

# ARCHIVE EDITION OF IRPS BULLETIN

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[Office Bearers : 2003 - 2006](#)

[Editorial](#)

[President's Report](#)

[Member's Report](#)

[Book Review](#)

[Obituary](#)

[ISRP-10](#)

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[Return to Archive Home Page](#)

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In this special issue of the IRPS Bulletin, we highlight the forthcoming 10th symposium of the International Radiation Physics Society (17-22 September 2006) and associated workshop on the use of Monte Carlo techniques for design and analysis of radiation detectors (15-17 September 2006). This will be held at the University of Coimbra, Portugal and many preparations are underway to insure a cordial and productive meeting.

Included in this issue of the Bulletin are listings of the invited symposium lecturers and their topics; a listing of the contributed posters may be found at:

[http://www.irps.net/posters and invited lectures.pdf](http://www.irps.net/posters%20and%20invited%20lectures.pdf).

Also included is the schedule of the workshop and symposium and a couple of maps we hope can provide some overview and orientation.

Finally, there are instructions for submitting I SRP-related papers for publication of the proceedings.

This promises to be the best-attended I SRP with international leaders in the field providing an impressive range of technical content. We look forward with anticipation to meeting those who are able to attend, and we hope that the next issue of the Bulletin will provide a good overview for those who could not attend this time.

*Larry Hudson*

[Home Page](#)

[Next](#)

## PRESIDENT'S REPORT

It is time for another IRPS election. These elections have been held every three years, ever since the Society was founded in Ferrara in 1985.

It is clear that candidates for offices in IRPS need to have energy and commitment, interests in IRPS and useful ideas for the Society. But candidates also clearly need to have the ability and willingness to participate in the affairs of an international organization (which is not large enough to offer funding to assist with that participation).

We welcome the slate of candidates which the Nomination Committee was able to obtain this year, and their interests, abilities and commitment to work for the IRPS. We thank them for their willingness to serve. (There would of course also have been the ability to nominate further candidates by petition, as did happen last time.)

As the Society becomes larger the pool of able active people who are trying to participate, and are willing to participate, should grow, and multiple candidates for some of the offices may become more common. (However one does not want to allow a failure to win an election to discourage participation in the affairs of the Society.) It is interesting to realize that, even in an era of enhanced communication, there is a need for a participatory organization to have actual physical meetings, particularly to conduct more than one-on-one discussion. This presents a problem, especially for an international organization.

The IRPS has tried to address these needs and problems by holding twice yearly Council meetings in geographically dispersed areas of the world, increasing the opportunities for members to participate in some share of meetings and come into regular contact with other members.

However this does also mean that most members will only come to a minority of meetings, except for the rather more general attendance in connection with the triennial ISRP which the Society sponsors. For the Council to be able to conduct business this situation requires that the Council have a rather small quorum. This in turn implies a need for trust, and an assumption of widespread consultation. In fact most decisions of the Council are made by consensus, and with awareness of the views of members not present.

The Society has also always welcomed inclusive participation in its activities. Members of the Society have been welcome to observe and participate in Council meetings (although of course not taking part in any formal vote). Continuity in the affairs of the Society is provided by staggered six year terms on Council, and historically by a Secretary for IRPS who (unlike the President) has had longer tenure through several elections.

But what is always needed is to identify additional and new people, with interests, useful ideas, and abilities to participate in the affairs of the Society.

As you proceed now to cast your ballot in this election, I urge you to also identify other candidates for the future, and bring them to our attention.

*Richard Pratt*



## Report of the World Conference on Physics and Sustainable Development

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*The World Conference on Physics and Sustainable Development* (WCPSPD), a landmark event organized to celebrate the International Year of Physics, was held during 31 October - 3 November 2005, at the International Conference Centre in Durban, South Africa. The Conference brought together, students, educators, scholars, representatives and decision-makers from numerous government and non-government agencies around the world, who formulated a plan aimed at resolving the challenges posed by sustainable development. Physics has made numerous contributions to the global economy in areas such as electronics, materials and computer technology, and to health through x-rays, synchrotron radiation, magnetic resonance imaging and nuclear medicine. However, these revolutionary technologies have been of greater benefit to people in the developed world than in the developing world. The Durban Conference was, in the words of Dr. Edmund Zingu, President of the South African Institute of Physics, "*an attempt to re-direct the attention and efforts of physicists towards the Millennium Development Goals*", endorsed by world leaders at the United Nations Millennium Summit in September 2000. The conference served as the first global forum to focus the physics community on development goals and to create new mechanisms of cooperation toward their achievement. It created an intellectual platform for an assessment of physics in development and the role it can play for sustainable development, particularly in the emerging and the developing countries. Participants from developed and developing nations examined the contributions that physics has made to society in the past in order to formulate and sharpen action-oriented plans for the contributions that it can and should make in the future. The above Conference was a follow-up on the 1999 UNESCO-ICSU World Conference on Science, which sought to strengthen the ties between science and society, as well as the broader UN World Summit on Sustainable Development that took place in Johannesburg in 2002.

This Conference was co-sponsored by several international organizations, including: International/World Year of Physics, UNESCO; the Abdus Salam International Centre for Theoretical Physics (ICTP); the International Union of Pure and Applied Physics (IUPAP); and the South African Institute of Physics (SAIP). About five-hundred physicists participated. Importantly there were several observers/representatives from numerous agencies, including American Physical Society; European Laboratory for Particle Physics (CERN) in Geneva, European Physical Society, IAEA, IUPAP, UNESCO, World Bank and several of the African organizations.

WCPSPD was preceded by the *25th General Assembly of the IUPAP* in Cape Town. It is the first time that the General Assembly (held once in three years) was held on the Continent of Africa; and the second time that it was held outside of USA/Canada and Europe (held once in Asia; in Japan in 1993). WCPSPD was immediately followed by two major Physics events in Durban: *US-Africa Advanced Studies Institute on Photon Interactions with Atoms and Molecules and the IAEA Technical Meeting on Accelerator-based Physics for sustaining the flow of Technology and Skills*. WCPSPD was much different from most of the other conferences, where the individual presentations of one's own research are the chief focus.

