IFMBE News

International Federation of Medical and Biological Engineering
No. 90,May - October 2012, ISSN: 1741-0800

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No. 90, May-Aug. 2012

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ISSN: 1741-0800

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EDITORIAL

New Phase of IFMBE

IFMBE World Congress 2012 conference was held at the end of May in Beijing, China. Delegates of IFMBE from all around the world attended discussion groups and developed plans for the IFMBE's future.

Main members of IFMBE Publication & Publicity Committee (PPC): Ratko Magjarević, Mario Forjaz Secca, James C.H. Goh, Saide Calil, Marc Nyssen, and Nicolas Pallikarakis had discussed and decide on important future direction during the WC2012 meeting. The first was the decision to elect a keen member from PPC to be in charge of the Publicity work, and to distinguish the Publicity from Publication as separate work. All the attendees agreed that the task of Publication is to continue existing publishing arrangement with Springer company. For Publicity, the focus will be to submit IFMBE press releases to local and global media outlets; the work on Publicity will be managed by the new PPC co-chair.

Based on the reforming work of IFMBE by the previous President Prof. Herbert Voigt, we expect the new President Prof. Ratko Magjarević to work in enabling the profession of biomedical engineering for the members and to create a new phase of growth by providing the best possible services.

In this issue of IFMBE News, the main theme was focused on the report and conclusion of WC2012 held in May. We very much appreciated that Dr. DePei Liu, the President of WC2012, and Ms. Weng, for providing the conference review of 2012 with abundant wonderful pictures. Specially, Dr. Sierin Lim shared a report on the theme of Asia Pacific Research Networking Fellowship 2012 (APRNF 2012), to express a visiting experience to the outstanding biomedical labs in Taiwan and Japan.

As usual, Prof. Monique Frize turn in the latest developing report of WiMBE and this time emphasized the WC2012 discussion groups. Prof. Biziya Enkhjargal introduced the biomedical engineering study in Mongolia which was bringing a new vision for us. Prof. Olof Lindahl provided an article describing the current development of biomedical engineering. All the pieces enriched the content of the latest IFMBE News and we hope everyone to share idea with us.

Kang-Ping, Lin
Editor, IFMBE News

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Words from the President

Dear Colleagues,

After the very successful World Congress of Medical Physics and Biomedical Engineering, held in Beijing in May this year, a new triennial cycle of Federation's activities has began. First of all, I would like to introduce you to the newly elected Officers of the IFMBE: Professors James Goh from Singapore, the President –Elect; S.M. Krishnan from Boston, elected Secretary General, and Marc Nyssen from Brussels as the new treasurer. Prof. Herbert Voigt did an outstanding job as the President of the IFMBE in the previous term of office and it will be a real challenge to keep his pace. I am very glad that Herb took over the leadership of the International Union for Physical and Engineering Sciences in Medicine (IUPESM) and from his first actions after taking the Presidency, I expect a growth of activities and better representation of MP and BME on the International scene. Prof. Voigt will continue his work in the Administrative Council of the Federation as the Immediate Past President. I have been collaborating with Herb, James, Krishnan and Marc for a number of years and I am sure that we will be able to serve the Federation in the forthcoming three years up to our best abilities.

It is not only that the leadership of the Federation has changed. In Beijing, the IFMBE General Assembly has adopted changes in the Statutes of the Federation which I hope will improve the governance of the Federation and open a lot of new opportunities for the affiliated societies, regional groups, divisions and the Academy. For all of those who were not able to follow the changes, let me try to elaborate in a few words:

The Administrative Council shall in the future consist of four officers (President, President-Elect, Treasurer and Secretary General), the Immediate Past President, four ordinary members elected in general elections by all IFMBE General Assembly Delegates, four members representing IFMBE Regional Groups, and Chairs of the Academy, two Divisions and the Council of Societies.

During the previous term of office of the IFMBE Officers and Administrative Council (AC), we had a lot of discussion on how to empower the BME Societies and meet their needs to develop BME research and development, education and collaboration with the BME industry in a more efficient way. We were able to identify a lot of differences, various problems and ideas for their solving brought up by the representatives of the affiliated BME societies from all over the world. Therefore, the Strategic Planning Committee has brought the idea of regional re-organization of the AC elections/membership in such a way that the representatives of the affiliated societies elect one representative of each region, who could then elaborate the standpoints and address the needs specific to the region at each AC meeting. Four regions with considerable representation in number of BM engineers have been identified: Asia-Pacific; North America; Latin America and as the fourth, Europe and Africa.

Some societies were already organized in regional bodies affiliated to the IFMBE, so it was easy to identify two Regions based on current organization of the Asia-Pacific Rim Working Group and CORAL, the regional organization of Latin American BME Societies and IEEE EMBS Chapters.

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With European representation of BME Societies the setting is more complicated since in Europe, in addition to a large number of IFMBE affiliated BME Societies, there is a large IFMBE daughter organization, the European Alliance for Medical and Biological Engineering and Science (EAMBES) which is also an IFMBE affiliate. EAMBES has also membership from European scientific and professional BME societies and from the Academy (Universities, Institutes). In the coming years, the leaders of both organizations (IFMBE and EAMBES) shall together with all affiliated member societies work on best possible models for the collaboration and representation of European BME community. Currently, there are only two BME Societies from Africa affiliated to IFMBE, in particular from Nigeria and from South Africa. These two societies as well as BM engineers from other African countries have tight links with European societies or academia, so for the time being, until the number of African affiliates does not grow, Europe and Africa will be considered as one region.

