

IFMBE News

International Federation for Medical and Biological Engineering

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International Federation for Medical and Biological Engineering

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Contents

Editorial	4
IFMBE Express	
World Congress on Medical Physics & Biomedical Engineering	5
Nicolas Pallikarakis received the nine millionth Erasmus+ participant award	9
Events	
The VII Latin American Conference on Biomedical Engineering (CLAIB 2016)	12
3 rd WHO Global Forum on Medical Devices	18
News in Brief	
2016 Teamwork Award - Children's Hospital of Eastern Ontario, Ottawa, Canada	20
2016 Teamwork Award - Ghana Health Service/Canadian Medical and Biological Engineering Society Collaboration	21
IFMBE-CED 2016 Manuscript Awards	21
Obituaries	
Joachim H. Nagel	22
Announcements	25

Editorial

The 25th World Congress on Medical Physics and Biomedical Engineering 2018 will be held in Prague in June 2018. The World Congress is the major conference of the IFMBE, IOMP and IUPESM. In this 101st issue we bring the invitation from the congress organizers, the Czech Society for Biomedical Engineering and Medical Informatics and the Czech Association of Medical Physics, together with important dates, main topics, list of plenary and key-note speakers, committee members, etc.

Nicolas Pallikarakis received the nine millionth Erasmus+ participant award. We congratulate Nicolas on this prestigious award which was given to him for his long and important contribution in the development of the Erasmus Programme at the University of Patras, mainly in the field of Biomedical Engineering Education. Read more in our report here. The Erasmus Programme is a European Union student exchange programme established in 1987. Erasmus+ is the new programme combining all the EU's current schemes for education, training, youth and sport, which was started in January 2014.

In the Events section we bring a report on the VII Latin American Conference on Biomedical Engineering (CLAIB 2016) which was held in Bucaramanga, Colombia in October 2016.

The 3rd WHO Global Forum on Medical Devices took place in Geneva, Switzerland between 10th and 12th May 2017. Read the most important information about this event, at which many IFMBE representatives also took part.

In the News in Brief section we have three contributions by Tony Easty related to 2016 Teamwork Awards and IFMBE CED2016 Manuscript Awards.

In July 2017 we lost a great man and leader Professor Joachim Nagel, Past President of the IUPESM and the Past President of the IFMBE. As a tribute to Joachim, professor Ratko Magjarević wrote In Memoriam.

Finally, we bring calendar of upcoming IFMBE related events in 2017 and 2018.

Igor Lacković
Editor, IFMBE News



World Congress on Medical Physics & Biomedical Engineering



**World Congress
on Medical Physics
& Biomedical Engineering**

June 3–8, 2018
Prague, Czech Republic
www.iupesm2018.org


IUPESM
PRAGUE 2018

First Announcement



Welcome

Dear colleagues,

it is a great pleasure and honour for The Czech Society for Biomedical Engineering and Medical Informatics and for the Czech Association of Medical Physicists to be the host societies and organizers of the 2018 World Congress on Medical Physics and Biomedical Engineering.

The Congress will be held in Prague, the capital of the Czech Republic, in the beginning of June 2018. The Congress is represented by the Congress Organizing Committee (COC) and is organized in a close collaboration with the international societies IUPESM, IFMBE and IOMP represented by the Congress Coordinating Committee (CCC).

This triennially organized joint meeting of medical physicists, biomedical engineers and adjoining health care professionals is a unique opportunity to liaise with your professional colleagues from all over the world, learn and share your knowledge, and discuss the latest research outcomes and technological advancements as well as new ideas in both medical physics and biomedical engineering field. Besides the purely scientific and technological topics, the 2018 Congress will also focus on other aspects of our professional involvement in health care, such as the education and training, the accreditation and certification, the health technology assessment or the patient safety.

Scientific sessions, plenary lectures, poster sessions, keynote lectures, continuing education sessions and special sessions will be the forms of the Congress events. These scientific meetings will be supplemented with exhibitions and presentations of the manufacturers, innovators and vendors, both local and global.

Dear colleagues, we do hope that the 2018 World Congress on Medical Physics and Biomedical Engineering in Prague will become a memorable event both professionally and socially to all participants and we are very much looking forward to meet you in person.

On behalf of the COC



Jaromír Cmíral, Ing., PhD., DSc.
COC Co-chair (Biomedical Engineering)



Libor Judas, RNDr., PhD.
COC Co-chair (Medical Physics)

Organizers

Czech Society for Biomedical Engineering and Medical Informatics
Member of Czech Medical Association JEP
Prague, Czech Republic

Czech Association of Medical Physicists
Prague, Czech Republic

Important Dates

September 1, 2017
Call for Abstracts opens

September 1, 2017
Registration opens
~~November 15, 2017~~

Abstract Submission Deadline
December 31, 2017

Authors Notification of Abstract Acceptance
January 31, 2018

Full Papers Submission Deadline

**DEADLINE
EXTENDED**

November 30, 2017



Main Topics

- 1 Diagnostic Imaging
- 2 Image Processing
- 3 Information Technology in Healthcare
- 4 Modelling and Simulation
- 5 BME and MP Education, Training and Professional Development
- 6 Patient Safety
- 7 Accreditation and Certification
- 8 Health Technology Assessment
- 9 Biosignals Processing
- 10 Biomechanics, Rehabilitation and Prosthetics
- 11 Minimum Invasive Surgery, Robotics, Image Guided Therapies, Endoscopy
- 12 Diagnostic and Therapeutic Instrumentation
- 13 Micro- and Nanosystems, Active Implants, Biosensors
- 14 Neuroengineering, Neural Systems
- 15 Biomaterials, Cellular and Tissue Engineering, Artificial Organs
- 16 Assistive Technologies
- 17 Biological Effects of Electromagnetic Fields
- 18 Clinical Engineering
- 19 Radiation Oncology Physics and Systems
- 20 Dosimetry and Radiation Protection
- 21 Advanced Technologies in Cancer Research and Treatment
- 22 Biological Effects of Ionizing Radiation
- 23 Nuclear Medicine and Molecular Imaging

Invited Speakers for Plenary Session

Professor Uwe Oelfke (United Kingdom)

Professor Russell Ritenour (USA)

Key-Note Speakers

Anthony Atala (USA)

Charles Bloch (USA)

Edward Boyden (USA)

José Bravo (Spain)

Carmel Caruana (Malta)

Paul Chang (Singapore)

Andre Dekker (Netherlands)