WCPSPD laid a great emphasis on chalking out programmes to work towards sustainable development. The Conference covered the following four focal themes:

1. Physics Education (330 registered participants)
2. Energy & Environment (80 registered participants)
3. Physics & Economic Development (52 registered participants)
4. Physics & Health (47 registered participants).

As well, there were about thirty participants involved in coordination and organizing. The Conference was inaugurated by His Excellency, Mosibudi Mangena, Minister of Science and Technology, South Africa. A welcome civic reception and banquet was held on the first day by the Mayor Councillor Obed Mlaba. The first day consisted of a Plenary Session with presentations by the Organizers, Keynote Speakers and the Programme Chairs of each theme. The second day was devoted to active discussions among the sub-groups under each of the four themes. A brief summary of each of the four is outlined below.

An urgent need was felt to strengthen *Physics Education*. Physicists pledged to make high-quality physics resources widely available in developing countries by establishing a website along with Resource Centres in Africa, Asia and Latin America. These will prepare instructional materials and model workshops for teacher trainers in Asia, Latin America and Africa. The resulting resource material will be made available on the web. A multidisciplinary mobile science team will also be created to provide online support.

Under the umbrella of *Energy and Environment*, efforts to enhance efficiency and reduce pollution in transportation will include investigating new battery technologies and improved internal combustion technology for hybrid application. Teams will develop solar photovoltaic technologies, including new and environmentally-friendly processes for generating and storing electricity. Efforts shall be made to enhance the usage of wind power.

The focal theme, *Physics and Economic Development*, drew a lot of attention with active participation from representatives of UNESCO, IAEA, IUPAP, World Bank, among others. This working group has come up with a series of recommendations and initiatives on how to strengthen Research and Development (R & D). Physics makes a vital contribution to the economy. It was pointed out that physics-based industries account for 43% of manufacturing employment in the United Kingdom. A Training Facility for Physicists in Economic Development is proposed, which shall provide training in entrepreneurship and related skills. The group further proposed to launch a joint research project on nanoscience and nanotechnology with a focus on clean water, air and energy. It proposes an integrated approach to strengthen R & D in nanosciences and help turn nanotechnologies into commercially viable products for the benefit of society, in the developing countries. An online network devoted to physics and agriculture was also proposed. Most members of this group will be following up with laboratory work and liaison with the industry. The group also urged the creation of International/Regional Science Centres (including the AFSRF: *African Synchrotron Radiation Facility*) in the developing countries.

Under the fourth and final theme, *Physics and Health*, educational resources will be made available through the Physics and Engineering Resources for Healthcare Development (PERHD) website, sponsored by the World Conference. Further projects include creating a network of training centres in physics of radiation therapy using shared resources from institutions around the world and providing guidelines to elaborate educational programmes in medical physics.

The Conference had about 200 Poster Presentations, displayed for two days. The third and the last day was devoted to the presentations of the summaries of the deliberations of each of the sub-groups on the preceding day. There shall be some follow-up meetings to review the progress of the deliberations and proposals during the WCPSPD. An interesting item in the Conference was *The Lab in a Lorry*. This mobile laboratory is a partnership between the Schlumberger Foundation and the Institute of Physics, UK. It is contributing to popularizing physics among school students and in creating a general awareness.

In the conference the radiation and radiation sources were mentioned in the context of health physics and materials sciences. The role of synchrotron radiation facilities in the arena of international cooperation was also covered.

Further details about WCPSPD are available at <http://www.wcpsd.org/>

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## The Curies: A biography of the most controversial family in science

by Denis Brian

Hoboken, New Jersey : John Wiley & Sons, 2005. ix + 438 pages.  
\$30.00.

Denis Brian, author of *Einstein: A Life*, has published an interesting biography of one of the most extraordinary families in science, the Curies. At first sight one might ask: why another biography? There are at least ten major biographers of Marie Curie, including her daughter Eve, and three biographers of Pierre Curie, in addition to numerous popular and scientific articles about the lives and work of the Curies. However, Denis Brian has set out to write the first full-scale biography of the entire Curie dynasty, from Pierre and Marie's fruitful union to the lives and accomplishments of their two daughters, Irène and Eve, and son-in-law Frédéric Joliot. Also included in the book are sketches of the lives of Pierre and Marie's parents, and of the generation following the Joliot-Curies.

As pointed out by Denis Brian, the momentous achievements of the Curie family resulted in several Nobel prizes: Pierre and Marie Curie shared the 1903 prize in physics with Henri Becquerel, Marie was awarded the 1911 prize in chemistry, and Irène and Frédéric Joliot-Curie shared the 1935 prize in chemistry. These achievements are even more impressive when considering the small number of female Nobel laureates. As a matter of fact, Marie and Irène have been awarded three out of the mere five Nobel prizes in physics and chemistry so far (2005) given to female scientists (the two other prizes are the 1963 prize in physics, awarded to Maria Goeppert-Mayer, and the 1964 prize in chemistry, awarded to Dorothy Crowfoot Hodgkin).