Finally, the fourth region considered was North America. In North America, there are national representatives of BME community, the American Institute for Medical and Biological Engineering, AIMBE, and the Canadian Medical and Biological Engineering Society, but also the headquarters of numerous and strong transnational BME societies: the IEEE Engineering in Medicine and Biology Society (IEEE EMBS) and the American College of Clinical Engineering (ACCE). The proposal for the reorganization considered the Transnational BME organizations belonging to the region where the headquarters is situated, which would assure the forming of four regions with equal representation in terms of geographical orientation and total membership in terms of members of affiliated societies.

Since these changes were adopted only at the General Assembly in May 2012, the procedures have to be prepared, so the IFMBE currently has an interim AC. Until the procedures are adopted and the elections of the four regional representatives are held, the ordinary AC members whose term of office expired in 2012, shall hold their positions. The General Assembly has extended their term of office until the end of this year.

The second change in the organization of the Federation was the introduction of the Council of Societies, instead of the historic Secretaries Committee and immediate previous Societies Committee. The council shall consist of one representative of each affiliated organization, but shall be responsible for execution of the elections of regional representatives. The Chair of the Council of Societies is according to the new organization an ex-officio member of the Administrative Council.

Finally, the third large change in the statutes was adding the chairs of the International Academy for Medical and Biological Engineering (IAMBES) and the chairs of both IFMBE Divisions, the Clinical Engineering Division (CED) and the Health Technology Assessment Division (HTAD). This shall enable a much closer collaboration between these bodies and the Federation and also give a higher visibility to each of them.

Let me at this point thank AC members who have already served for one term and continue for another term, profs. Luis Kun and Olaf Lindahl for their support to the Federation in their first term of office, welcome newly elected AC members, Profs. Maria Siebes, the Netherlands and Mario Secca, Portugal, as well as the new, ex-officio AC members, Profs. Roger Kamm, Chair of the IAMBE, Saide Calil, Chair of the CED, Nicolas Pallikarakis, Chair of the HTAD and Andrei Linnenbank, Interim Chair of the Council of Societies. I would like to thank the interim members of the AC, Profs. Akos Jobbagy, Sun Kim and Jan Wojcicki, for their support and willingness to continue their positions until the elections of regional representatives are concluded.

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The new management structure of the Federation is a step forward in boosting the activities and the influence of the IFMBE in development of global health care policies and research in the field of biomedical engineering and sciences. This growth of activities is going to be a challenge for the Officers and the AC and at the same time it will demand a lot of new volunteers to join the activities. I am looking forward to working with you!

Ratko Magjarevic
IFMBE President

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Review of WC 2012

The 2012 World Congress on Medical Physics and Biomedical Engineering (WC2012) was held in Beijing, China from May 26 to 31, 2012. As a triennial important event of the International Union of Physical and Engineering Sciences in Medicine (IUPESM), the International Federation for Medical and Biological Engineering (IFMBE) and the International Organisation for Medical Physics (IOMP), the World Congress in 2012 for the first time took place in China and hosted by Chinese Society of Biomedical Engineering (CSBME) and Chinese Society of Medical Physics (CSMP). "Promoting Health through Technology" is the theme of this Congress.

Dr. Depei Liu, the President of the WC2012 and the former President of CSBME opened the Congress on May 26. During the opening ceremony, Prof. Barry J Allen, the President of IUPESM; Prof. Herbert F. Voigt, the President of IFMBE; Prof. Fridtjof Nüsslin, President of IOMP and Prof. Dov Jaron, Representative of International Council for Science Union (ICSU) delivered their speeches respectively. Besides, the Award Ceremony of IUPESM was held.

fig.1 Opening of 2012 World Congress

fig.2 Dr. DePei Liu, Chair of 2012 World Congress on Medical Physics and Biomedical Engineering, addressed in the opening ceremony

Also, the WC2012 was supported by local biggest NGO: Chinese Association for science and technology (CAST) and many relevant local government departments, research institutes in China. The president of CAST, Dr. Qide Han attended the opening ceremony and gave a speech.

The WC2012 invited the Year 1991 Nobel Prize Winner, Prof. Erwin Neher to deliver a Keynote Speech in the Opening Ceremony. This speech excellently builds the connections between Physics, Engineering and Biology, also subsequent applications to medicine, making a perfect match to the scope of our

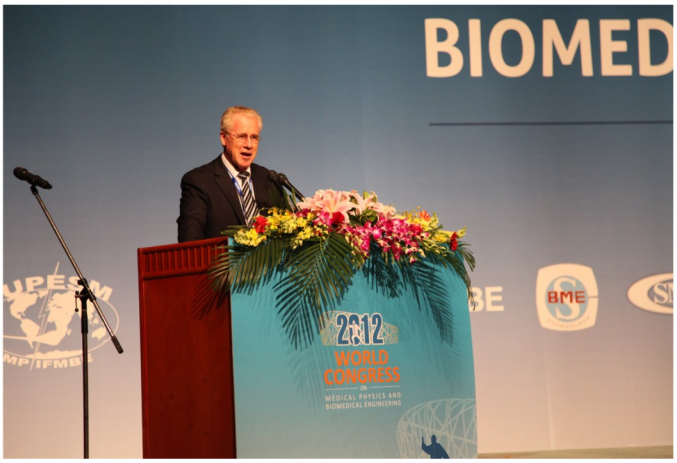

fig.3 Prof. Barry J Allen, the President of IUPESM, gave speech in the opening ceremony

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fig.4 Prof. Herbert F. Voigt, the President of IFMBE delivered speech in the opening ceremony

On each subsequent congress day, the scientific program is highlighted by one exciting plenary speech of a world-class leading scientist and 2 or 3 attracting theme keynote speeches given by high reputation experts in different academic areas. All invited speakers and speeches were well advertised thru website and program book. (please find out details on the website: www.wc2012.org)

The WC2012 totally set up 19 themes and 180 tracks for scientific program, which covered all branches of biomedical engineering and medical physics, and obviously more than the former one. It shows that techniques innovate has been driving rapid development in some branches, and some new points predict the developing trend of future medical mode.