Jay Flanz (USA)

Christian Gasser (Sweden)

Jens Haueisen (Germany)

Radovan Hudak (Slovakia)

Leonidas D. Iassemidis (USA)

Sebastien Incerti (France)

Penelope Jeggo (United Kingdom)

Christian Kollmann (Austria)

Patty Kostkova (United Kingdom)

Michal Kozubek (Czech Republic)

José Millet Roig (Spain)

Donald Peck (USA)

Miroslav Pinak (Austria)

E. Russell Ritenour (USA)

Milan Santrucek (Czech Republic)

Jack A. Tuszynski (Canada)

Jozsef Varga (Hungary)

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Jana Kolarova (Czech Republic)
Christian Kollmann (Austria)

Irena Koniarova (Czech Republic)
David Korpas (Czech Republic)
Vladimir Krajca (Czech Republic)
Jan Kremlacek (Czech Republic)
Petr Marsalek (Czech Republic)
Karel Nechvil (Czech Republic)
Milos Nesladek (Belgium)
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Vaclav Porod (Czech Republic)
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Ivo Provazník (Czech Republic)
Vladimir Rogalewicz (Czech Republic)
Simo Saarakkala (Finland)
Ioannis Sechopoulos (Netherlands)
Milan Sonka (USA)
Lucie Sukupova (Czech Republic)
Olga Stepankova (Czech Republic)
Krystina Tack (USA)
Rosanna Tarricone (Italy)
Annalisa Trianni (Italy)
Jiri Trnka (Czech Republic)
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Vladimir Vondracek (Czech Republic)
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Kevin Warwick (United Kingdom)
Martha Zequera Diaz (Columbia)

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Libor Judas (Czech Republic, MedPhys)

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Nicolas Pallikarakis received the nine millionth Erasmus+ participant award



The European Parliament celebrated on Tuesday, June 13th 2017, the 30th anniversary of the Erasmus program. First launched in 1987, the program has provided scholarships to nine million participants across Europe up to now.

The event was held during a Plenary Session of the European Parliament and was hosted by European Commission President Jean-Claude Juncker, European Parliament President Antonio Tajani, and European Commissioner for Education, Culture, Youth and Sport Tibor Navracsics. During the ceremony, 33 representatives, one from each participating country, shared their personal experiences and received awards.

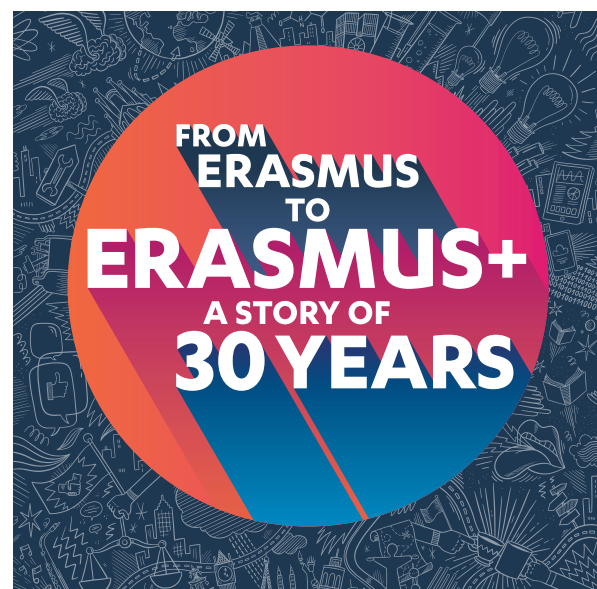
The Official Ambassador for Greece in the framework of this event was Nicolas Pallikarakis, Professor Emeritus at the University of Patras and Head of the Biomedical Technology Unit (BITU), who received an award for his long and important contribution in the development of the Erasmus Programme at the University of Patras, mainly in the field of Biomedical Engineering Education.

In the letter prof. Pallikarakis received it stated:

“This award is given to those Erasmus+ alumni with an extraordinary Erasmus+ story, who have inspired others to actively contribute to bringing Europe and Europeans closer together, fostered social cohesion, and helped create a better reality within their communities and organisations. In a nutshell, it is

given to those whose experience and achievements have set an example for younger generations to embark on an Erasmus+ journey. With this award, I would like to show my appreciation for your dedication and passion for education in the field of biomedical engineering and your enthusiasm and commitment in promoting the Erasmus+ programme in Greece and abroad.”

His experience with the Erasmus program started back in 1989, when the European MSc Program on Biomedical Engineering was created at the University of Patras, Greece. This program resulted from a common European initiative of the so called Concerted action on Biomedical engineering (COMAC BME) active at that time at the European Commission, aiming to create a program with teaching staff from more than 20 European Universities and open to students from all over Europe, based on and taking advantage of the then newly established Erasmus program. The curriculum of the program and teaching staff assignment were agreed in a consensus based general assembly meeting in Patras and the first students enrolled in September 1989.





The program was innovative in terms of its collaboration approach, as through the numerous bilateral agreements that were signed with Universities from practically all over Europe, mobility of both students and teachers was encouraged and gave the program its unique multicultural character. Additionally, this Program was among the first to apply the European Credit Transfer System (ECTS), as well as the first one to be officially recognized by the Greek State as a Joint Program in 1994, since it was implemented by the University of Patras in collaboration with the National Technical University of Athens.

For the 25 years that it lasted, more than 600 students attended this BME program, half of whom were coming from abroad. Some of them followed academic career and are today Professors in EU as well as in USA Universities.

Collaboration between European Universities became even closer with the occasion of two more recent TEM-

PUS IV projects that were coordinated by the Biomedical Technology Unit of the University of Patras during the last decade. The first one, CRH-BME (Curricula Reformation and Harmonisation in the field of Biomedical Engineering), established a generic curriculum for BME studies that took into consideration recent and future developments but also the necessity to provide similar knowledge to BME students all over Europe in order to facilitate studies and professional recognition, staff exchange and student's mobility. The second one, BME-ENA (Biomedical Engineering Education Tempus Initiative in Eastern Neighbouring Area), was based upon knowledge transfer from EU Partners to four Eastern Neighbouring Countries (Armenia, Georgia, Moldova and Ukraine) and aimed to promote, establish and improve BME Education in this ENA region, through the creation of four joint multidisciplinary MSc BME programs. The program was successfully completed last month and all programs created are accredited and the first alumni received already their degrees.

