



Welcome Message from IEEE EMBS President



Dear Colleagues,

Welcome to the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS). The EMBS Annual Conference (EMBC) is the most well-attended annual international conference in biomedical engineering, and has been held all around the world, from Vancouver, Lyon, New York and Shanghai, over the past 4 years. This year, EMBC is held in Minneapolis, the world's capital of the medical device industry.

The mission of EMBS is to advance the application of engineering sciences and technology to medicine and biology, and to promote the profession for the benefit of its members and humanity by disseminating knowledge, setting standards, fostering professional development and recognizing excellence. Conferences are important activities of EMBS, and the Annual Conferences provide an important platform for the exchanging of ideas, reporting the latest results in R&D efforts, and debating important topics.

The organizing team of EMBC'09 has developed a broad and exciting conference program. A particular effort was made to recruit leading intellectuals to deliver invited talks at EMBC'09. The renowned list of invited speakers includes the Conference Keynote Speaker, 2006 Nobel Laureate in Medicine or Physiology Andrew Z. Fire, the Plenary Speakers Earl Bakken, Gary Glover, and Doug Lauffenburger, nine Theme Keynote Speakers, and a number of dynamic speakers in Special Symposia, Minisymposia, and various invited sessions. In addition to the invited presentations, the conference program also includes a number of contributed presentations covering virtually all areas of biomedical engineering. Being held in Minneapolis, the EMBC'09 organizing committee has made a special effort to recruit industrial colleagues aimed at enhancing academia-industry collaborations.

This year all papers submitted to EMBC'09, both contributed and invited, were peer-reviewed by the EMBS Conference Editorial Board, led by EMBS Vice-President for Conferences, Zhi-Pei Liang. The Board conducted over 5000 reviews for papers submitted to EMBC'09 within a month to ensure timely decisions being communicated to authors. The staff in the EMBS Executive Office has worked tirelessly together with volunteers, leading to a dynamic and quality conference program. On behalf of EMBS, I would like to express my heart-felt appreciations to everyone who has contributed and helped in the organization of this exciting conference.

The EMBS Annual Conference represents a unique opportunity to exchange timely ideas in the broad range of topics in biomedical engineering. We hope you will find EMBC'09 both intellectually stimulating and enjoyable overall. If you are not an EMBS member yet, please consider joining this most dynamic society, and join us for future EMBS Conferences. The EMBS Annual Conferences in the next four years will be held in: Buenos Aires (2010), Boston (2011), San Diego (2012), and Osaka (2013).

I hope you all enjoy this exciting conference and Minneapolis.

Bin He
EMBS President, 2009-2010



Engineering in Medicine and Biology

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31st Annual International Conference of the
IEEE Engineering in Medicine and Biology Society



Minneapolis, Minnesota
2 – 6 September 2009



Dear Colleagues,

On behalf of the organizing committee, it is our pleasure to welcome you to the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society and to Minneapolis, Minnesota. Consistently ranked as one of the most livable cities in the United States, Minneapolis is a dynamic, world-class city located in a spectacular natural setting.

The general theme of EMBC 2009, “*Engineering the Future of Biomedicine*,” reflects the vision of the conference in reviewing current state-of-the-art and future directions for biomedical engineering research, exchanging ideas on significant research efforts and discussing partnerships among academia and industry. The final scientific program is comprised of over 1800 contributed and invited papers. We are particularly pleased by the quality and number of invited presentations from leading research institutions, companies and government agencies which cover a broad spectrum of biomedical engineering research and development, education, public policy, and more.

The conference will start on Thursday with a plenary address by Dr. Gary Glover from Stanford University, and will be followed by another plenary address at the evening Welcome Banquet by Dr. Earl Bakken, Co-Inventor of the Battery-Powered Cardiac Pacemaker and Co-Founder of Medtronic, Inc. On Friday morning, the Conference Keynote Address will be delivered by the 2006 Nobel Prize winner in Medicine or Physiology, Dr. Andrew Z. Fire, from Stanford University Medical School. On Saturday morning, Dr. Douglas Lauffenburger from MIT will deliver another plenary address. In addition to these highly stimulating and exciting plenary presentations, Drs. A. Alavi, R.L. Ehman, J.G. Fujimoto, P. Hunter, J.C. Principe, A. Schwartz, R. Tranquillo, K. Ugurbil and L.V. Wang will present Theme Keynote Lectures on highly exciting topics related to biomedical imaging and optics, neuroengineering and neuroscience, physiome, and tissue engineering. A particular feature of the conference is the enhancement of collaboration between academia and industry. In the afternoon on Thursday, industrial leaders from major medical device and healthcare companies will address the participants with regard to the trends, challenges, and opportunities in the healthcare industry. Two special sessions and symposia are scheduled for Friday on federal funding and the stimulus package. In addition, there are a number of special symposia, minisymposia and invited sessions at which you will be able to hear about recent advances in virtually all areas of biomedical engineering.

In addition to the outstanding scientific program, the conference includes an excellent student activity track with paper presentations, student awards and tips for career planning, as well an exhibition with 30 participants from industry, government and academia. Tours to major R&D centers including the University of Minnesota, Mayo Clinic, Medtronic and Boston Scientific are also planned. On Friday evening, a special social event is planned in The Bakken Museum for witnessing the history of bioelectricity and networking with your colleagues. Finally, we hope that you will find time to explore Minneapolis and its magnificent natural surroundings. Minneapolis has fabulous shopping, dining and entertainment along Nicollet Mall, the Warehouse District, the Hennepin Theatre District and the Mall of America. In the City of Lakes, outdoor festivals are enjoyed year-round along the winding backdrop of the scenic Mississippi River.

We hope that you will find EMBC’09 intellectually exciting and stimulating, and that the meeting will provide an opportunity to meet old friends and make new ones while you enjoy the Twin Cities.

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