About 700 full papers and 1500 abstracts of submissions were reviewed by more than 500 professionals from all over the world. Among all submissions, 608 full papers were accepted and edited to be published on IFMBE proceedings by Springer.

The congress scientific program scheduled more than 200 oral sessions (including about 1200 oral presentations) and 80 posters sessions (including about 800 poster presentations). Around 2000 people from 82 countries attended the Congress for scientific communication. The congress attracted many international young investigators, especially about 600 student delegates.

fig.5 Prof. Dov Jaron, Representative of International Council for Science Union (ICSU), addressed speech in the opening ceremony

In addition, 24 mini-symposiums and 9 workshops were carefully organized to concentrate on some hot topics, and 130 invited experts shared their latest investigations and new points. These special sessions attracted lots of audience. According to statistics of session chair reports collected during the congress, totally more than 1200 audiences were involved in mini-symposiums and workshops.

Most of the attendants highly ranked this congress for its full and various scientific activities, in which abundant information and active AQ shared the latest research results to make academic development energetic.

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Words from the Chair of 2012 World Congress

(By Depei Liu, PhD, May 31st of 2012, at closing ceremony of WC 2012)

Distinguished guests, friends, ladies and gentlemen,

Good morning! Welcome to the closing ceremony of World Congress 2012.

First of all, I would express my deepest thanks to all of you, distinguished guests, professors and students from all over the world for attending Beijing World Congress 2012. Special thanks to leaders of the three international organizations: IUPESM, IFMBE and IOMP, for your great support to the congress. Meanwhile, I would highly appreciate all invited speakers, committee chairs and all theme/track/session chairs for your important contributions. Many thanks to our local and international friends, for your sincere help and suggestions on organizing this exciting congress. And also thanks to our Platinum Sponsor **Mindray Corporation**, two Golden Sponsors: **Neusoft Corporation** and **Research in Germany**, as well as 40 sponsor companies for your great financial support.

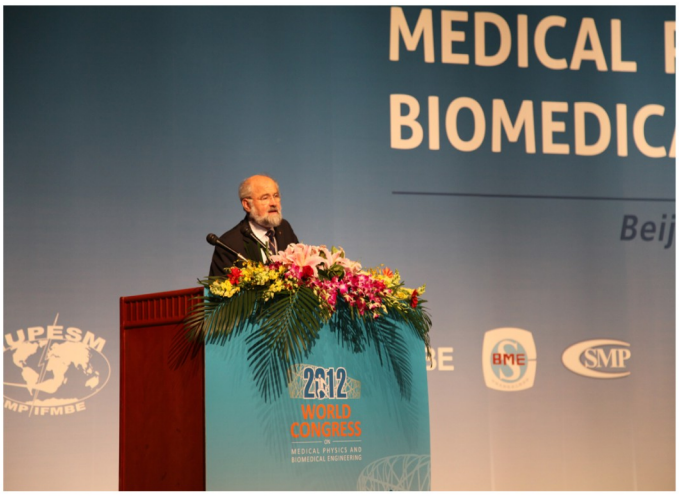

fig.1 the Year 1991 Nobel Prize Winner, Prof. Erwin Neher to deliver a Keynote Speech in the Opening Ceremony

fig.2 Poster session

fig.3 Reception and banquet time

Next, I would like to give a short summary on the scientific program and activities. Totally, we have received about 2200 submissions, including over 700 full papers and 1500 abstracts. After peer-reviewing by over 500 worldwide experts, about 600 full papers were accepted and finally included in the IFMBE Proceedings published by Springer Press, and more than 2100 submissions were finally included in the congress abstract CD.

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For the scientific program, there are substantial increase on the numbers of themes and tracks in this congress compared with the former one. This is mainly due to the rapid development of many research areas during the past three years, such as Biomechanics, Bio-signal processing, Cancer Treatment and so on. As a result, we have total 19 themes and about 180 tracks in World Congress 2012.

About the invited speakers, we feel greatly honored being able to invite the Year 1991 Nobel Prize Winner, Prof. Erwin Neher, to deliver the Keynote Speech in the Opening Ceremony. This speech excellently builds the connections between Physics, Engineering and Biology, and also subsequent applications to medicine, making a perfect match to the scope of our Congress. After this shining start point, on each subsequent congress day, the scientific program is highlighted by one exciting plenary speech delivered by a world-class leading scientist and 2 or 3 attracting theme keynote speeches given by high reputation experts in different academic areas. In the final program, we use individual and well-designed full pages to introduce those speakers and their talks to attract great attention and wide interests from the congress attendees.

fig.4 outside meeting rooms

fig.5 Closing ceremony- YIC

Over 200 oral sessions and about 80 poster sessions are in the congress. In addition, 24 mini-symposiums and 9 workshops are carefully organized by the experts in the fields. All these academic events make a very strong scientific program in the congress.