"This extremely long Erasmus experience allowed me to expand my academic career, broaden my horizons, visit many countries, get in touch with new people and work closely with colleagues from many different countries, many of whom actually became my friends over the years", said Nicolas Pallikarakis. "In addition, I had the chance to meet some brilliant students who visited Greece for their Erasmus studies and later on became core members of my research team."

The next goal is to promote harmonisation of BME studies between Europe and Latin America. Hopefully, the proposals submitted under the new Erasmus+ call will be approved and European colleagues will be given the opportunity to work with their Latin American peers towards this direction.

Let's hope that the Erasmus+ program will successfully run for many more decades and will continue to reinforce cooperation not only between Universities but also – and perhaps most importantly – between countries!



Nicolas PALLIKARAKIS – 68



From Greece
To 19 Partner countries
Since 1990
>>> International Cooperation

Despite officially retiring recently, Nicolas remains committed to fostering excellence in the field of biomedical engineering and encouraging European research collaboration within Europe and beyond. As Professor Emeritus at Patras University in Greece, Nicolas continues to teach postgraduates, coordinate R&D activities and support new Erasmus+ programmes at the university. Nicolas was an early advocate of harmonising biomedical engineering curricula across Europe and beyond, and has seen first-hand the benefits to students, institutions and citizens in general of closer research collaboration in medical research. His current ambition is to strengthen synergies with universities in South America.



Events

The VII Latin American Conference on Biomedical Engineering (CLAIB 2016)

Bucaramanga, Colombia

Isnardo Torres, President of Colombian Association of Biomedical Engineering



Isnardo Torres, president of Colombian Association of Biomedical Engineering



Dr. John Bustamante, Director of Bioengineering Center, "Universidad Pontificia Bolivariana"



Dr. Daniel Sierra, Director of Planning and Development, "Universidad Industrial de Santander"

The VII Latin American Conference on Biomedical Engineering (CLAIB 2016) was held in Bucaramanga, Santander state, Colombia, from October 26 to 28, 2016. This event is held every three years in a Latin American, and this was the first time that CLAIB was brought to Colombia. The professors Isnardo Torres, John Bustamante and Daniel Sierra were the Chair, Co- Chair and scientific director of Publications and Documentation Area in CLAIB 2016.

The organization of the VII Latin American Conference on Biomedical Engineering was carried out by the Regional Council of Biomedical Engineering for Latin America – CORAL and it was being organized and summoned by the Colombian Association of Bioengineering and Medical Electronics–ABIOIN at the "Universidad Autonoma" de Bucaramanga, Colombia". It was also sponsored by the IFMBE and IEEE-EMBS among other organizations.

The conference organization relied on a Regional Conference Organizing Committee –CORAL – with represen-

tatives from Latin American IFMBE member's societies, and International Scientific Committee of 216 members, and a Local Organizing Committee of 30 members. The directive group of "Universidad Autonoma de Bucaramanga- UNAB", doctors Gilberto Ramirez, Eulalia Garcia, Wilson Briceño, German Oliveros and Nayibe Chi Cho provided hospitality at the host university and especially the professors Carlos Arismendi and Alejandro Arboleda who worked tirelessly on the organization of space and logistics for the conference in UNAB.



Bucaramanga, Colombia, place of CLAIB 2016

The Executive board comprised of the engineers and / or doctors Jorge Reynolds, Ignacio Escobar (Committee of Honor - ABIQIN), Carlos Mesa, Economic and Financial Affairs Coordinator, Jesus Ma. Soto, Academic and Scientific Activities Coordinator, Carolina Salazar, Workshop Coordinator, Andrés Orozco, Director and Commercial Staff Coordinator, Delfin Albarracin, Coordination of the Green Day, Martha Zequera, Extra Activities, Congress Academic Network and Scientific Societies Coordinator and Nydia Paola Rondón, Scientific Communication and Protocols Coordinator. The valuable collaboration of the student group of UIS and UNAB coordinated by the engineer Pedro Albarracin, who made the preparations and aspects related to attending the CLAIB 2016. The President of CLAIB 2014, Professor de la UNER, Dr. Ariel Braidot of Argentina, participates also Administrative Adviser of This Conference.



UNAB, University host of CLAIB 2016

The International Scientific Committee evaluated more than 350 scientific papers. Based on 3 independent reviews per paper, 297 were accepted and out of these only 197 were published in the IFMBE proceeding. This conference covered 17 themes:

- Biomedical Signal Processing
- Biomedical Imaging and Image Processing,
- Biosensors and Bioinstrumentation,
- Bio-Micro-Nano Technology,
- Biomaterials,
- Biomechanics and Bio robotics,
- Neural Rehabilitation Engineering and Bio prosthetic implants,
- Cardiovascular, Pulmonary and Endocrine Engineering,
- Molecular, Cell and Tissue Engineering
- Modelling and Simulation,



Student support group at CLAIB 2016

- Bioinformatics and Computational Biology,
- Clinical Engineering and Health Technology Assessment,
- Health Informatics and E-Health,
- Education in Biomedical Engineering,
- Telemedicine and Health Care
- Medical Physics and Nuclear Medicine,
- Microelectromechanical Systems – MEMS, Control and Nonlinear Systems

There were also 17 keynotes talks delivered by distinguished international scientists including 1 representative of IEEE – EMBS, 5 IFMBE officers and 10 representatives from Latin-America societies that are members of CORAL:

- Andrew Laine, President IEEE/EMBS Professor of Biomedical Engineering, Chair Department of Biomedical Engineering, Columbia University, New York, USA,
- James Goh, President IFMBE, National University of Singapore,
- Ratko Magjarević, Past President IFMBE, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia,
- Shankar Krishnan, President Elect IFMBE, Professor & Chair, Department of Biomedical Engineering, WIT, Boston, USA,
- Kang-Ping Lin, Secretary General IFMBE Distinguished Professor, Chung-Yuan Christian University,
- Marc Nyssen, Treasurer IFMBE, Medische Informatica, Faculteit Geneeskunde en Farmacie, Vrije Universiteit Brussel, Belgium,
- Luis Kun, Editor in Chief - Journal of Health & Technology - Springer - IUPESM - WHO, IFMBE Chairman Global Citizen Safety and Security WG,