Throughout the present biography, Marie Curie's first name is quoted as Marie, but actually she was born Marya Skłodowska. In November 1891, Marya left Poland and registered at the Sorbonne under the French version of her first name, Marie. She met Pierre Curie, an internationally known physicist but an outsider in the French scientific community, and they married in 1895. For her doctoral thesis she studied the 'uranium rays' just discovered by Henri Becquerel. In the course of her work, she coined the name 'radioactivity' and found that the mineral pitchblende was more radioactive than would be expected by its uranium content alone. Therefore, she postulated that a new element, considerably more active than uranium, was present in the ore. The joint work of Marie and Pierre resulted in the discovery of two new radioactive elements, polonium and radium. Their arduous work to isolate these elements from tons of pitchblende from Jáchymov (St. Joachimsthal), now in the Czech Republic, is well known. The 1903 Nobel Prize in physics was awarded to Henri Becquerel "for his discovery of spontaneous radioactivity", and to Pierre and Marie Curie "for their joint researches on the radiation phenomena discovered by Professor Henri Becquerel." Later, Marie Curie was awarded the 1911 Nobel Prize in chemistry "for her services to the advancement of chemistry by the discovery of the elements radium and polonium, by the isolation of radium and the study of the nature and compounds of this remarkable element."

The biography strongly focuses on the Curies' work on the radioactive elements polonium and radium. It is natural since this work constitutes the major and perhaps most spectacular part of their achievements. However, in the beginning of their joint career, the Curies were involved in many other projects. Together with Henri Becquerel they investigated the properties of beta rays. The predictable identification of beta rays with cathode rays or electrons required in early 1900 two more verifications: it was necessary to demonstrate that the beta rays are deviated in a magnetic field, and that they carry a charge of negative electricity. Becquerel took care of the electrostatic deflection. The Curies, for their part, demonstrated that an isolated conductor became negatively charged when exposed to beta rays from a radium source. As corroboration, they isolated some of the radium salt and found that it became positively charged. The Curies also showed interest in Paul Villard's discovery of gamma rays in 1900. They placed a radium source at his disposal, and they supported his interpretation of the penetrating gamma rays as being a kind of X rays.

Marie Curie put much effort into the determination of the atomic weight of radium. This was essential in order to prove that she and Pierre had found a new chemical element. Later it turned out to be crucial for establishing the uranium radioactive series, including radium and radon and ending with lead. However, the account of that work in the biography is incorrect. Marie Curie did not write down the atomic weight of radium as 225.93 in 1902. In that year, she determined the atomic weight of radium by precipitating less than 0.1 g of its chloride with silver nitrate. The result was 225 with an uncertainty of one unit in the last digit. In 1907, with 0.4 g of radium chloride, she got the value 226.3±0.5. Later, in 1911, Otto Hönigschmid, then at the Institute for Radium Research in Vienna, determined the atomic weight of radium as 225.95. A redetermination with a larger amount of material in 1933 resulted in 226.07.

In his book, Denis Brian claims that the curie unit (Ci) for radioactivity was adopted without establishing whether this was to honour Pierre, Marie, or both of them. As a matter of fact, the unit is named after Pierre Curie (1859-1906). The International Radium Standards Committee met in Brussels in 1910 in connection with the International Congress on Radiology and Electricity. The two most influential members of this committee were Marie Curie and Ernest Rutherford. It was quickly agreed that the unit for radioactivity would be the curie in memory of Pierre Curie, but there was considerable discussion over the amount of activity that would correspond to 1 Ci (a working amount of radium at the time was of the order of a few milligrams of the element). Marie Curie felt that it was inappropriate to use the name Curie for an infinitesimal amount of material, so she insisted that a curie correspond to a larger amount. Her definition was the radioactivity associated with the quantity of radon in equilibrium with one gram of radium. The present definition, which refers to a unit of the same size but described in terms independent of the disintegration of radon, was agreed upon at the Copenhagen meeting of the International Commission on Radiological Units in 1953 (today, the SI unit for radioactivity is the becquerel (Bq), where 1 Ci = 3.7×10<sup>10</sup> Bq).

The second order of business of the International Radium Standards Committee was to agree on an international standard that could be used to compare radium preparations from various laboratories. In 1911 Marie Curie prepared a primary standard of about 20 mg pure radium chloride in a sealed glass tube. Simultaneously, Otto Hönigschmid prepared a number of primary standards at the Institute for Radium Research in Vienna. In March 1912, the committee met again in Paris to intercompare the Curie standard and the Vienna standards. As it turned out, they were virtually identical. The committee also arranged for the preparation of standards for those governments that required them. These secondary standards were compared directly both with the international standard in Paris and with the Vienna standards, the certificates being signed by Stefan Meyer, Marie Curie and Ernest Rutherford. This procedure worked satisfactorily for the next 20 years.

Marie Curie is described in the biography as a hard working researcher, devoted to pure science, but she also interacted with industry, a fact that is less known. In 1904 the Curies began a collaboration with industrial chemist Armet de Lisle, who built a radium factory at Nogent-sur-Marne, east of Paris. For Marie Curie the factory was a natural extension of, and supplement to, her own laboratory, helping to keep her activities going. Later, many researchers from the Curie laboratory became involved in the creation of a French radioelement industry. Marie Curie's key role in the establishment of a radium standard also can be seen as a proof of her interest in public service.

In his book, Denis Brian also details the life of Eve Curie, who made an interesting career as a talented writer, correspondent and reporter. Eve and Irène accompanied Marie Curie on her first journey to the United States in 1921. In the mid-1930's, Eve wrote a biography of her mother. The book was an instant and enduring best seller, later converted into a popular movie. The MGM movie *Madame Curie* was released in 1943. Greer Garson, a successful actress of the 1940's, played Marie, and Walter Pidgeon, one of Hollywood's leading men, appeared as Pierre. To complete the Curie family, it could be mentioned that Irène was played by the popular child actress Margaret O'Brien, and that the roles of Pierre's parents were given to Henry Travers and Dame May Whitty. During World War II, Eve Curie travelled to remote battle fronts in the Far East, where she met many interesting people and interviewed three Indian leaders, Nehru, Gandhi and Jinnah. Today, Eve Curie Labouisse lives in New York City. Interestingly, she read and commented upon most of the present biography until, at one hundred years of age, her eyesight began to fail.