Last but not least, I would like to say: We are very happy and honored to be the host of this successful and wonderful Beijing World Congress 2012, providing the platform for all distinguished attendees to exchange latest scientific results, technologies and achievements, and especially, to increase chances of potential cooperation in the near future.
Thanks to everybody and see you next time on 2015 world congress in Canada!

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Asia Pacific Research Networking Fellowship 2012 (APRNF 2012) Report

The Asia Pacific Research Networking Fellowship 2012 (APRNF 2012) was organized by IFMBE Asia Pacific Working Group on 19th – 31st May. The program started in Taiwan, followed by Japan, and concluded at the 2012 World Congress on Medical Physics and Biomedical Engineering (WC 2012) in Beijing. The previous APRNF had been successfully held in 2006 and 2009.

fig.1 The Fellows with the President of IFMBE, Prof. Herbert F. Voigt (third from the right), and the President of Taiwanese Society of Biomedical Engineering, Prof. Fong-Chin Su (third from the left), during IFMBE Presidential and MBEC Jubilee Reception. The Fellows (left-to-right): Dr. Yeh, Dr. Ting, Dr. Lim, and Dr. Nakamura.

The Taiwanese Society of Biomedical Engineering and Japan Society of Medical and Biological Engineering jointly hosted the APRNF 2012. Four representatives from Taiwan, Japan, Singapore, and Malaysia participated in APRNF 2012. The nominated 2012 Fellows were Associate Prof. Dr. Chih-Kuang Yeh (National Tsing Hua University, Taiwan), Associate Prof. Dr. Ryoichi Nakamura (Chiba University, Japan), Assistant Prof. Dr. Sierin Lim (Nanyang Technological University, Singapore) and Dr. Hua-Nong Ting (University of Malaya, Malaysia).

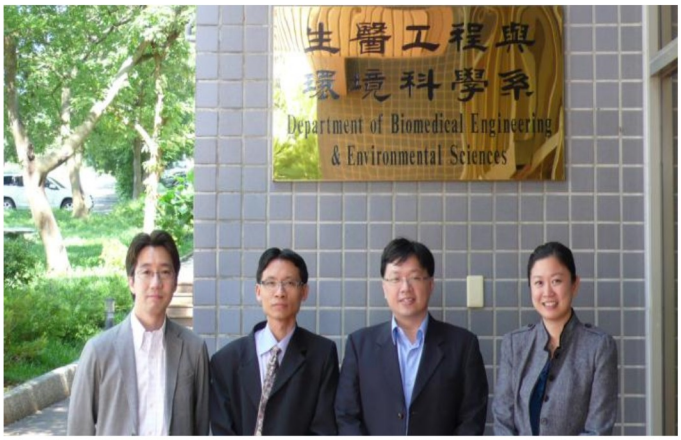

fig.2 Visiting in Taiwan at the Department of Biomedical Engineering and Environmental Sciences Department at the National Tsing Hua University

The APRNF 2012 visit started in Taiwan at the Department of Biomedical Engineering and Environmental Sciences, Nuclear Science and Technology Development Center at the National Tsing Hua University; Division of Medical Engineering Research and Center of Nanomedicine Research at National Health Research Institute; Department of Biomedical Engineering at the National Cheng-Kung University; and the Metal Industries Research and Development Center.

In Japan, we visited the Department of Medical System Engineering and Center for Frontier Medical Engineering at the Chiba University; Medical Innovation Center and Department of Advanced Medical Initiatives at the Kyushu University; and the Center for Medical System Innovation and Global Center of Excellence for Mechanical System Innovation at the University of Tokyo.

Stimulating discussions arose during the presentations of our research to the faculty and students at the National Tsing Hua University, National Health Research Institute, and the University of Tokyo. At National Cheng Kung University we shared not only our research activities but also academic and society activities in our respective countries.

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fig.3 The Fellows and Faculty Members with BME Freshmen at National Cheng-Kung University

The activities of the Biomedical Engineering Society (Singapore) Student Chapter spurred interests among the undergraduate students. To balance the research activities, we also had dinner socials with the Taiwanese Society of Biomedical Engineering and with faculty and students at the University of Tokyo.

We flew to Beijing on 26th May to attend the WC 2012 at Beijing International Convention Center. We had the great honor to be invited to the IFMBE Presidential and MBEC Jubilee Reception on 27th May. We presented our research and concluded the APRNF 2012 at the IFMBE Asia-Pacific Working Group meeting on 28th May where we also met a couple of the previous Fellows. The Malaysia and Singapore societies are very keen on hosting the next APRNF in 2015.

We would like to thank IFMBE for the financial support; Asia-Pacific Working Group for the program initiation and organization; Taiwanese Society of Biomedical Engineering and Japan Society of Medical and Biological Engineering for hosting the APRNF 2012. The Fellowship has allowed us to share not only our scientific knowledge but also the research landscape and medical device regulatory affairs in each other's country.

The newly formed network has opened a new window of opportunities for scientific collaborations in the form of research/student exchanges, journal editorships as well as forging new friendships. We hope to share the experience with future Fellows.

