



SSBE/SGBT/SSGB Newsletter

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President's Message

Dear Members,

At the Society's General Assembly, held during the Society's Annual Meeting at EPFL in August 2012, the SSBE agreed on the new composition of our Society's board. First, I would like to take the occasion to thank our Past President, Prof. Dr. Stephen Ferguson from ETHZ, for his time and efforts spent for our Society, managing the Society's events and the board's work tasks

timely and in an efficient and collegial manner. Fortunately, Prof. Dr. Ferguson will support our board as well in the future and will serve as Past President. With the General Assembly in 2012 Prof. Dr. Thomas Järmann from the ZHAW and Prof. Dr. Sebastian Maerkl from EPFL stepped down from the Society's board and I would like to thank them for their service.

With the new board composition, the Society aimed on one hand at a geographical balance between the Eastern and Western part of Switzerland, and on the other hand to have members from the EPFs and the UAS by ensuring at the same time a representation of the medical device technology industry in Switzerland. In this sense I am glad to welcome as

new board member Dipl. Ing. ETH André Butscher from the RMS Foundation, Prof. Dr. Dominique Pioletti from EPFL and Prof. Dr. Stephan Scheidegger from the ZHAW. We are glad that Prof. Dr. Volker Koch from the BFH, Dr. Monika Schömann-Zihlmann from the company J&J, Prof. Dr. Erik Schkommodau from the FHNW, Prof. Dr. Jess Snedeker from EPFZ and Dr. Simon Künzi from EPFL continue their service in the Society's board. For me as representative of CSEM, which mission is the technology transfer between the academy and industry, it's an honor and a pleasure at the same time to act as a President of the SSBE for the next years.

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President's Message Continued

During my presidency I will aim at strengthening further our key event, the Society's Annual Meeting during which the Society awards outstanding research in Swiss biomedical engineering. The Society has already taken important steps in this direction during 2012 by increasing the prize money of the Research Award to 5000 CHF and the prize money for the Student Award to 2000 CHF, whereas the prize money of the Poster Awards have been kept (two times 500 CHF).

This incentive has led to the expected success with a considerable increase in applications in 2012 for the Research Award (a total of 14 submissions!), as well as for the Student Award (a total of 6 submissions). I would like to pro-

mote herewith as well the SSBE Awards of the year 2013 and hope that our members will be proactive and motivated as in 2012 to submit their application for the prestigious SSBE Awards. Apart the strengthening of the Society's Annual Meeting, the board of the Society will aim at maintaining its industrial visits and at sponsoring student events to promote the networking of the Society's members and the biomedical engineering society in general. And last but not least, we would like to communicate in a focused manner the Society services and advantages to be member of our Society by reorganizing our homepage on the internet and informing our collective members about our core activities.

With these words I would like to

close the outlook into the near future and wish you a successful and healthy 2013. I look forward to personally meet many of you at one of our Society events and hope that you enjoy reading this newsletter, which gives you the condensed information regarding the Society's past and future activities, With Best Regards,

Jens Krauss



Message from the Past-President

It was with some regret, but mostly with optimism, that I passed on the office of SSBE President to Jens Krauss at the Annual Meeting in August. For me, it was an honor to have been able to serve as the president of the society for the past four years. Through this role, I have come into contact with many interesting people active in the field of biomedical engineering and have developed a much better understanding of the position of biomedical engineering on the Swiss science and technology map. The more administrative activities of the President, such as formally approving new membership applications and updating our membership database, have given me a clearer overview of who is active in our field. Scrolling through the names in our database on a semi-regular basis, it has always encouraged me to see both long-time members, who have continued to support the society over the years, and a healthy number of new applications each year from students or recent graduates, who see the society as an opportunity to develop their professional network.

Thinking of the long-standing members reminds me of an interesting telephone conversation that I had last year with Dr. Urs Gessner, the first president of the SSBE. In response to an inquiry from the German Society for Biomedical Engineering, I was searching for information about the origins of our society. Perhaps surprisingly, in an age where it seems no information can hide from Google, our society's own historical records were a bit more difficult to track down. With the help of several long-standing

members, I was able to finally contact Dr. Gessner and learned of the founding of an *Arbeitsgemeinschaft für Biomedizinische Technik* upon Gessner's return from work in the United States. This original working group was formed by like-minded individuals in the 1960s to explore and discuss technical advances in cardiac monitoring, ultrasound, bronchial aerodynamics or EEG technology, to name only a few areas. The informal working group formed the basis of the society in 1970, and one can appreciate from that date the considerable history that our society has. I see now that my notes, which were scribbled rather illegibly on some scraps of paper, do not do justice to the phone conversation or Dr. Gessner and his colleagues, and therefore I have set myself the task to dig a bit deeper into the archives in an attempt to document this in a more permanent fashion.