- Renato Garcia, Ex president of CORAL, Professor, Researcher and Coordinator of the Institute of Biomedical Engineering, Universidad Federal de Santa Catarina,
- Antonio Hernández, Founder and member of the Board of Directors of Global Health International Advisors (GHIA), ACCE - USA (video conference),
- Juan Pablo Graffigna, President of SABI, Professor National University of San Juan, Argentina
- Martha Lucia Zequera, Professor of Biomechanics, Universidad Javeriana, Bogotá Colombia
- Jaime Delgado, Physicist and Professor, Research FISICA NOVA, Bucaramanga, Colombia
- Guillermo Avendaño, President of CORAL, Research Center of Biomedical Research, Universidad de Valparaíso, Valparaíso, Chile
- Ariel Braidot, Professor, Universidad Nacional Entreríos- UNER, Paraná, Argentina
- John Bustamante, Director of Bioengineering Centre, Universidad Pontificia Bolivariana, Medellín, Colombia
- Miguel Cadena, Professor-Researcher at the Universidad Autónoma Metropolitana, Iztapalapa Unit (key note presented by Drs. Joaquin Aspiroz and Fabiola Martinez)
- Jorge Reynolds, Scientific researcher in Nano cardiac pacemakers, electrophysiology and cardiovascular engineering, The Department of Research in Electronics and Nanotechnology in Shaio Clinical Foundation, Bogotá Colombia

The CLAIB 2016 program also included 7 pre-congress courses that were organized at several universities in the metropolitan area of Bucaramanga such as UIS, UPB, UNAB and also clinical and hospital engineering workshops at FOSCAL-INTERNACIONAL and HIC-Hospital International of Colombia:

- Microscopy image processing by Drs. Virginia Ballarin and Juan Pastore,
- Prospects of engineering and technology biomedical rehabilitation of disability by Engineers Mario Aguilar, Rafael Kohanoff,
- Nanotechnology in Bioengineering by Professors Lina Marcela Hoyos and others
- Analysis of Potential Micro ECG Cardiac Logs High Resolution by professor Eric Leber Laciár
- Applications of Clinical Biomechanics and Sport by Dr. Ariel Braidot
- Curriculum design in Biomedical Engineering by Dr. Joaquin Aspiroz
- Clinical Applications of bio impedance by Franco Simini

The UNAB organized a meeting about Latin American experience in the Biomedical Technologies and Engineering. Professors Rafael Kohanoff, Franco Simini and Ariel Braidot shared experiences with future biomedical engineers of the UNAB - CLAIB 2016, Host University, Bucaramanga, Colombia.

Workshops were held on October 26, 2016 within the framework of the congress:

- Engineering workshops Hospital and/or Clinic at INTERNATIONAL FOSCAL (see figure 7) and INTERNATIONAL HOSPITAL OF COLOMBIA, both of them Metropolitan area of Bucaramanga.
- Workshop on Disability and Technology, with the participation of Professor James Goh, President, IFMBE and Jean Marc Van Hissenhoven, Chief scientist Mobility Group "High technology and rehabilitation."
- Workshop on Education in Bioengineering and Biomedical Engineering organized by Jesus Ma Soto Universidad EIA - CES at UNAB, Bucaramanga, Colombia.



Members IFMBE administrative, Prof. James Goh (president) and others

- Workshop on Innovation and Business Development Organized by the Medellin Metropolitan Institute (ITM), led by medical equipment companies at UNAB, Bucaramanga

The international relations were an important activity made by Dr. Martha Zequera. The IFMBE officers and the IEEE-EMBS president with the assistance of all the presidents of the national societies supported the most important CORAL event in Latin America. Some pioneers of the biomedical engineering of Colombia, Uruguay, Cuba and Argentina shared their experiences and ideas with the actual and new generations of biomedical engineering in CLAIB 2016. The honorary members of the organizing committee were always supporting us with their wonderful experiences. With representative from Latin American IFMBE member societies, during this conference several IFMBE and CORAL meetings took place .

The opening ceremony was held in Auditorium Carlos Gómez Albarracín of "Universidad Autónoma de Bucaramanga". The opening Ceremony was followed by a plenary Lectures by professor Andrew Laine and Luis Kun. In the evening, the universities UNAB and UIS presented a beautiful cultural activity of singing and dancing of the folklore of the region Santander and Colombia with some Latin American melodies.

Within the Industrial Exhibition a number of companies such as Materialize, Medinistros, Advanced Instruments, Set & Gad, Foscal International, presented their products and exchanged views with congress participants.

Over 493 delegates participated in the conference. Attendees came from all countries of Latin America and among others from the USA, Spain, Croatia, Singapore, Taiwan, Portugal, Poland, Holland. CLAIB 2016 was an event characterized by the low cost of registration (average registration fee was 118 USD), internal transportation support for all scheduled activities, hospitality for the attendees and an excellent presentation of recreational and cultural activities. Also there were approximately 100 scholarships for the collaborators of this great event. Costs of stay (accommodation, meals) and costs of national and international airfares were covered for some professors as well.

The technical program was structured into 7 plenaries and 10 semi-plenary conferences, 16 oral sessions and



Opening Ceremony



Opening remarks by Dr. James Goh, IFMBE



Group of song and dance of the UNAB

6 poster sessions (2 per day) with 20 articles. The oral sessions were carried out in two major auditoriums, one smaller and 5 special rooms equipped with appropriate technology (all the infrastructure of the host University - UNAB).

CLAIB 2016 also included a Young Investigator competition with 10 best works presented by preselected students. This selection was based on the evaluation performed by the reviewers (review to accept works to CLAIB 2016 performed by two or three independent reviewers) and the evaluation of the presentation given by the Session Chair or the Posters Evaluation Panel. For this evaluation, works presented in oral or poster sessions were scored in a similar way: 60% Reviewers evaluation (E1) and 40% Session chair evaluation (E2). The reviewers evaluation was on the scale from 1 to 10 and given that the accepted works have had evalua-

tion on scale from 0 to 3.0, based on EasyChair, then a normalization process was made, ranking all the works by the Final Evaluation where the best 10 works were presented by students-finalist of the competition. From this list of the 10 best student works, ordered in descending way by Efinal, the best work in each category (Bachelor, Masters, Doctoral) were selected for the Best Young Investigator Award.