While the story of Pierre and Marie Curie has been told many times, the lives and achievements of the Joliot-Curies are perhaps less known. Irène, the elder daughter of Pierre and Marie Curie, graduated in physics after an unconventional education: she was taught at home, in physics by her mother, in mathematics by Paul Langevin and in chemistry by Jean Perrin. She became Doctor of Science in 1925, with a thesis on the alpha rays of polonium. At the Radium Institute she met Frédéric Joliot, and they married in 1926. Frédéric prepared a thesis on the electrochemistry of radioelements and obtained his Doctor of Science degree in 1930. From then on Irène and Frédéric worked in close collaboration. They were immediately thrown into a hard international competition with other groups in nuclear science.

In 1930 Walther Bothe and Herbert Becker had discovered a very penetrating radiation emitted by light elements, such as beryllium, when bombarded by alpha particles from radioactive polonium. The radiation could pass easily through sheets of metal and even penetrate an inch of lead. It was assumed that this penetrating radiation consisted of high-energy gamma rays. In a crucial experiment, Irène and Frédéric Joliot-Curie showed that the new radiation was able to eject protons from hydrogen *comptes rendus* paraffin wax, and they published a note in the *Comptes rendus de l'Académie des Sciences* on January 18, 1932. They still believed the penetrating radiation to be a kind of gamma rays, although the ejection process seemed to violate conservation of energy and momentum. When reading their paper, James Chadwick of the Cavendish Laboratory immediately thought of a neutral particle with unit mass, envisioned by Ernest Rutherford already in 1920. Such a particle should be able to move freely through matter. After ten days of intense experimental work he sent a note to *Nature* on February 17, and then confirmed his results on May 5 with a paper in the *Proceedings of the Royal Society*. The neutron had been discovered.

The Joliot-Curies were also on the verge of discovering the positron. One of their cloud-chamber photographs of an electron's track showed it to be curved in the wrong way in a magnetic field. They suggested the electron was moving in the opposite direction from the other electrons. Four months later they realized that Carl Anderson of Caltech had beaten them to the true explanation: the peculiar, oppositely curved track had not been made by an electron but by Anderson's discovery, the positron. For the second time the Joliot-Curies had been first to make a discovery but had failed to recognize it. But at last they got their great triumph: the discovery of artificial radioactivity.

In January 1934 Frédéric Joliot was bombarding an aluminium foil with alpha particles from polonium. He wanted to see if the resulting neutrons and positrons were emitted simultaneously. The two radiations did appear simultaneously, but to his surprise the positron radiation continued for some time, when the alpha source was removed. In fact, he had created a radioactive phosphorus isotope with a half-life of about three minutes. For the first time, an isotope that does not exist in nature had been formed in the laboratory. The Joliot-Curies' discovery was communicated to the *Académie des Sciences* by Jean Perrin on January 15, 1934. In a subsequent communication on January 29, they confirmed the result with chemical evidence that phosphorous had indeed been produced. The discovery was to transfigure the whole periodic system, eventually adding more than 400 radioisotopes. Irène and Frédéric Joliot-Curie were jointly awarded the 1935 Nobel Prize in chemistry "in recognition of their synthesis of new radioactive elements." At the same time James Chadwick was awarded the Nobel Prize in physics "for his discovery of the neutron." In passing, one notices a slip in the figure caption of a photo from the Nobel ceremony in Stockholm: the Swedish King, Gustaf V, is mistakenly denoted "King of Norway."

A year after sharing the Nobel Prize, the Joliot-Curies broke up as a research team. Frédéric Joliot was appointed professor at the *Collège de France*, the most prestigious chair in academic France. He was now building the first cyclotron in Western Europe. Irène Joliot-Curie continued her work at the Radium Institute, now together with Paul Savitch. Once again, they had gotten a hot topic: following the young Enrico Fermi and his team in Rome, they were bombarding uranium with neutrons, hoping to find transuranic elements. The results were confusing. They found that one of the radioactive products, with a half-life of 3.5 hours, resembled lanthanum chemically. But lanthanum is 35 elements removed from uranium, and they dismissed the idea. Meanwhile, Otto Hahn, Fritz Strassmann and Lise Meitner proceeded along similar lines in Berlin. By 1938 Lise Meitner, being Jewish, was unsafe in Germany and had escaped to Sweden. Hahn sent to her the results of the work with uranium, and it was she and her nephew Otto Frisch, who published the novel and totally unexpected idea of nuclear fission. Otto Hahn was awarded the 1944 Nobel Prize in chemistry "for his discovery of the fission of heavy nuclei" - a contentious issue, since Strassmann, Meitner and Frisch were excluded from the Nobel Prize.

Scientists talked about the prospect of atomic-energy machines, but before any serious work could be undertaken, the Second World War had begun. Joliot recognized the likelihood of producing a chain reaction in uranium, and he secured all of the available heavy water, necessary as a moderator, from Norway. In advance of the invading German army the heavy water was transported to the south of France and then shipped to England. The Joliot-Curies left Paris on June 10, 1940, just two days before the Germans entered the city. According to Denis Brian, the couple loaded a Peugeot 402 with laboratory equipment, including the precious gram of radium, and drove south, followed by Henri Moureau, deputy director at the *Collège de France*, in a Peugeot 303. A Peugeot connoisseur will immediately spot an error here: there is no such thing as a Peugeot 303. Possibly, Moureau drove a Peugeot 302, a model that was introduced in 1935 and sold in a large number of units (in 1969 Peugeot launched the 304, and there was no model 303 in between).

After the war, Frédéric Joliot suggested that de Gaulle create the *Commissariat à l'Energie Atomique* (CEA). Joliot became the first High Commissioner for atomic energy in France, and two years later, in 1948, the first experimental French reactor ZOE was operational. In 1950 Joliot was relieved from his duties for political reasons, but he retained his professorship at the *Collège de France*. Convinced socialists, the Joliot-Curies took considerable part in social and political matters. Frédéric Joliot was elected President of the World Peace Council, and during the war he had joined the *Resistance* and the Communist party. The Joliot-Curies devoted their last years to the development of a large centre for nuclear physics at Orsay, near Paris.

