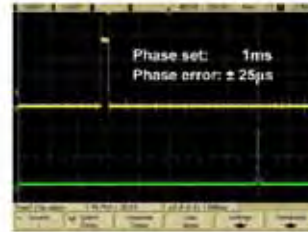
- **Scintillator detecors**

- Finish its preliminary design, start scintillator ordering

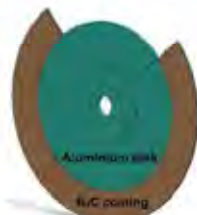
Bandwidth Limited Chopper



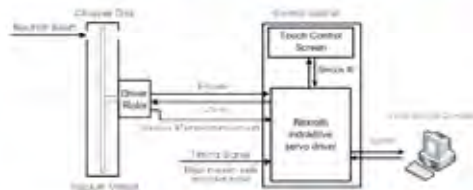
Photograph of the prototype machine



Phase control on the chopper mock-up machine



Mixture of B₄C micro powder and TS811 epoxy resin



Neutron chopper control system on the prototype machine

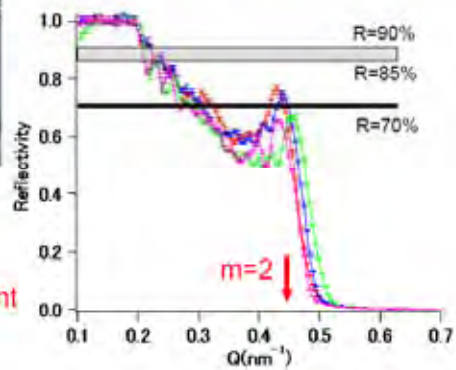
Page 21

Neutron Guide



3rd measurement
(12/2008)

- Red: No.4 (08-11-19)
- Blue: No.5 (08-11-21)
- Green: No.2 (08-06-20)
- Pink: No.2 (08-07-04)



Page 22

Users Development

- Five CSNS User Meetings/Workshops on Application of Spallation Neutron Source have been held since 2004
 - User Committee has been set up
 - discuss and review the design of 3 instruments for CSNS phase-1 project
 - a better understanding of special needs from the potential users
- CSNS start to support some users for training at foreign neutron sources in 2005.



Summary

- CSNS site was decided at Dongguan, Guangdong province.
- The CSNS is designed with the capability for upgrading from 100kW to 200kW.
- Most of the key components are under prototyping.
- Review of feasibility study was performed in October 2009.
- Construction of the project is planed to start in this year, and complete in 2017.
- We are facing many challenges to achieve the specific goals. The collaborations (international and domestic) will be important to the success of the project.

Thanks for your attention!