The winners of the Best Young Investigator Award, considering each one of the academic categories were:

Authors	Title of the Work	Category	Country
<i>Diana Carolina Castaño, Jeanneth Mosquera-Rendón, Mauricio Corredor</i>	Structural and functional genomics analysis of methyltransferase genes and networks associate to understand an bio- resistance inside the pangenome of <i>Pseudomonas aeruginosa</i>	Bachelor	Colombia
<i>N. Alemán-García, A. Pérez-García, J. Sánchez-Melecio, F. Silva-Aguilera, E. Gutiérrez-Herrera, M.R. Ortiz-Posadas, J. Hernández-Ruiz, D. Kershenobich, C. Sánchez-Pérez</i>	Fibrosis evaluation of animal liver tissue by thermal conduction	Masters	México
<i>L. Schiaffino, A. Rosado Muñoz, J. Francés Villora, M. Bataller, A. Gutiérrez, I. Martínez Torres, V. Teruel-Martí, J. Guerrero Martínez</i>	Feature selection for KNN classifier to improve accurate detection of subthalamic nucleus during deep brain stimulation surgery in Parkinson's patients	Doctoral	Argentina

On the Thursday night there were a culture dinner at Girón, Santander, Colombia where ideas, projects and future plans for biomedical engineering in Latin America were combined with tastes of rich food, music of the region and a dance presentation of a tango studio.

The professor Andrew Laine, president of the IEEE-EMBS with other academic experts organized a panel under the direction of Martha Zequera and Alejandro Arboleda to discuss projects to support the development of biomedical engineering in Latin America.

On October 28 IFMBE- Industry working Group Symposium was organized with the assistance of professors Piotr Ladyzynski from Poland, Martha Zequera from Colombia, Carlos Mesa by HIC- International Hospital, Paulo Carvalho from Portugal, Ratko Magjarevic from Croatia and representatives from industry and also delegates of the Ministry of Social Affairs.

The closing ceremony was preceded by a keynote lecture by professor Kang-Ping Lin, IFMBE Secretary General. Afterwards we moved to the "Cerro El Santísimo" where the awards ceremony and closing ceremony took place.

After to next day to the closing ceremony some delegates went on ecological day in the famous great canyon of Chicamocha, 100 km to the south of Bucaramanga.



CLAIBs are always the leading events for biomedical engineering in Latin America. We wish many successes to CLAIB 2019 to be held in Viña del Mar, Chile.





Place of closing Ceremony on the hill the SANTISIMO at Foridablanca, Santander, Colombia



Delegates of CLAIB 2016 ready to travel to the great canyon of Chicamocha

VII

LATIN AMERICAN CONFERENCE ON BIOMEDICAL ENGINEERING

CONGRESO LATINOAMERICANO DE INGENIERÍA BIOMÉDICA
CONGRESSO LATINO-AMERICANO DE ENGENHARIA BIOMÉDICA
Bucaramanga Colombia, Octubre 26 al 28 de 2016

Recordará para la posteridad a los participantes, ponentes, miembros del comité científico, a las empresas y conferencistas magistrales de América Latina y del mundo y estudiantes del comité de apoyo que hicieron posible este magno evento.

Posterity will remember for the participants, speakers, committee members científico, companies and keynote speakers from Latin America and the world who made this great event.

Posteridade vai se lembrar para os participantes, palestrantes, membros da comissão científico, empresas e palestrantes da América Latina e do mundo que fez este grande evento.

 Prof. Isnardo Torres President CLAIB 2016, chair	 Dr. Jhon Bustamante Co. chair	 Dr. Daniel Sierra Scientific Divulgerion and Publication	 Dr. Carlos Arismendi Infrastructure Coordination	 Dra. Martha Lucia Zequera Scientific Societies	 Ing. Alejandro Arboleda Conzalez Infrastructure Logistic	 Ing. Carlos Mesa Financial Affairs	 Dr. Jesus Maria Soto Academic Oversight	 Prof. Delfin Albarracin Coordinator Green Day
 Ing. Carolina Salazar Coord. Workshop on Innovation	 Dr. Andres Orozco Coord. Business Sample	 Dra. Nydia Paola Rondón Scientific Communicator and proposals	 Dr. Jorge Reynolds Scientific Adviser	 Dr. Ariel Broidot Administrative Adviser	 Ing. Ignacio Escobar Academic Adviser	 Prof. Guillermo Avendaño CORAL President	 Prof. Eric Laciir Leber CORAL Vice President	 Prof. Ernesto R. Denis CORAL Secretary
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Table of honor / mosaic of the people who made CLAIB 2016 possible.



3rd WHO Global Forum on Medical Devices

Geneva, Switzerland

WHO



The 3rd WHO Global Forum on Medical Devices took place in the Geneva International Conference Center (Switzerland) between 10th and 12th May 2017, 10 years after the Member States recognized in resolution WHA60.29 and WHA67.20 that medical devices are indispensable for health care delivery, but that their selection, regulation and use present enormous challenges. The Forum allowed discussing the achievements that have been made in the field and the enormous challenges in low and middle income countries. This also served as an opportunity to share the WHO EMP strategy in the framework of Universal Health Coverage and the Sustainable Development Goals.

The Forum was attended by 571 participants (264 females and 307 males) from 71 countries. 55% of the participants came from: the government (17%), academia (18 %) and industry (20 %). The other 45% were from NGOs, UN/intergovernmental organizations, professional associations, funding/donor agencies, WHO Collaborating centers as well as independent health professionals and consultants. It included plenary panel sessions, oral parallel sessions, workshops, exhibition and poster sessions.

The Forum was the venue to launch 4 new important publications of the Medical Device Technical series.

It was a successful event that ended with the invitation to the 4th WHO Global Forum on Medical Devices to be hosted by New Delhi, India.

Objectives of the Forum achieved

1. To define methods of increasing access to priority medical devices under Universal Health Coverage

in compliance with the Sustainable Development Goals

2. To share evidence of best practices in regulating, assessment and management of medical devices
3. To demonstrate development and use of innovative appropriate affordable technologies to respond to global health priorities
4. To share WHO tools and guidelines on medical devices for better implementation
5. To present the outcomes of the implementation of the World Health Assembly resolutions on medical devices and the EMP strategy for 2030

Launching of four new books during the Forum

- **Global Atlas of Medical Devices** (http://www.who.int/medical_devices/publications/global_atlas_meddev2017/en/)
- **Human Resources for Medical Devices: the Role of Biomedical Engineers** (http://www.who.int/medical_devices/publications/hr_med_dev_bio-engineers/en/)
- **WHO Global Model Regulatory Framework for Medical Devices including in vitro diagnostics medical devices** (http://www.who.int/medical_devices/publications/global_model_regulatory_framework_meddev/en/)
- **WHO List of Priority Medical Devices for Cancer Management** (http://www.who.int/medical_devices/publications/priority_med_dev_cancer_management/en/)

All books can be freely downloaded following the links above.