Prepared by,
Dr. Hua-Nong Ting
Dr. Sierin Lim
Dr. Ryoichi Nakamura
Dr. Chih-Kuang Yeh

fig.4 Visiting Kyushu University: Center for Surgical Training

FROM THE SOCIETIES/COMMITTEES

-Women in Biomedical Engineering (WiMBE)-

Workshop Report: How to Increase Participation of Women in Biomedical Engineering Beijing, May 30, 2012, WC2012

fig.1 Attendants of Wokshop of WiMBE during WC2012

The Chair (Monique Frize) discussed how the workshop would unfold and asked three groups to form as much as possible by geographic region, although some exceptions provided a broader view in each group. Twenty persons attended and were active participants in the small group discussions. The three groups were composed of persons from:

(I) Australia, USA, Brazil, China, and Germany
(ii) Mainland China, Hong Kong, Singapore, Japan, South Korea, Algeria
(iii) Europe and Cuba

Australian and North American Group Participants: Laura Poole-Warren (Chair, Australia), Penny Martens (Australia), Kate Fox (Australia), May D. Wang (USA), Mu Lim (student from China), SubrataSaha (USA), Birgit Glasmacher (Germany), Anna Maria (Brazil)

The group discussed various issues relating to challenges for women in science and engineering. These included:

- 1. although attracting women is still an issue in some branches of engineering in the biomedical areas the problem of retaining women in the field are more acute
- 2. the low numbers of senior female role models in the field, including very low numbers of female plenary and keynote speakers and awardees
- 3. there is limited information on the proportion of female abstract/paper submissions to conferences and the acceptance rate for females versus males is unknown
- 4. female attendance at conferences may be impacted by financial limitations in some areas (the example of scholarships for females to attend Medical Physics conferences was raised)
- 5. the definition of "early career researcher" for females is the same as for males despite the higher likelihood for females to have career interruptions and part-time employment in the post-PhD period due to maternity leave
- 6. communication of information relating to WiMBE with groups like INWES at the individual organisation and institutional level needs to be improved

Recommendations

1. Propose female plenary speakers with the aim of achieving 50% female speakers at plenaries at the 2015 World Congress
2. Develop and obtain support for a multinational women's travel scholarship to support a delegation promoting women in science and engineering (this could be modelled on the Singaporean travel fellowship model)
3. Collect data on female to male ratios for paper submission and acceptance and on conference attendance to better understand whether there is an issue with access to conferences. If this is an issue, consider introduction of scholarships for female attendance and other factors that could improve the ratio.

FROM THE SOCIETIES/COMMITTEES

4. Improve the WiMBE website and ensure that better communication of the website and contents occurs to support improvement of profile. Strategies for improved communication of activities at the Societies level via the newsletter and website should be developed and implemented.

Asia group

Participants: Shauna Mullally (Chair, Canada), Mainland China (Yuchuan Fu, BME working in a hospital); Singapore (Tan Peck Ha, director of a 3 year BME diploma programme); Japan (Miki Kaneko, BME student); Hong Kong (Winnie So, BME student); Algeria (Ahmed Meghzifene, working for the IAEA); South Korea (Sangbeom Jun, Instructor of a BME programme).

Discussion themes

There was a really lively discussion about the challenges of recruiting and retaining women in Biomedical Engineering(BME) in Asia. Some of the challenges discussed (balancing work and family, lack of role models, etc.) reflect wider global challenges, while others were more specific to the Asian context. These are:

1. Cultural – women are expected to join the workforce immediately after receiving their bachelor degree (i.e. not pursue post-graduate studies); to 'place family first' after getting married; at times female students and professionals are openly discriminated against for positions

2. Economic – there are not many options for BME research positions within Asian industry

Regarding recruitment, participants said it was hard to attract female students because:

- 1. Government policies support females entering life sciences more than engineering
- 2. The programmes are associated with hard work but low pay (as compared with finance, business and life science research positions which are more highly valued)

Regarding retention, cultural expectations around the role of women was a large factor identified in losing women in the profession. “Women get lost” between 25 and 40, when most are expected to become mothers and policies to support working mothers are not strong.

Additionally, there were more open signs of discrimination than are found in other regions. For example, participants shared anecdotes of employers stating that they only wanted to review the profiles of recent *male* graduates and reject all female students for workplace attachments based on their gender.

Some strategies employed to combat these challenges include senior faculty visiting female students on workplace attachments and 'checking in with them' regularly during their studies.

Recommendations

1. Create an international mentoring network.

2. Advocate for the appointment of a women BME representative on each of the IFMBE's new regional Councils.

The breakout session was a great venue for discussion and sharing of experiences and strategies. The need for established mentorship programme options was loud and clear.

FROM THE SOCIETIES/COMMITTEES

European group

Participants: Alicia El-Haj (Chair, UK), Consuelo Varela (Cuba), Jorge Castro (Cuba), Kurt Höller and Birgit Glasmacher (Germany), Suzanne Picard (France) and Lena-Kajsa Sidén (Sweden).

Discussion points: In Europe, there have been a significant number of groups involved in promoting Engineering and Physics in schools as a discipline, encouraging an increased number of female students taking these courses. The participant from Germany commented that in his Institute they had created a new undergraduate course called Healthcare Engineering which had 70% female student enrolment. This reflects the greater participation of women in courses which interface the bio or biomed aspects of engineering and physics.

The consensus was that undergraduate aspects of women's issues are being well covered by existing groups within Europe with some success. The issue is now how to retain and support these students through their career if they choose to carry on to PhDs and remain within the clinical healthcare or academic sector.
The group felt there was a lack of senior female role models who were accessible or visible to this community. In addition the group felt that the openings and support for senior women in the field was lacking.