In conclusion, one cannot say that the present biography discloses any new sources, hitherto unknown. The author has, however, with great success managed to bring together and work through practically all of the enormous archive material available about the Curie family. At the same time, his multigenerational story provides a well-written and well-rounded look at both the private and professional lives of one of the most gifted scientific families, put in a social and political context. The long time span has made it possible to give a vivid account of the whole history of radioactivity and nuclear science from its very beginning to the dawn of the atomic age after the Second World War. The Curie story clearly demonstrates that scientific progress takes place in keen competition in an international context. The process is driven by the personal ambitions and dedications of the individual scientists, but also by the research traditions of the laboratories involved and, to some extent, by patriotism. The biography of the Curies covers an epoch with profound changes in science as well as in society at large.

The book can be recommended to anybody with an interest in the history of modern physics.





Joseph Rotblat

(1908 - 2005)

By D.A. Bradley, University of Surrey, UK  
(This obituary has borrowed heavily from information appearing in several previously published obituaries of Professor Sir Joseph Rotblat, FRS)



One's memory of Joseph Rotblat goes back to student days, at St. Bartholomew's College (London University) in the mid 1970's. Professor Rotblat was a larger-than-life figure, evoking a sense of awe and a dawning realisation that one was in the presence of greatness. In a callous youth, one had very little idea of just how great the life of this man had been and absolutely no idea of how much greater he was to become.

Thirty years on, working to the grand age of 96 and acclaimed internationally, this great man passed on. The life of Sir Joseph Rotblat began in Warsaw, on 4 November 1908. His father ran a successful transporting business until war broke out, subsequently distilling illicit vodka to make money for the family to survive. Determined to become a physicist, Joseph Rotblat worked as an electrician, studying by night and graduating from the Free University of Poland in 1932. Gaining a research post in the Radiological Laboratory of Warsaw, he was conferred a doctorate in physics in 1938. In 1939, and not long married, Joseph Rotblat was invited by James Chadwick to join his team at the University of Liverpool. 1939 was also the year in which in Germany the uranium atom was split, Rotblat being among the first to realise that this reaction could be very fast and explosive, and could be used to make a massively powerful bomb.

Before gaining his doctorate he had met and married Tola Gryn and so in August 1939 he made a visit to Poland to arrange for his wife to join him in England. Due to a news blackout in Poland, the young couple were not made aware of how urgent the situation was and on his return to work in Liverpool, he had no idea that his train was one of the last to leave Poland. After the invasion of Poland in September 1939, he tried repeatedly to get his wife out of the country but later learned that she was among the many Poles who lost their lives during the German occupation. It was the invasion of Poland that made Joseph Rotblat suggest to James Chadwick that they should start work on developing an atomic bomb. He was afraid that the handful of physicists who had stayed in Germany might already be developing such a bomb, which Hitler would then use to force Nazism on the world. 'It was a terrible time for me, perhaps the worst dilemma a scientist could experience. Working on a weapon of mass destruction was against all my ideas - all my ideas of what science should do - but those ideas were in danger of being eradicated if Hitler acquired the bomb.'

Joseph Rotblat went to Los Alamos in early 1944 to work on the Manhattan Project. As soon as he heard confirmation, supplied by scientific intelligence reports towards the end of 1944, that the German scientists had abandoned their atomic bomb programme, he left the Manhattan Project and returned to Britain. A condition of his departure was that he made no contact at all with his colleagues on the Project. And indeed he said nothing, either in the USA or when he got back to Liverpool early in 1945 (which was also the year he applied to become a British citizen, and his mother and sister and one of his brothers who had survived the war, were later able to join him).

But in August came the dropping of atomic bombs on Hiroshima and Nagasaki, and he could not remain silent. 'I didn't know anything until I heard the BBC announcement on August 6. It came as a terrible shock. My idea had been to make the bomb to prevent it being used, and here it had been used immediately after it was made, and against civilian populations.'

After the war, and the bombing of Hiroshima and Nagasaki, he became interested in the possible medical applications of nuclear physics. In 1949 he joined the staff of St. Bartholomew's Hospital Medical College, and in 1950 became Professor of Physics there. He also became a prominent opponent of the proliferation of nuclear weapons. Believing that scientists should bear personal responsibility for their discoveries, in 1955 he was one of the 11 signatories, along with Einstein and Bertrand Russell, of a manifesto calling for scientists of all nations to meet and devise ways of avoiding nuclear war. The first such meeting took place in Canada in 1957, at Pugwash, a remote village on the coast of Nova Scotia. Since then the informal, discreet gatherings of like-minded scientists who meet to exchange views on the application of science and on other world affairs have been known as Pugwash Conferences. These became an influence behind the scenes in arms control and disarmament treaties, and Rotblat was involved in all of them.

Returning to some personal reminiscences, one ultimately recognises that at St. Barts, Joseph Rotblat laid the foundations for the development of a pretty extraordinary physics department.

Among the personalities that he would almost certainly have played a primary role in drawing to the department were the late Dr. Alan Smith, providing as I recall, a particularly excellent but intensive series of lectures on nuclear and neutron physics, and Professor Norman Kember (who for more than 100 days, and ending just yesterday, had been perhaps more widely known as one of four peace activists who had been kidnapped in Iraq, surviving these harrowing events along with two of the others). Also not well known is that Professor Rotblat was a member of the Protom Committee charged with setting up IRPS at the time of I SRP-2 (along with A.M. Ghose, John Hubbell, Didier Isabelle, P.K.I yengar and Daphne Jackson), also allowing this writer the chance of a reunion at the University of Science in Penang (where Joseph Rotblat had been Visiting Professor and I had just joined the University as a lecturer in the biophysics group).