IFMBE at 3rd WHO Global Forum on Medical Devices



Adriana presenting the @WHO books on Priority Medical Devices
#MedicalDeviceG @IFMBE_HTAD @IFMBE_CED



ISPOR @ #WHO plenary introduces its multi org. Int'l Initiative on the #Assessment of the #Value of Medical Technologies



Dr. James Goh (IFMBE President) and Dr. Ernesto Iadanza (IFMBE/CED Chairman) at @WHO #3GFMD



Plenary Panel Session - Adriana Velazquez Medical Devices - Global and Regional Perspective



Dr. Ernesto Iadanza, CED chairman, plenary talk on HTM



News in Brief

2016 Teamwork Award - Children's Hospital of Eastern Ontario, Ottawa, Canada

Tony Easty, Chair, CED Awards Committee

The Children's Hospital of Eastern Ontario's (CHEO) Clinical Engineering Department, under the leadership of its current Director, Kim Greenwood, has implemented a number of initiatives over the last couple of decades that has elevated this 29 person team into a leading innovator in the field of clinical engineering and healthcare technology management in Canada. Over the last fifteen years, this group has implemented and led a continuous healthcare technology planning process that has been recognized as an industry best practice through ECRI and peer reviewed journals. The technical personnel of Clinical Engineering hail from a broad range of experience that is continually bolstered by ongoing training in both formal and informal settings. During the last fiscal year, on average 25 hours of train-

ing were provided to each technical staff member.

This team provides service within CHEO across the spectrum of clinical equipment including laboratory and medical imaging systems. They have reduced the entire clinical equipment inventory's Cost of Service Ratio to 4.9 percent for the last fiscal year. Every effort is made to cross train as many of the technical staff as possible on a wide range of equipment. In addition to supporting CHEO, this Clinical Engineering team operates a regional service that supports 18 other healthcare organizations at 23 sites in the Eastern Ontario region for the last 35 years.

Knowing the importance of encouraging the success of the profession, CHEO's Clinical Engineering team has worked in cooperation with the Biomedical Engineering programs

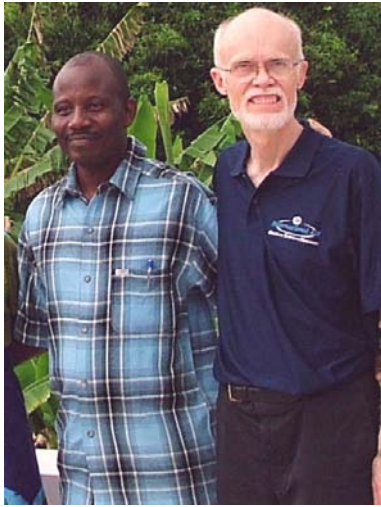
at the University of Ottawa and Carleton University along with the Durham College Biomedical Engineering Technology program.

Not only is CHEO's Clinical Engineering team an industry leader for technology, it also raises the bar in other areas. They actively work with a number of different charitable organizations to identify suitable healthcare technology to be reused outside CHEO locally and internationally. In recent years, CHEO Clinical Engineering has sent equipment to eight other countries. Furthermore, the diversity of the team itself strengthens its ability to innovate and problem solve while being more reflective of society as a whole. CHEO Clinical Engineering's ongoing success is due to the fact that they follow the simple principle that to achieve great things, we all must continue to work together as equal partners.



2016 Teamwork Award - Ghana Health Service/Canadian Medical and Biological Engineering Society Collaboration

Tony Easty, Chair, CED Awards Committee



At two Advanced Clinical Engineering Workshop in Ghana in March and June 2009, the Ghanaian clinical engineers were introduced to the activities of the CMBES, including the development of the Clinical Engineering Standards of Practice for Canada.

The team leader for these workshops was Bill Gentles, a Canadian Clinical Engineer and past president of CMBES. Nicholas Adjabu was and still is the deputy Director of Clinical Engineering in the Ghana Health Service. The workshops led to the formation of the Ghana Biomedical Engineering society in March 2009.

John Zienaa was the first Executive secretary of the Ghana Biomedical Engineering Society.

The two groups developed further collaboration when the CMBES International Outreach Committee (Bill Gentles, Chair) obtained a research grant in 2013 to study the donation of medical devices to developing countries. The grant included funds to support a Clinical Engineer in Ghana (Yolanda Adusei-Poku) who would interview recipients and compile data on Medical Equipment donations in Ghana Health facilities. The grant also included funds for members of the Ghana Health Service to travel to conferences in Toronto, Vancouver, (John Zienaa and Yolanda Adusei-Poku) and London England (Nicholas Adjabu).

In 2014, Dr Adjabu and Bill Gentles attended the Appropriate Healthcare Technologies for Low Resource Settings Conference in London, England, and presented a paper entitled "A study of medical equipment donations from Canada to developing countries: progress and challenges."

In 2015, John Zienaa and Yolanda Adusei-Poku (Ghanaian Clinical Engineers) attended the CMBES conference in Vancouver and participated in a roundtable discussion on Medical Equipment Donations.

In 2015, Yolanda Adusei-Poku, visited 28 health facilities in Ghana to interview recipients of medical equipment donations. This data was used as the basis of a paper presented by Bill Gentles at the CMBES conference in Calgary, Alberta, Canada in 2016. This paper won the award for best research paper award at the conference.

A video addressing the issues of medical equipment donations to developing countries has been produced by CMBES and is published on YouTube. (<https://www.youtube.com/watch?v=R27CPPAwL1Y&feature=youtu.be>)

Team collaboration has led to many mutual benefits and increased mutual understanding. The team continues to maintain contact and seek new opportunities for interaction.

IFMBE-CED 2016 Manuscript Awards

Each year, the Clinical Engineering Division Awards Committee selects two manuscripts published in IFMBE journals or proceedings for awards. The major criteria for the awards are as follows; originality and significant impact on the field of clinical engineering, quality of presented arguments, and quality of writing style.