Recommendations:

1. The IFMBE should make proactive efforts to have female representation on the Council. This should be maintained with a suitable ratio (in proportion to female membership).
2. There should be a new award scheme for outstanding younger female researchers and senior female researchers. The award for the senior researchers should link through to presentations at the World Congress.
3. An international mentor scheme should be encouraged and facilitated through the website.

fig.2 Group Discussion of Workshop of WiMBE during WC2012

Conclusion

The workshop was highly successful in indentifying issues in the several regions of the world. Although some of the participants in groups were from other regions, it was useful to hear from everyone. A clear consensus was reached by each group on each region's priorities and objectives, with doable recommendations put forward. It is important that the WiMBE committee work with the Administrative Council, with constituent societies, and with the WC2015 organising committee to ensure that the recommendations are implemented by 2015 in Toronto. The WiMBE committee is now expanded with several new members from regions not covered previously and the hope is a broader outreach for putting together an action plan to reach the goals described above.

As Chair, I wish to thank the three facilitators: Laura Poole-Warren (Australia), Alicia El-Haj (UK), and Shauna Mullally (Canada) for their help! Also many thanks are due to all participants at Workshop 8 in Beijing for their positive contributions to the future of WiMBE.

Monique Frize, Chair, WiMBE Committee

FROM THE SOCIETIES/COMMITTEES

Note:
The WiMBE committee is welcoming the following new members:

Penny Martens (Australia),
Shauna Mullally (Canada),
Consuelo Corona (Cuba),
Lena Kajsa Siden (Sweden),
Tan Peck Ha (Singapore),
May D. Wang (USA),
Andrel Linnenbank (The Netherlands);
Ratko Magjarevic (Croatia), the new President of IFMBE, ex-officio.

-Clinical Engineering Division (CED)-

Development of Clinical Engineering in China

Yadin David, Dan Zhou, William Hyman, Kun Zheng

A common element among most of the professional societies around the globe is the mission to serve the community through pursuant of continuing education opportunities, networking and knowledge sharing, and professional development that includes professional recognition and certification. In these regards, the Chinese Clinical Engineering Society known as the Medical Engineering Society (MES) of Chinese Medical Association (www.cceweb.cn) is no exception.

Following the 2012 World Congress in Beijing, China this year colleagues asked me about the state of clinical engineering there. Not many non-Chinese clinical engineers have had the opportunity to visit a Chinese hospital, so it will be appropriate to begin by sharing some facts about the healthcare system there. In comparison to the United States, an important fact that contributes to the growth of clinical engineering is that there are about 10-fold more hospitals there. The more than 60,000 hospitals in China do vary in size, complexity, designation and affiliation. In the larger metropolises, hospitals with 2,000 to 4,000 patient beds are considered normal and National. National and local Chinese governments are expected to spend about 100 billion Renminbi, or about $US 15.5 billion over the next 7 years. This significant investment in the Chinese healthcare services magnifies the need for continuous growth and improvement in healthcare technology management expertise and thus the clinical engineering profession.

FROM THE SOCIETIES/COMMITTEES

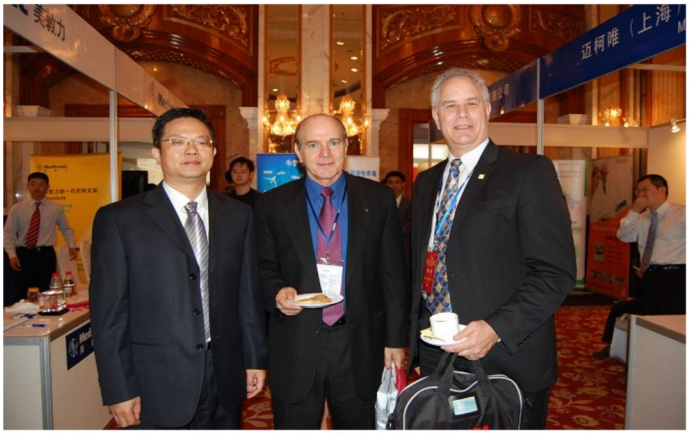

fig.1 Drs. Dan Zhou (president of the Chinese medical engineering society), Yadin David (Previous chairman of IFMBE/CED) and Prof. Elliot Sloane

The roles and responsibilities of the hospital staff in these facilities are not an exact match to those that are common in the US. For example, the purchasing process and purchasing decisions, and the accreditation of hospital operations, and the role of nursing staff are all different than in the United States. To become part of the care team, the MES, chose to become affiliated with the professional Chinese Medical Association (CMA). Affiliation with the CMA was accomplished in 1993 and today the MES is one of the 82 academic branches of the CMA. The presence of clinical engineers is varied among hospitals, with the majority of hospitals still not having the benefits of having trained clinical engineers on their staff. The total number of clinical engineering and technical personnel, in China, is estimated at 115,000. The MES now has a membership of several thousands of individuals and they have achieved some influence in China's rapidly growing healthcare delivery system. The members of MES represent every region of this large country. They are practicing as clinical engineers as this profession is recognized elsewhere, namely by providing technical support through tasks such as preparation of bids, acquisitioning of medical equipment and information technology, installation and commissioning, planning and functional development, quality assurance, devices utilization, service and maintenance, technical training, systems integration, and support of scientific research.

Others practice as consulting experts, in academia and teaching including administrative staff from educational programs and from manufacturing companies working in medical engineering research and development, production, distribution, and support. The MES has a strong liaison with government and medical sciences and technology associations, and has become an important society in the improving of healthcare delivered to the diverse and remote communities. Dr. Dan Zhou, who was elected chairman of the Chinese Medical Engineering Society last year was instrumental in building the momentum for clinical engineering in China, for establishing its Clinical engineering certification program, as well as serving as co-opted member of the IFMBE Clinical Engineering Division.