The further personal pleasure followed of delivering to him in his home in London, a copy of the Proceedings of I SRP-2, the copy being received with the usual graciousness for which he was so well known.

Joseph Rotblat went on to lend his name to many of the subsequent I SRPs, being a member of the International Advisory Board of most of these.

Joseph Rotblat, Nobel Peace Laureate 1995, lead a special life, poignant, brave and distinguished. A reproduction of the CV of Joseph Rotblat, produced at the time of the award of the Nobel Peace Prize, appears below.

CV of Professor Sir Joseph Rotblat, FRS

Academic Degrees :

- MA, Free University of Poland, 1932;
- Doctor of Physics, University of Warsaw, 1938 ;
- PhD, University of Liverpool, 1950;
- DSc, University of London, 1953.

Honorary Degrees :

- Hon DSc, University of Bradford, 1973;
- Hon. Fellow, University of Manchester Institute of Science and Technology, 1985;
- Dr *Honoris causa*, University of Moscow, 1988;
- Hon DSc, University of Liverpool, 1989.

Professional Career :

- 1933-1939 Research Fellow of Radiological Laboratory of Scientific Society of Warsaw ;
- 1937-1939 Assistant Director of Atomic Physics Institute of Free University of Poland;
- 1939 Oliver Lodge Fellowship, University of Liverpool;
- 1939-1944 Work on atom bomb, University of Liverpool and in Los Alamos;
- 1940-1949 Lecturer and afterwards Senior Lecturer in Department of Physics, Liverpool University ;
- 1945-1949 Director of Research in Nuclear Physics at Liverpool University
- 1948 Fellow of Institute of Physics;
- 1950-1976 Professor of Physics in the University of London, at St. Bartholomew's Hospital Medical College, subsequently Emeritus;
- 1950-1976 Chief Physicist at St. Bartholomew's Hospital.

Other activities and appointments :

- 1945-1950 Chairman, Photographic Emulsion Panel of the UK Nuclear Physics Committee (development of sensitive emulsions which made possible the discovery of pi-mesons);
- 1946-1950 Chairman, Cyclotron Panel of the UK Nuclear Physics Committee (planned and supervised building of cyclotrons for Harwell and Liverpool);
- 1946-1959 Co-founder of Atomic Scientists Association; served as its Executive Vice-President from 1952-1959;
- 1947-1950 Organized the Atom Train Exhibition, the first large-scale effort to educate the public about the peaceful and military applications of nuclear energy. The exhibition toured Britain, Europe and the Middle East;
- 1955 Signatory of the Russell-Einstein Manifesto; chaired press conference which announced it ;
- 1957-1973 Secretary-General of the Pugwash Conferences on Science and World Affairs; organized numerous conferences of scientists; edited Pugwash Newsletter;
- 1960-1972 Editor-in-Chief of Physics in Medicine and Biology;
- 1966-1971 Co-founder and member of governing board of the Stockholm International Peace Research Institute;
- 1966 Co-founder of UK Panel on Gamma and Electron Irradiation;
- 1969-1970 President, Hospital Physicists' Association ;
- 1971-1972 President, British Institute of Radiology ;
- 1972-1975 President, International Science Forum;
- 1972-1975 Member of the Advisory Committee on Medical Research, World Health Organization;
- 1974-1976 Treasurer, St. Bartholomew's Hospital Medical College ;
- 1974-1976 Vice-Dean, Faculty of Science, University of London;
- 1975-1976 Montague Visiting Professor of International Relations, University of Edinburgh;
- 1977 Governor of the Voluntary Hospital of St. Bartholomew in the City of London;
- 1977-1978 Visiting Professor of Physics, University of Penang, Malaysia;
- set-up school of biophysics;
- 1978-1988 Chairman of the British Pugwash Group;
- 1984-1990 Member of the Management Group of World Health Organization; as rapporteur mainly responsible for Reports on Effects of Nuclear War on Health and Health Services;
- 1988- President of the Pugwash Conferences on Science and World Affairs.

Membership of Academies of Science :

- Foreign Member, Polish Academy of Sciences, 1966;
- Honorary Foreign Member, American Academy of Arts and Sciences, 1972;
- Foreign Member, Czechoslovak Academy of Sciences, 1988;
- Foreign Member, Ukrainian Academy of Sciences, 1994;
- Fellow of the Royal Society, 1995.

Honours and Awards :

- Commander of the British Empire (CBE), 1965;
- Bertrand Russell Society Award, 1983;
- Commander, Order of Merit (Poland), 1987;
- Gold Medal, Czechoslovak Academy of Sciences, 1988;
- Order of Cyril and Methodius (1st Cl.) (Bulgaria), 1988;
- Knight Commander's Cross, Order of Merit (Germany), 1989;
- Distinguished Citizen Award, Int. Physicians for the Prevention of Nuclear War, 1989;
- Honorary Member, British Institute of Radiology, 1990;
- Albert Einstein Peace Prize, 1992;
- Honorary Professor, University of Blagoevgrad, 1993;
- Nobel Peace Laureate, 1995.

**Publications : Over 300 publications, including 20 books, in the following areas:**

- Nuclear Physics;
- Medical Physics and Radiation;
- Biology Radiation Hazards and the Consequences of Nuclear War;
- Nuclear Power and Proliferation of Nuclear Weapons;
- Arms Control and Disarmament ;
- The Pugwash Movement and the Social Responsibility of Scientists.

