

**International Union of Pure and Applied Physics (IUPAP)**  
**Affiliated Commission AC-4: Medical Physics**  
**[International Commission on Medical Physics Committee, IComMP]**

**Fridtjof Nüsslin, Chair**

**Activities Oct-2011 to Sept-2012**

**Background**

The International Organization for Medical Physics (IOMP) represents over 18,000 medical physicists worldwide and has 83 national member organizations. The mission of IOMP is to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physics and promoting the highest quality medical services for patients.

Medical Physics is a branch of Applied Physics that applies scientific principles, methods and techniques in practice and research for the prevention, diagnosis and treatment of human diseases with the specific goal of improving human health and well-being. The profession Medical Physicist has been recognized by the International Labor Organization (ILO) in 2010 as a professional group listed in the ILO classification system ISCO-08 under '*Physicists and Astronomers*'. To strengthen Medical Physics science within IOMP and to link IOMP to IUPAP the International Commission on Medical Physics (IComMP) has been established which has been approved as IUPAP Affiliated Commission AC-4.

**Membership of AC-4**

Due to recent elections (Beijing May 2012) the new membership of the AC4 took office:

IOMP Officers:

- Kin Yin Cheung (President IOMP)
- Slavik Tabakov (Vice-President)
- Fridtjof Nüsslin (Past-President IOMP, IComMP/AC-4 Chair)
- Madan Rehani (Secretary General IOMP)
- Anchali Krisanachinda (Treasurer)

IOMP Committee Chairs

- William Hendee (Science, SC)
- John Damilakis (Education & Training, ETC)
- Raymond Wu (Professional, PRC)
- Tae Suk Suh (Publication, PC)

Associate Members from IUPAP Commissions:

- Kenichi Yoshikawa (Chair C6, Biological Physics)
- Paulo Murilo de Castro Oliveira (C13, Physics for Development)
- Robert Lambourne (C14, Physics Education)

3 external scientists co-opted by IComMP:

to be nominated

**Activities during the reporting period**

According to the terms of references of the IOMP Committees (see IOMP Bylaws on [www.iomp.org](http://www.iomp.org)) the AC4 is a unique platform for promoting medical physics worldwide with particular emphasis on science and education to disseminate knowledge, promote research and explore new frontier areas in physics and biology and their impact on the application of physics in medicine. With that perspective organizing international meetings, interaction with the science community and collaboration with key organizations such as the IAEA and the WHO/PAHO are essential activities. Examples of recent activities and future working plans are summarized below.

**World Congress Medical Physics & Biomedical Engineering in Beijing, May 26-31, 2012**

World Congresses on Medical Physics and Biomedical Engineering (WCs) are triennial scientific events organised by IUPESM, the international umbrella organization of Medical Physicists and Biomedical Engineers, and normally organized by an individual National Organization.

The WC-2012 attracted about 2,000 delegates from around the world. The program of the congress covered the entire spectrum of lifesciences with involvement of physics and engineering. In addition special topics and workshops have been organized in order to build up bridges between themes and to add comprehensive aspects to the matrix structure, for example sessions on Linking Proteomics and Genomics with Medical Physics, Linking Physiome with Patient Needs, Bridging Fundamental Research with Medical Physics, Medical Technology and Medical Engineering, and in case of Catastrophes involving radiation, Patient Safety and Process Optimization. Furthermore, evolvement of medical physics in developing countries was a special focus addressing the needs of dedicated technologies for health care systems. Programs for education and training have been discussed.

Most important collaborative events jointly with the IAEA and the WHO have been organized:

*IOMP/WHO/IAEA Mini-Symposium: "Staffing Requirements for Radiation Medicine".*

*IOMP/IAEA/WHO Mini-symposium: "New BSS: requirements for Medical Physics Education and Training".*

*IOMP/IAEA/WHO/IRPA Mini-symposium: "Medical Radiation Protection Standards and Applications".*

*IOMP/IAEA/WHO Mini-symposium: "Nuclear and Radiological Emergencies".*

*IUPESM /WHO Workshop: "Telemedicine for developing countries".*

The 2015 World Congress of Medical Physics and Biomedical Engineering will take place from June 7 to 12, 2015 at the Metro Toronto Convention Centre, in Toronto, Canada.