One of the important activities that helps the MES is their ability to organized and deliver an annual conference and exhibition event that includes knowledge exchange, review of best practices, quality education and training sessions and domestic and foreign speakers that are invited to contribute to the professional development of clinical engineering. After the development and adoption of policies and procedures for a national certification program in clinical engineering, the annual conferences of the last four years have also included training for and the offering of the clinical engineering certification program. The program is based on a structure similar to the one practiced in the US and it includes both a written and oral exam. Consistent with the argument used in the US and elsewhere, certification in China contributes to an overall improvement in competencies, recognition of those with demonstrated competence, and the standardization of clinical engineering practice in China. The program emphasizes life cycle technology management, hospital program management, engineering participles, regulatory compliance, risk management, patient safety, and integration of medical devices with information technology.

FROM THE SOCIETIES/COMMITTEES

In 2011, the Twelveth Annual Conference of The Chinese Medical Association & Clinical Engineering was held in Houngshan city. This conference cooperated with international organizations, and was supported by the Clinical Engineering Division of the IFMBE, by ACCE, and by entities such as the ECRI Institute and the German regulatory association. In addition, several foreign speakers came from a variety of countries. Over the last three years each conference has drawn more than 1,000 clinical engineers, biomedical equipment technicians, academicians, physicians, biomedical engineers, hospital IT managers, asset managers, health care IT managers, industry professionals and administrators. Five years ago, the MES established technical training and a system of certification examination of clinical engineers. More than 1000 people have now taken part in the training, and over one hundred and sixty clinical engineers have passed the examination and become certified. The passing ratio is about 60% of those taking the examinations. This is the only established professional certification program of medical engineering in China, and they are actively working with the various government departments to set this program as a recognized national certification system.

The daily clincial engineering practice in Chinese hospitals includes carrying out a review and analysis of the quality control of medical equipment including technology performance. Between 2001 and 2009, their team of researchers completed a quantitative assessment of medical equipment and classification program of risk control, and established a quality system for medical equipment management and technical operations. At present, their effort and practice standards have been adopted in more than one hundred hospitals in China. In 2010, their team is participated in the completion of a regulation of the safe clinical application of medical equipment, a regulation that has been issued by the State Ministry of Health. In some regards this level of direct influence in governmental actions exceeds that enjoyed by clinical engineers in the US.

As an additional indication of the professional evolution of clinical engineering in China, beginning in 2010 the establishment of the China Forum took place within RSNA meeting (The Radiological Society of North America) as part of their efforts to stregthen cooperation with the international community.

fig.2 Chinese clinical engineers candidates during clinical engineering certification training

Like in the US, the MES is actively promoting the convergence of IT and CE in hospitals and medical engineering technology will play a more and more important role in the development of the digital hospital in China. As a result of rapid growth China will have more new hospitals than the US and many other countries, and it therefore has both the challenge and the opportunity to create systems from the beginning rather than retrofit both technology and contemporary good practice. Other projects include the classification and coding of medical supplies and the compilation of a basic training textbook for medical engineering personnel are also in progress. This year the Chinese association plans to carry out a nationwide survey and selection of the "Top Ten service engineers" , and will organize a comparison of equipment warranty terms that purchasing groups are securing for medical institutions.

FROM THE SOCIETIES/COMMITTEES

Planning and coordinated organizations is working on the plans for the coming thirteenth Annual Conference of Chinese Medical Association (CMA) Medical Engineering Society (MES) scheduled for November in Ningbo, co-hosted by the Chinese Medical Association Medical Engineering Society and the Health Information Standardization Committee of the Health Ministry, with the support of Shanghai Medical Association, and Shanghai Clinical Engineering Branch.

The development of clinical engineering in China is part of that country's rapid economic and healthcare development, modernization and resource and technology deployment. In support of their collective efforts clinical engineers in China have become increasingly well organized, and influential. This has included a large annual meeting and implementation of a program of certification in clinical engineering that has now certified over 160 clinical engineers.

IFMBE News
International Federation of Medical and Biological Engineering
No. 90, May-Aug. 2012

BME AROUND THE WORLD

Biomedical Engineering Study in Mongolia

Prof. B.Enkhjargal is founder and Head, Biomedical Engineering department (since 1996). She has published over 30 papers and journal articles. Prof. B. Enkhjargal graduated as a Electrical engineer from Mongolian University of Science and Technology with BSc in 1983, and she is 'Mongolian Consulting Engineer for Medicial Equipment', Joiint Accreditation of Ministry of Health, Mongolia and Mongolian University of Science and Technology 2005. She holds a master degree for medical engineering(1994), Her dissertation is titled 'A study on the a ways for improving in Mongolian medical imaging diagnostics' (March, 2004).

Clinical Activities: Director of 'MUST- Health center' at the Mongolian University of Science and Technology (MUST).
Teaching Activities: Head of Biomedical engineering dept at the Power Engineering School of Mongolian University of Science and Technology (MUST).
Research activities: National coordinator of 'Strengthened capacity of the Regional Diagnostic and treatment Center' Project Manager of 'Improved quality of diagnosis, reduced misdiagnosis'
Expertise in the field of Biomedical engineering:
Chief Biomedical engineer of Ministry of Health of Mongolia, since 2008.
Founder and President, Mongolian Society of Biomedical Engineering (Since 1999)

Biomedical Engineering Department Power Engineering School - Mongolia University of Science and Technology

The Mongolian University of Science and Technology (MUST) founde The principal objective of our undergraduate program is to prepare students for productive careers in the field of biomedical engineering. As a department in Mongolian University of Science and Technology starting from 1996-1997 academic year. Because of the economic transition period in Mongolia, hospitals have been receiving a lot of medical equipment from developed countries. Now there is a growing need for qualified professional personnal to work with this new equipment. Therefore the Mongolian University of Science and Technology began new courses to train such personnal in both undergraduate and graduate studies. Since 1996-97 academic year over 300 students have learned.