From *Les Prix Nobel. The Nobel Prizes 1995*, Editor Tore Frangsmyr, [Nobel Foundation], Stockholm, 1996

Selected Bibliography :

By Joseph Rotblat

- Rotblat, Joseph. "Leaving the Bomb Project", *Bulletin of the Atomic Scientists*, 41 (August 1985): 16-19. Rotblat's personal story;
- Rotblat, Joseph, J. Steinberger and B. Udgaonkar, *Nuclear-Weapon-Free World: Desirable? Feasible?* Boulder, Colorado: Westview Press, 1993. A Pugwash monograph which opened a significant debate on its theme. Also published in Russian, French, Chinese, Arabic, Swedish, and Japanese;
- Rotblat, Joseph ed., *Nuclear Weapons: The Road to Zero*. Boulder, Colorado: Westview Press, 1998. Essays on the present situation and prospects for the future;
- Rotblat, Joseph, *Scientists in the Quest for Peace: A History of the Pugwash Conferences on Science and World Affairs*, Cambridge, MA: MIT Press, 1972;
- Rotblat, Joseph, ed. *Scientists, the Arms Race and Disarmament. A UNESCO/Pugwash Symposium*. London: Taylor & Francis, 1982. Esp. Rotblat's article, "Movements of Scientists against the Arms Race", pp. 115-157.

Other Sources

- De Andreis, M. and Francesco Calogero, *The Soviet Nuclear Weapon Legacy*. SIPRI Research Report no. 10, Oxford: Oxford University Press, 1995;
- Calogero, Francesco, M. Goldberger and S.P. Kapitza, eds. *Verification: Monitoring Disarmament*, Boulder, Colorado: Westview, 1991. Also published in Russian. Essays by top experts from U.S., Europe and Russia;
- Moore, Mike. "Forty Years of Pugwash", in *Bulletin of Atomic Scientists* vol. 53, 6 (November/December 1997):40-45. Looking back after the 40th annual meeting, held at Lillehammer, Norway. Illustrated;
- Szasz, Ferenc Morton, *British Scientists and the Manhattan Project*. MacMillan 1992, Ch.5;
- Wittner, Lawrence, *The Struggle Against the Bomb*. Vol. 2, *Resisting the Bomb* 1954-1970, (Stanford, California: Stanford Univ. Press, 1997): 33-37, 111-114, 292-96, 418- 419. A monumental work with well researched references to the hostile attitude of Western governments toward early Pugwash activities.

From *Nobel Lectures, Peace 1991-1995*, Editor Irwin Abrams, World Scientific Publishing Co., Singapore, 1999  
This CV was written at the time of the award and later published in the book series *Les Prix Nobel/Nobel Lectures*.



ISRP - 10

IRPS Elections



## 10th International Symposium on Radiation Physics (ISRP-10)

17th - 22nd September, 2006

and

## Workshop on Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors

15th - 17th September 2006

Coimbra, Portugal

### GENERAL INFORMATION

The 10th International Symposium on Radiation Physics (ISRP-10) and the Workshop will be held at the University of Coimbra, Portugal, 17-22 September and 15 - 17 September, 2006, respectively.

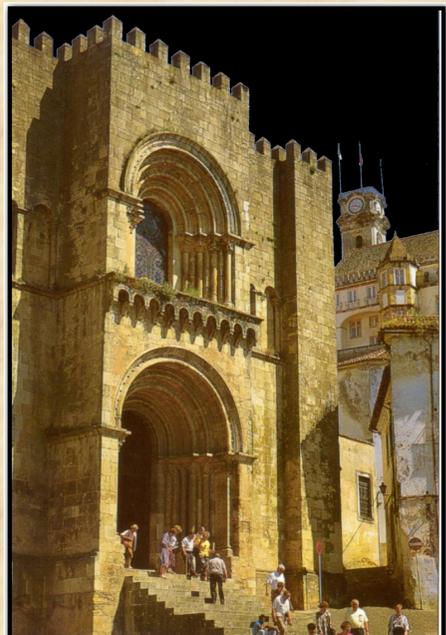
This event is organized jointly by the International Radiation Physics Society (IRPS) and the Physics Department of Coimbra University. The meeting is devoted to current trends in radiation physics research. The symposium in Coimbra is the latest in a series of triennial symposia which began in Calcutta in 1974 and continued in Penang (1982), Ferrara (1985), São Paulo (1988), Dubrovnik (1991), Rabat (1994), Jaipur (1997), Prague (2000) and Cape Town (2003)

Coimbra University is one of the oldest in Europe, its foundation dating back to 1290.



The University of Coimbra

Apart from the University, there are many interesting monuments dating from the Roman times onwards.



Coimbra is approximately 200 km north of Lisbon and 100 km south of Porto. Lisbon and Porto have international airports. Coimbra is connected to both cities by fast trains, bus and highway.

Information on the Symposium and Workshop can be gained from our [Conference Information page](#), and also from the websites :

Symposium : <http://www.pollux.fis.uc.pt/isrp10/>

Workshop : <http://www.pollux.fis.uc.pt/isrp10/workshop>

## International Radiation Physics Society

### Elections

These will be held at ISRP-10

[Click here for profiles of members standing for election.](#)

[Click here for ballot form.](#)

Previous

Home Page

### 23rd Summer School and International Symposium on the Physics of Ionized Gases

Kopaonik, Serbia and Montenegro

August 28 - September 1, 2006

The official conference website will be used for all conference activities including registration, accommodation, paper submission, and the review process.

The website is located at <http://www.spig2006.phy.bg.ac.yu>

An instruction for authors can be downloaded from the website.

The aims of the SPIG 2006 are to present the latest results in atomic collision processes, particle and laser beam interactions with solids and low temperature plasmas, general plasmas.

Scientists worldwide are invited to submit original contributions in the areas of:

- Electron and Photon Interactions with Atomic Particles
- Heavy Particle Collisions
- Swarms and Transport
- Atomic Collisions in Solids
- Sputtering and Deposition
- Laser and Plasma Interaction with Surfaces
- Plasma Spectroscopy and Other Diagnostics Methods
- Gas Discharges
- Plasma Applications and Devices
- Fusion Plasmas
- Astrophysical Plasmas
- Collective Phenomena.