As much as I like to look back, as history teaches us many good lessons and also provides positive examples that we can try to follow, it is always important to also look forwards. During the last four years, I often struggled with the question of whether the society needs to evolve; what does the society need to offer its members and vice-versa? It is clear that the annual meeting remains the focal point of our society. In the same way that the original *Arbeitsgemeinschaft* was formed to foster dialogue, our society comes together each year to exchange ideas, experiences and visions. This is a successful formula, and I can only suggest that the board will continue to look for more efficient ways to promote this

dialogue. One decision that we have taken is to shorten the term of the president, to promote fresh perspectives. Another direction that is worth exploring is a more open and flexible communication strategy for the society, perhaps including also a revision of the webpage and newsletter philosophy to embrace (where appropriate) the new opportunities offered by social networking services for a less complicated delivery of information to society members.

These are interesting challenges to be addressed by Jens Krauss during his term. I wish Jens all the best, I take this opportunity to thank my fellow board members, past and present, for the excellent collaboration during my term, and also thank you the members of the SSBE for your continued support of a vital, relevant and rewarding society.

Stephen Ferguson
Past-President, SSBE



Industry Visits

Since our last newsletter, Society members have had the opportunity to visit several companies covering a broad range of activities in the biomedical engineering field. In our visit to Edwards Lifesciences (<http://www.edwards.com>) in Nyon, participants were provided with an introduction into the science and technology of heart valves, a core business of the company, and hemodynamic monitoring. The company's history was presented in an informative talk, starting with the early work of Miles Edwards in the late 50s, who initially had the goal to develop an artificial heart, but soon redirected his attention to mitral valve replacements. During the presentation and subsequent tour, SSBE members gained insight into the design and manufacturing of modern leaflet heart valves, which are based on a fascinating combination of synthetic and biological materials. From the humble starting point of bovine pericardial tissue, the valves are fabricated through a

combination of automated and manual manufacturing steps, with the final processes reminiscent of the precise assembly work of a Swiss watch. During the informal reception, participants could also discuss with company representatives new operative methods and materials that are on the horizon.

In the visit to Bruker Biospin (<http://www.bruker.com>) in Fällanden, SSBE members were also given an informative introduction to a company with more than 50 years' history of innovation, with a focus on the technology of high-frequency nuclear magnetic resonance as an analytical technology. Perhaps many of the participants were not even aware of the use of NMR in analytical chemistry, with magnetic resonance being a term commonly associated with medical imaging. The basic theory of NMR spectroscopy was outlined in a presentation to the group, followed by a tour of the laboratory and manufacturing facilities

of Bruker.

During the laboratory tour, the current NMR equipment was displayed, the methods for conducting measurements were explained and the application of the process was highlighted in a very memorable fashion through the chemical analysis of a can of Red Bull energy drink. At the manufacturing site, the fine construction of the necessary coils was demonstrated, together with the high demands placed on superconducting materials and construction for the creation of an NMR magnet. The tour closed with a reception and, as usual, an animated discussion.

The SSBE has also recently visited Medtronic in Tolochenaz. A report on this visit will be included in the next issue of our newsletter.



SSBE Annual Meeting 2012

One of the goals of the Society is to build a network for education, research, manufacturing and politics within the background of biomedical engineering (BME). With the organization of regular scientific meetings, all these fields are brought together.

The 2012 Annual Meeting of the SSBE was held at the École Polytechnique Fédérale de Lausanne (EPFL) on August 27th – 28th, 2012. It had 90 attendees at the meeting and about 50 posters were presented.