Here are the winning manuscripts for 2016:

Clinical Engineering Benchmark Comparison Between Zhejiang Province and American Hospitals, published in the Proceedings of the First International Clinical En-

gineering and Health Technology Congress, Hangzhou, People's Republic of China, September 2015. Authors: *Dr. Binseng Wang*, CCE (USA), *Mr. Kun Zheng*, CCE (PRC) and *Ms. Qing-Yi Feng*, CCE (PRC)

Key Considerations for the Introduction of a Healthcare Technology Program in Remote Locations, published in the Proceedings of the First International Clinical Engineering and Health Technology Congress, Hangzhou, People's Republic of China, September 2015. Author: *Mr. John Robson* (Australia)

Obituaries

Joachim H. Nagel February 1948 – July 2017



In Memoriam

Prof. Dr. ret. nat. Joachim H. Nagel

IFMBE President 2003 – 2006

IUPESM President 2006 – 2009

I met Prof. Nagel more than 20 years ago at one of the Mediterranean Conferences in Biomedical Engineering, when Joachim was already an established researcher and well known scientist, and I was entering the arena of BME research. Shortly after that event, Joachim invited me to start collaborating within the frame of the Int'l Federation for Medical and Biological Engineering. One of the first projects we realized was the IFMBE's Mediterranean Conference which was held in Pula, in Croatia in 2001. At that time, Joachim was already the President-Elect of the IFMBE and I was enjoying listening to his ideas and plans for the future development of the Federation, involving the young generation of researchers into BME and increasing the visibility of the profession. We were usually sitting on a terrace of a small restaurant on the shore in the bay, after the presentations at the Conference and all meetings were finished, looking at the yachts at the anchorage in the marina, letting the breeze bring us refreshment and new, fresh ideas. We continued to collaborate on numerous different IFMBE and later IUPESM projects, until and after Joachim's retirement, until a few months ago when Joachim withdrew into private life due to health reasons. During all those years, Prof. Nagel has been the leading person or has been actively involved in different initiatives, which resulted in increasing of visibility and importance of biomedical engineers and medical physicists in medicine and health as well as in large number of benefits for IUPESM and IFMBE affiliated societies and individuals.

Joachim Nagel received his Diploma in Physics from the University of the Saarland, Germany, in 1974 and his D.Sc. in Medical Engineering Physics from the University of Erlangen-Nuremberg, Germany, in 1979. Following appointments in industry and as a faculty member at the Department of Biomedical Engineering of the University of Erlangen-Nuremberg, he joined the University of Miami, Florida, USA, in 1986, where he served as a Professor of Biomedical Engineering (1986-96), Professor of Radiology (1990-96), and Professor of Psychophysiology (1988-96), Director of the Medical Imaging & Instrumentation Lab (1986-1996), and Director of Biomedical Engineering at the Behavioral Medicine Research Center (1986-1996). In 1996, he accepted the position as Professor of Biomedical Engineering and at the same time the Director of the Department of Biomedical Engineering at the University of Stuttgart with appointments as Adjunct Professor of Biomedical Engineering and Radiology at the University of Miami. He was the leader of several International Associations: he served as the President of the International Union for Physical and Engineering Sciences in Medicine (IUPESM) and the President of the International Federation for Medical and Biological Engineering (IFMBE). He was a member of the Scientific Council of the International Centre for Biocybernetics of the Polish Academy of Science, a Fellow of the Institute of Physics (IOP), a Fellow of the International Academy of Medical and Biological Engineering (IAMBE), a Fellow of the American Institute of Medical and Biological Engineering (AIMBE), Founding Fellow der European Alliance for Medical and Biological Engineering and Sciences (EAMBES) and an Academician Member of the UNESCO/UATl World Academy of Biomedical Technologies. He has served on the IEEE/EMBS Administrative Committee as a European and as a US representative, and he was a member of the IEEE Engineering Research & Development Committee (Technology Policy Council). He was an honorary member of the Czech Society for Biomedical Engineering and Medical Informatics of the Czech Medical Association of J. E. Purkyně.

In 2012, Prof. Nagel was honored Honorary Life Membership of International Federation for Medical and Biological Engineering (IFMBE). Also in 2012, he was awarded the IUPESM Award of Merit for his "Outstanding Achievements in Physical & Engineering Sciences in Medicine".



Joachim Nagel was an editor of the IOPP Book Series in Medical Physics and Biomedical Engineering and the IFMBE Book Series in Biomedical Engineering, he has served as an Editor for the BMES journal *Annals of Biomedical Engineering* (1989-94), the IOPP journal *Physiological Measurement* (1994-98), and he was a member of numerous Editorial and Review Boards. He served as a consultant to NIH, NHLBI, the Scientists' Institute for Public Information, the American Cancer Society – ACS/NASA Subcommittee, and numerous companies. He has been funded by NIH and the DFG, and he has taken part in EU-funded projects.

His main research interests were in the fields of cardiovascular monitoring, instrumentation and physiology, medical image acquisition and image processing, physiological signals, MEMS, and biological effects as well as therapeutic applications of ultrasound. He has published more than 200 scientific papers, books, book chapters, patents, and conference papers.

Joachim Nagel was the coordinator of the European project BIOMEDEA (Biomedical Engineering Preparing for the European Higher Education Area). The objective of the project was to develop and establish consensus on European guidelines for the harmonization of high quality MBES programs, their accreditation and for certification and continuing education of professionals working within the health care systems.

Prof. Nagel's contributions to biomedical engineering and medical physics are numerous and it is very difficult to mention them all.

IUPESM Health Technology and Training Task Group

Together with Prof. Barry Allen, Prof. Joachim Nagel established the IOMP/IFMBE Task Group for Health Technology and Training in Developing Countries later called "Health Technology and Training Task Group". They started to develop policies and a program in accordance with WHO approaches, involving WHO and the governments and health care systems of the countries with which IFMBE and IOMP are cooperating. Such a program is a milestone in developing healthcare around the world, especially in developing countries.

Collaboration with WHO

Prof. Nagel has considerably increased the cooperation of IUPESM and IFMBE with WHO. As the president of the

IFMBE he has participated in WHO General Assemblies in Geneva during his term of office and continued to represent the IFMBE at general assemblies also after 2006.

It is Prof. Nagel's achievement that IFMBE is included into the WHO's World Alliance for Patient Safety.

Other NGO activities

Prof. Nagel re-established IFMBE's status of an NGO at United Nations and included IFMBE into the initiative "Information Society of the UN". Prof. Nagel also initiated the cooperation of IFMBE with international standardization organizations (ISO, IEC and ITU). IFMBE has meanwhile been accepted as member of the World Standards Cooperation.

