



Welcome Message from IEEE-EMBS President

Dear Colleagues,

It is with great pleasure that I welcome you to the 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS). As the largest worldwide biomedical engineering society, EMBS holds its annual conference at various international destinations. This year we are indeed fortunate to gather in Lyon, a city with deep historical roots that include the introduction of some of the first technological devices in support of medical diagnosis. We are particularly pleased to hold this conference in conjunction with the Biennial Conference of the Société Française de Génie Biologique et Médical (SFGBM) with whom we previously held the 14th EMBS Annual Conference in Paris in 1992.

The 2007 EMBS Conference features a wide range of contributions, distributed across twelve themes that represent the broad range of interests in biomedical engineering. In addition, the conference features keynote addresses by David J. Beebe, Professor of Biomedical Engineering at the University of Wisconsin-Madison (*Microscale bioengineering inspired by nature: from widgets to cell biology*) and Jean-Claude Healy who heads the European Union telematics initiatives (*What is the added value of Biomedical Engineering technologies?*), as well as a number of mini-symposia focusing on bioinstrumentation, technology transfer, and career and professional development. The Program Chairs, Nigel Lovell and Eric McAdams, have put in many long hours to assure that the Technical Program includes high-quality, cutting-edge research with many practical applications. The Conference Chairs André Dittmar and John Clark, have made certain that our experiences in Lyon will include not only a superb professional experience but also offer a taste of Lyon, the historical home of French gastronomy. The meeting site at the Palais des Congrès de Lyon located at the Cité Internationale offers both a spectacular setting and state-of-the-art facilities. I would like to extend my thanks on behalf of EMBS to the conference organizers and committees for their dedicated efforts in the organization of this exciting conference.

The Annual EMBS conference offers a unique opportunity to view the broad range of topics in bioengineering and to see first-hand the inherent interdisciplinary nature of our field. We hope you will come away from the meeting with new ideas and new professional contacts and that you will be anxious to attend future EMBS conferences: Vancouver (2008), Minneapolis (2009), Buenos Aires (2010), Boston (2011).

EMBS and the EMBC '07 Conference Committee join together to say: Bienvenue à Lyon et au 29^{ème} congrès international de EMBS!

My best wishes for a productive conference and enjoyable time,

A handwritten signature in black ink, appearing to read 'Donna Hudson'.

Donna Hudson
EMBS President, 2007-2008



Engineering in Medicine and Biology

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Welcome Message from SFGBM President

Dear Colleagues,

On behalf of the French Society of Biomedical Engineering SFGBM (Société Française de Génie Biologique et Médical), it is a pleasure and an honor to welcome you to the 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS).

It is the second time that this prestigious conference is hosted in France in 1992 the conference was held in Paris, the first non US venue.

More than 2060 papers have been submitted by more than 5000 authors from more than 60 countries.

The French community of Biomedical Engineering shows its interest and involvement with 220 submitted papers and is very happy of this opportunity for exchanges, personal meeting, cooperation ... with their colleagues from all the world.

We take care to poster sessions with a particular interest:

- it is clear that these sessions have the same importance as oral sessions
- the organization with “thematic villages”, meeting areas will provide conditions to promote exchanges and personal interactions among all participants.

Lyon the host city has a long and living tradition in medicine and especially in biomedical engineering.

An exceptional exhibition on the history of BME will be held at the conference center in the main meeting area, with the very active support of the EMBS History Committee. Thus it would be possible for you to measure your respiration with non invasive sensors from the 19th century!

46 volunteer students will participate at the conference and will be pleased to help you all along your stay.

We hope also that you will take benefit of the exceptional opportunity for visiting Lyon, classified world heritage of Unesco and the Rhone-Alpes region, its vineyards, the Alps mountains and its long history.

We wish that EMBC'07 will be a productive and enjoyable time for you,



Catherine Marque
SFGBM President





Welcome Message from Conference Committee of EMBC'07



AD 46 - The Emperor Claudius born in Lyon was treated by electrotherapy for a foot gout using a live back torpedo in the pain treatment by his physician Scribonius Largus – Ellen R. Kuhfeld, the Bakken library and Museum

On behalf of the organizing committee, it is our pleasure to welcome you to the **29th Annual International Conference of IEEE Engineering in Medicine and Biology Society and to the city of Lyon.**

In addition to the scientific program we hope that you will find time to explore Lyon and the surrounding areas. Please take advantage of four opportunities or explore on your own.

The EMBC'07 final program and proceeding are comprised of 2057 papers in 12 themes submitted by over 5 000 authors representing over 60 countries worldwide.

The conference themes **“Sciences and Technologies for Health”** emphasizes the importance of interdisciplinary research, and particularly the new possibilities offer by micro-nanotechnologies, flexible technologies, wireless transmission, computing , imaging, materials.

A new medicine is growing, taking benefit of continuous monitoring out of hospital, at home, during sport, leisure or professional activities and behaviour, circadian, rhythm, chronic disease, elderly people.

Measurement for a better understanding new sensors will feed computers, PDA, wrist devices, clothes, houses, beds, wheelchairs, surgical tools with data collected in real condition for improving diagnostic, treatment and prevention. A beautiful challenge!

The more than 2000 years old city of Lyon is cross by 2 rivers Rhône and Saone and the citizens of Lyon add the Beaujolais River!

29 museums, 3 roman theatres ... the city is **classified as world heritage of Unesco.**

4000 bicycles (**“Velo’v”**), available in 200 stations are waiting for you (including 1 bike station at the Congress center).

Lyon is close to the Alps 200 km from Mont Blanc, but also to Beaujolais, Burgundy and Rhône Valley vineyards. Mediterranean sea is at 1.5 hours from Lyon and Paris 2 hours by TGV.

We hope that you will be stimulated and challenged by the EMBC'07 scientific program, as well as enjoy the beautiful atmosphere of the city of Lyon.



Conference Chairs
André Dittmar
INL – CNRS – INSA
Lyon



John Clark
Rice University – Houston



Program Chairs
Eric McAdams
NIBEC – Northern Ireland



Nigel Lovell
University of New South
Wales - Sydney