Bachelor degrees and about 30 students have learned Master degrees successfully in Engineer in Medical Equipment /Biomedical engineering field. Before 1996 year the professional personnel working with medical equipment had been trained in Russia,Poland, Germany and Hungary. Preparing graduates with a engineering in medical equipment degree is a significant event in the Health Care Field of Mongolia, especially because global medical technology continues rapidly. Further, rare demand for this profession is going to increase, therefore, increasing the need to improve our training facilities.

fig.2 MUST-Health center

BME AROUND THE WORLD

fig.3 Club for Undergraduate Biomedical Engineering (CUBE) is a student-run club whose mandate is to promote biomedical engineering at the undergraduate level.

The Mongolian University of Science and Technology (MUST) founded in 1959, with its superior quality service to society, MUST has proved itself to be a leader national university in providing the highest quality of education and producing a great number of leading engineers in the fields of science, technology and engineering. Over 36 thousand of our undergraduate,graduate and postgraduate students have build themselves both an inclination and a capacity to inquire that will serve them well throughout their lives and learn to analyze issues from a variety of perspectives and to synthesize what they learn into personal and professional decisions that are ethical and socially responsible. With the aim of becoming a world class university, which encourages innovation and knowledge based research and development and economy, MUST is making every efforts. Given this goal, we have a community dedicated to academic excellence and over 1200 distinguished professors, lecturers, researchers and staff along with our students, alumni, colleagues, associates and supporters. Over 40 thousand our graduates emerge from this institution with the capacity to be both leaders in their chosen professions and leaders in their respective field.

Notes from Sweden

The Swedish government supports national Biomedical Engineering effort

The Swedish Governmental Agency for Innovation Systems, VINNOVA, has decided to finance and support an application from the leading Biomedical Engineering professional and industrial organisations in Sweden including the Swedish Society for Biomedical Engineering and Medical Physics (MTF). It is an application and effort concerning the role of technology in health care today and tomorrow with the aim to strengthen academic research as well as industry in biomedical engineering. A special focus is on a national innovation strategy in the area.

The health cost in the western world has grown very rapidly and the amount of elderly people is rising more and more. This entire give rise to health economic challenges that is tremendous. Of course this gives a great impact on many levels like political, economical, organisational and technical. No doubt will technology continue to play a very central role to facilitate innovations and create platforms for better and safer health care.

Sweden has traditionally been very successful in biomedical engineering very much due to the strong cooperation between academic research on one hand and health care and industry on the other hand. Strong efforts from all this parts are now needed to continue this high level of success and that is what the suggested agenda is all about. The approved application by VINNOVA includes a suggestion from the joint academia, industry and societies in Sweden for a national innovation strategy in Biomedical Engineering. The strategy is focused on how to achieve innovations in cooperation between health care, industry, and academia. How to make sure that the innovations really reach clinical use both in Sweden and internationally?

BME AROUND THE WORLD

The structure is built on the competences, the needs and the goals for the three main actors; health care, medtech companies, technical universities and research institutes. The agenda has a national perspective including the six most important universities/ university hospitals in Sweden, the medtech industry and the research institutes. All of those are standing united behind this approved application.

VINNOVA has approved the application and finances that the details of the suggested innovation strategy are to be determined and documented during the autumn 2012. The work will be performed in a working group with participants from all three main actors and hopefully we will be able to report a successful result of this effort in the beginning of next year.

EVENTS

The 30th World Congress of Biomedical Laboratory Science

Dear Colleagues and Friends,

After a period of more than 40 years it is time for German Association to host the IFBLS World Congress. On behalf of the Deutscher Verband Technischer Assistentinnen/ Assistenten in der Medizin e.V (dvta) - German Association of Biomedical Scientists – represented by the organizing committee it is a great pleasure and honor for us to invite you to the 30th World Congress of Biomedical Laboratory Science to be held in Berlin, Germany on 18th to 22nd August 2012.

Biomedical laboratory science plays an important role in the public and private health care system throughout the world, providing excellent clinical laboratory service for the wellbeing of patients. It is a great challenge to all biomedical scientists to further develop despite permanent changes (move along with constant changes) in medicine and public health areas and the constant threat of explosive increases in costs.

It is our primary common goal to develop the profession of biomedical scientists and to emphasize our role in the health care system. The 30th World Congress is a global event and hosts a large number of biomedical scientists, researchers, laboratory workers and business executives from around the world to discuss and share the latest knowledge in biomedical laboratory science. Furthermore the congress will strengthen co-operation between relevant organizations and built networks between colleagues, scientists and friends during this scientific gathering.

We, the organizing committee, will do our very best to provide an excellent scientific program for the benefit of all. But (despite the tight schedule) and besides all the hard work during our meetings there will be some spare time for social events and to experience historic Berlin with its rich culture and heritage.

We encourage you all to be part of this 30th Anniversary and are looking forward to welcoming you in Berlin, during the summer season of 2012.
Yours faithfully

Annette Artelt
Chair of Organizing Committee

For more information you can go on the website: http://www.ifbls-dvta2012.com/

APCMBE2014

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Taiwanese Society of Biomedical Engineering

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