Publications

Prof. Nagel recognized the value of IFMBE publications, mainly its Journal MBEC and its potentials. Therefore, he was leading negotiations with the most significant publishers in the field of biomedical engineering and together with other members of the Journal Committee decided to sign a contract with a new publisher, Springer. He achieved three major successes for the IFMBE:

Dramatical increase of distribution and circulation as well as of the Journal's volume which brought to a significant increase in visibility of biomedical engineering and IFMBE.

Excellent services for IFMBE members (each of 120.000 individuals from the IFMBE affiliated societies) who can free of charge access electronic copies of Federation's Journal MBEC and another three BME journals published by Springer. In addition, IFMBE conference proceedings from the IFMBE proceedings series and the IFMBE newsletter can be accessed under the same conditions. Up to my knowledge, this is a unique service in biomedical engineering community.

In addition to the above-mentioned achievements, the income from the Journal has significantly increased, enabling the Federation to start new projects, programs and initiatives.

Education

Prof. Nagel was working actively in biomedical engineering and medical physics education not only as a university professor and Head of the BME department, but he

also initiated a series of workshops on biomedical engineering and founded a European project BIOMEDEA in 2004. The BIOMEDEA project gathered BME societies and BME university programs. This initiative resulted in a number of documents (criteria, guidelines and protocols) for harmonization and accreditation of biomedical engineering and science programs. The project has also dealt with training, certification and continuing education of biomedical and clinical engineers working with the healthcare system.

During the realization of this project it became evident that this project is interesting not only for Europe but also for the BME community worldwide, so that at the III BIOMEDEA meeting, representatives from all over the world were present. The success of the BIOMEDEA project encouraged Prof. Nagel to continue it with that activity with a strong support of the IFMBE which incorporated many of the BIOMEDEA policy statements into policy IFMBE policies.

Conferences

Prof. Nagel has found it his professional obligation to attend and to communicate with IFMBE members at all possible levels and in all regions. Such an open and friendly approach resulted in the increase of applications for IFMBE co-sponsorship and endorsement of worldwide BME conferences. Prof. Nagel continued this policy also as IUPESM president.

Positions held in IUPESM

IUPESM President, 2006-2009

Member of Congress Coordinating Committee

Nominating Committee

ICSU Liaison Committee

Member of the Administrative Council of IUPESM

Positions held in IFMBE

Member of the Administrative Council since 1997

President-Elect and Vice-President, 2000-2003

President, 2003-2006

Immediate Past President, 2006-2009

Chairman of the Federation Journal Committee,
2004 -2007

Chairman of the Publications and Publicity Committee,
2000 -2007

Chairman of the Awards Committee, 2000-2003

Co-Chairman of the Awards Committee, 2003-2006

Member of the Education and Accreditation Committee

Member of the WHO Committee

Member of the EAMBES Executive Board, 2003-2004

Editor of the IOPP/IFMBE/IOMP book series since 2002-
2006

Editor of Springer biomedical engineering book series

Co-Founder and Coordinator IFMBE Proceedings Series
2001-2006

Co-editor of IFMBE Proceedings Series

Prof. Nagel has also held a number of positions in many other learned societies and organizations. Prof. Nagel is a distinguished scientist who contributed to biomedical engineering and science and published a large number of scientific publications.

I have never met any person, scientist or engineer, who has been as much engaged and as much successful in representing interests and achieving aims of a scientific organizations in biomedical engineering as Prof. Nagel. In many years of his work, Joachim earned many friends and admirers, and he also changed many people's lives for the better. I am honored to have been among them.

Ratko Magjarević



Announcements



<http://www.iupesm2018.org/>

Calendar

CMBE2017

2017 BMES Cellular and Molecular Bioengineering Conference

03 – 07 Jan 2017

Hawaii, USA

CONIIC2017

III Congreso Internacional de Ingeniería Clínica 2017

14 – 18 Mar 2017

Medellin, Antioquia, Colombia

<http://www.coniic.com/>

CMBEBIH2017

2nd Conference on Medical and Biological Engineering in Bosnia and Herzegovina

16 – 18 Mar 2017

Sarajevo, Bosnia & Herzegovina

<http://cmbebih.com/>

7th Panhellenic Conference on Biomedical Technology

07 Apr 2017

Athens, Greece

<http://www.elevit.org.gr/>

VI Spring School on ICT, economical and organizational issues for e-health integration in the enlarged Europe

22 – 24 May 2017

Koper-Capodistria, Slovenia

<http://ssic.units.it/spring-school>

CMBEC 40

Canadian Medical & Biological Engineering Conference

23 - 26 May 2017

Winnipeg, Canada

<http://cmbes.ca/>

APCES2017

Asia Pacific Clinical Engineering Summit

october 2017
(Dates to be confirmed)
Xiamen, China

ICBHI2017

International Conference on Biomedical and Health Informatics 2017

18 - 21 Nov 2017
Thessaloniki, Greece

<http://icbhi.med.auth.gr/>**ICIBEL 2017**

International Conference for Innovation in Biomedical Engineering and Life Sciences

10 – 13 Dec 2017
Penang, Malaysia

http://cime.my/icibel_2017/**ISMBE 2018**

Annual Meeting of the Israeli Society for Medical and Biological Engineering

22 Feb 2018
Haifa, Israel

<https://ismbe.org.il/biomedical-engineering-2018/>**ICBEM 2018**11th International Conference on Bioelectromagnetism

23 - 25 May 2018
Aachen, Germany

<https://icbem2018.rwth-aachen.de/>

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The newsletter appears on the web page <http://www.ifmbe.org> in downloadable PDF format. Articles and announcements for **IFMBE News** should be sent to Prof. Igor Lackovic, Faculty of Electrical Engineering and Computing, University of Zagreb, Unska 3, HR-10000 Zagreb, Croatia, Phone: +385 1 6129 808, Fax: +385 1 6129 652, E-mail: igor.lackovic@fer.hr. Please include „IFMBE News“ when e-mailing materials.

Submission guidelines

Text may be submitted via e-mail (to igor.lackovic@fer.hr) as either an ASCII (unformatted text) file in the body of the message or as an attachment in its native word processor format, which is preferable. Microsoft Word is the preferred format (doc or rtf). Please do not embed your photos in your document file. Instead submit them as separate attachments (TIF, JPEG, ...) at high enough resolution (preferably 300 dpi). Along with your photos, please submit suggestions for captions. Captions can be provided via a text document with a list of filenames and captions. Usually, the article can be around 3 to 4 pages in regular single space Microsoft Words format with 2 to 6 high resolution photos.