### **EMERALD/EMIT Project**

The EMERALD project developed e-Learning materials in 3 areas of Medical Physics (X-ray Diagnostic Radiology, Nuclear Medicine and Radiotherapy), while the EMIT project developed e-Learning materials in 2 further areas - Ultrasound and Magnetic Resonance Imaging. The modules include specific training tasks and thousands of related images, now used in some 65 countries. EMERALD developed the first e-books in Europe, and the later EMIT project used the same web-platform for the next 2 e-books. These innovative projects and their global impact brought to Medical Physics the inaugural award for education of the European Union – the Leonardo da Vinci Award. For further details visit (<http://emerald2.eu/cd/Emerald2/>; [www.emitel2.eu](http://www.emitel2.eu); [www.emitdictionary.co.uk](http://www.emitdictionary.co.uk).)

### **Collaboration with the WHO**

Based on MoU signed in 2010 the following domains of cooperation were defined and several actions yet initiated:

- Promoting the safe use of health technologies
- Participating in WHO surveys
- Workshops and training
- Dissemination of information

### **Collaboration with the IAEA**

According to the IAEA Statutes of "...contribution of atomic energy to peace, health and prosperity" there is a wide spread cooperation with the IAEA in all fields of medical application of radiation technologies in diagnosis and treatment of diseases. To mention only one example the involvement of the IOMP in the Programme of Action for Cancer Therapy (PACT), in particular the Advisory Group on increasing access to Radiotherapy Technology (AGaRT) is emphasized. AGaRT addresses the lack of medical radiation technologies in developing countries and works in alliance with the WHO and the major stakeholders on appropriate measures to improve the access to radiation treatment in those areas of the world.

### **Endorsement of IAEA educational material in the field of medical applications of ionizing radiation:**

- IAEA handbook (A Handbook of Nuclear Medicine)
- IAEA document: Accuracy Requirements & Uncertainties in Radiation Therapy

- sponsorship of a meeting (ISEP 2012) of the International Student Exchange Program, a network of over 300 colleges and universities in 50 countries cooperating to provide affordable access to international education for a diverse student population ([www.isep.org/About\\_ISEP/](http://www.isep.org/About_ISEP/)).

### **Cooperation with Regional Organizations of the IOMP**

The IOMP supports, endorses or is involved in many scientific, educational and professional activities of its Regional Organizations. For example, at the AAPM-meeting in Charlotte an International Medical Physics Symposium has been organized jointly with AAPM & IOMP. Special focus was Medical Physics in developing countries.

### **IOMP International Conference on Medical Physics (ICMP 2013)**

To strengthen medical physics particularly in developing parts of the world IOMP runs the regionally based international conferences of medical physics (ICMP) every three years, approximately halfway between World Congresses. These are organised by a National Organization for Medical Physics after an open selection procedure. Acknowledging the birth of the IOMP the 50<sup>th</sup> anniversary ICMP will be held 1-4 September 2013 in Brighton hosted by the IPEM (Institute of Physics and Engineering in Medicine) / UK. A special Symposium on “*Medical Physics in Africa – Capacity Building, Research and Education*” is planned with special emphasis on the African countries. Crosslinking with the IUPAP Commission C14 is under discussion. Furthermore, we are working on a joint workshop “*From Molecules to Life - Cooperation between the Biological Physics and Medical Physics*”.

The IUPAP Young Scientists Prize 2012 and 2013 will be delivered at the ICMP2013.

The ICMP is the primary and regular congress activity of the AC4. AC4 has applied for IUPAP a type A conference sponsoring for the ICMP13.

### **ICBP International Conference on Biological Physics 2014**

After the successful 7<sup>th</sup> ICBP in San Diego 2011 the Chairs C6 and AC4 are considering again to organize workshop at the next ICBP 2014 in Beijing to continue the interaction between the Medical Physics and Biological Physics community.

An involvement of IUPAP is planned (e.g. a symposium jointly organized by AC-4 and C6, workshop on Development & Training Medical Physics (involvement of AC-4, C13, C14).

### **IUPAP Young Scientist Award**

The rules for the IUPAP Young Scientist Award are published at the IOMP website. The IOMP Awards & Honours Committee by applying the rules for electing the IUPAP Young Scientist Award is currently preparing the call for the awards 2012 and 2013 to have the winner ready for presentation at the ICMP2013 in Brighton next year.

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Fridtjof Nüsslin  
Chair AC-4  
Past-President IOMP