Scientific awards presented at the Annual Meeting of the Society stimulate also younger members to play an active role in the Society. For this reason, each year the SSBE honors outstanding scientific work by two major awards, the SSBE Research Award and the SSBE Student Award. Additionally two SSBE Poster Awards are presented during the Annual Meeting. For 2012, the value of the research award was increased to reflect its prestige. The competition in 2012 was particularly strong, with 14 excellent submissions for the research award and 6 for the student award. All submitted theses were reviewed by an awards committee to select three

finalists for each. At the Annual Meeting, the finalists gave a short overview presentation of their research and the final winner of the award was determined by the awards committee or by the SSBE members themselves for the research award and the student award, respectively.

The 2012 winner of the SSBE Research Award was Dr. Kaori Sugihara of the ETH Zürich for her work entitled "Lipids and polyelectrolytes for high-throughput ion channel sensors". In her thesis, Dr. Sugihara contributed to the development of high-throughput electrophysiological assays for drug screening, focusing on ion channels. In this work, she followed a bottom-up approach to create such systems, developing self-assembling and high-electrical-sealing membrane bilayers over nanopores on a chip. The work produced eight manuscripts and a high citation record.

The 2012 winner of the SSBE Student Award was Ms. Colette Bichsel of the EPFL for her thesis entitled "Development and characterization of a microfluidic chip to capture prostate cancer cells from blood samples". In her work, she focused on methods for the analysis of cir-

culating tumor cells (CTCs). The development of a microfluidic platform that specifically captures prostate cancer cells from a whole blood sample was demonstrated, whereby different capturing antibodies were tethered on the microchip surface. Proliferation assays of captured cells were performed directly on the chip.

Two SSBE Poster Awards were presented at the Annual Meeting. Janine Ruppen et al. of the University of Bern were recognized for their work "Individual trapping of lung cancer cell spheroids on a microfluidic platform for chemosensitivity assays". The second poster award was presented to Thomas Steiner et al. of the ETH Zürich for their work "Microstructural imaging for sample-specific finite element analysis in a rat osteoarthritis model".

We congratulate all award winners and acknowledge the excellent submission quality of all applicants. SSBE members are strongly encouraged to nominate strong research work at the B.Sc., M.Sc. and Ph.D. level to be considered for the 2013 awards.

Details are available on page 6.

SSBE Awards



Prof. Dr. Stephen Ferguson and Dr. Kaori Sugihara of the ETH Zürich



Prof. Dr. Stephen Ferguson and Ms. Colette Bichsel of the EPFL

Upcoming Meetings

In the coming months we can look forward to several meetings in Switzerland and Europe of interest for those active in the field of biomedical engineering. Up-to-date announcements of future meetings will also be made to society members via e-mail.

BMT 2013 in Graz, Austria

The University of Graz will host the annual BMT on September 19 - 21, 2013. English-language submissions covering all aspects of biomedical engineering and medical technology are invited with a submission deadline of March 18, 2013.

<http://www.bmt2013.at/>



IEEE EMBS Biomedical Engineering Events

The Swiss Chapter of the IEEE Engineering in Medicine and Biology Society (IEEE EMBS) organize talks, excursions, and other networking opportunities related to biomedical engineering, predominantly in the Bern / Biel area. These events are open to non-members and address issues relevant to the SSBE.

<http://www.biomedeng.org/events.html>





The SSBE Awards honor outstanding work and stimulate active participation by our younger members

SSBE Awards 2013

Call for nominations

It is an important initiative of the SSBE to recognize research and development achievements of younger members within the Swiss Biomedical Engineering community, and encourage their future active engagement with the SSBE.

For this reason, each year the SSBE honors outstanding scientific work with two major awards, the SSBE Research Award (accompanied by a prize of SFr. 5'000) and the SSBE Student Award (accompanied by a prize of SFr. 2'000). Additionally two Poster Awards are presented each year. Nominations are now being accepted for the SSBE awards. The deadline for nominations is 15th July 2013. Following candidate pre-selection, final-

ists will be invited to present their work to the award panel.

A list of past winners is available on the Society's webpage. For detailed information on submissions and nominations, please refer to the Awards Regulations on the webpage or contact the Awards Committee

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Contributions and Comments

Your contributions are welcome. If you have information or news items of interest to the SSBE members, please feel free to submit your content to our office. We encourage also an open dialogue and are always interested in SSBE members' opinions. Suggestions for future industrial visits or inquiries from industrial partners to host a visit are gladly received by our industrial liaison, Simon Künzi (simon.kuenzi@gmail.com).

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