The conference will feature invited lectures, progress reports, oral and poster presentations.

#### IMPORTANT DATES

Pre-registration Due:	February 1, 2006
Second Announcement :	March 1, 2006
Contributed Papers :	June 1, 2006
Acceptance notification:	July 1, 2006
Regular registration:	August 10, 2006
Hotel reservation:	August 10, 2006
Final Announcement:	August 10, 2006

**Enquiries :** e-mail: [spig2006@phy.bg.ac.yu](mailto:spig2006@phy.bg.ac.yu)

### 10th International Symposium on Radiation Physics (ISRP-10)

17-22 September 2006

**and**

#### Workshop on Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors

15-17 September 2006

Coimbra, Portugal

#### Symposium Topics

- Fundamental Processes in Radiation Physics
- Radiation Sources and Detectors
- Radiation Physics in:
  - Materials Science
  - Medicine and Biology
  - Space, Earth and Environmental Sciences
  - Art and Cultural Heritage
  - Technology and Industry

#### Workshop Topics :

- Radiation Detectors
- Monte Carlo Techniques
- Simulation Packages
- Hands-on Sessions

#### Contacts :

**Symposium** - Isobel Lopes e-mail : [isabel@ipc.fis.uc.pt](mailto:isabel@ipc.fis.uc.pt)

**Workshop** - William Dunn e-mail : [dunn@mne.ksu.edu](mailto:dunn@mne.ksu.edu)

**OR** Isobel Lopes e-mail : [isabel@ipc.fis.uc.pt](mailto:isabel@ipc.fis.uc.pt)

**Websites :** **Symposium :** <http://www.pollux.fis.uc.pt/isrp10/>  
**Workshop :** <http://www.pollux.fis.uc.pt/isrp10/workshop>

### R A D E C S 2006

#### Radiation Effects on Components and Systems

Athens, Greece

September 27 - 29, 2006

#### Workshop Theme :

**What's New in Radiation Effects on Electronics**

The workshop covers radiation effects on electronics, including aerospace, power industry, military systems, high energy physics, and other special applications

[Click here for further details](#)

#### IMPORTANT DATES

January 11	Abstract/Extended Summary Submission Opening
March 15	Workshop Registration Opening
May 6	Deadline for Abstract/Extended Summary Submission
June 24	Notification of Authors
July 25	Last Day of Early Registration
August 5	Final Date for Late News Submission
August 25	Final Date for Submission of full-length Papers

**Web site :** <http://www.radecs.org>

**Workshop Secretariat :** [radecs2006@in.tejpir.gr](mailto:radecs2006@in.tejpir.gr)

### Workshop on Monte Carlo Treatment Planning "Introduction of MCTP into the clinic"

Organised by the European Workgroup on MCTP



Gent, Belgium

October 22nd - 25th, 2006

#### GENERAL AIM

During the sessions a lot of time will be spent on discussions. A session will be formed by one or two invited speakers, a number of general talks and a round table discussion. Therefore the number of participants will be limited to around 100. As the Workshop focuses on the introduction of MCTP into the clinic, also non MCTP experts are more than welcome.

#### PREVIEW

Monte Carlo dose engines are currently being implemented into commercial treatment planning systems. It is common knowledge that Monte Carlo dose calculation algorithms are superior, compared to pencil beam algorithms and superposition/convolution systems, when applied to heterogeneous phantoms irradiated by a single beam. Moreover a large number of references are available demonstrating the added value of MCTP in the clinic, compared to pencil beam algorithms. First evidence demonstrating the added value of MCTP compared to superposition/convolution algorithms for clinical cases is getting available. Calculation time issues have been tackled in the commercial MCTP systems by introducing efficient, dedicated particle transport algorithms, variance reduction techniques and approximations. The clinical relevance of the consequences of these modifications is still under investigation. Developments are still ongoing in the field of inverse optimization and 4D treatment planning. Especially in this last category MCTP offers advantages over conventional planning systems, as the moment of linac (e.g. dynamic IMRT, IMAT, hadron applications, ...) and organ movement can be modelled in a continuous and thus more realistic way. Calculation time does not scale with complexity of the treatment, as opposed to conventional algorithms.

#### CONFERENCE PROGRAMME

Scientific sessions will consist of general talks and poster presentations. The research topics covered will be the following:

- Industry - MCTPS
- 4D MCTP
- General multipurpose codes
- Dosimetry
- Photon MCTP
- Electron MCTP
- Proton MCTP
- Brachytherapy MCTP
- Clinical studies
- MC in optimisation
- Portal dosimetry

The social programme will cover a welcome reception and a symposium dinner. Activities for accompanying persons can include a visit to the historical city of Bruges or to the "Zwin" bird reserve at the north sea coast.

#### Enquiries to :

N. Reynaert  
Lab for Standard Dosimetry Gent  
Gent University -FANC  
Proeftuinstraat 86 - B-9000 Gent  
BELGIUM

**Tel:** + 32 9 264 66 48

**Fax:** + 32 9 264 66 96

**Email:** [nick.reynaert@ugent.be](mailto:nick.reynaert@ugent.be)

**Website:** [www.EWG-MCTP.UGent.be](http://www.EWG-MCTP.UGent.be)

### 8th Radiation Physics and Protection Conference

Cairo, Egypt

12-15 November 2006

First Call for Papers and Publications Abstract of not more than 250 words on A4 paper should be sent by 15 May, 2006, via the Internet.

The full paper must be submitted according to the instruction to authors and attached to letter of acceptance.

Oral representation should be received by 15 September, 2006.

All correspondence via internet to : [rpc20062004@yahoo.com](mailto:rpc20062004@yahoo.com)

#### Conference Topics :

Natural and Man Made Radiation Sources	Operational Health Physics
Radiation Damage and Radiation Effects.	Radiation Shielding
Radiation Detection and Measurements	Transport of Radioactive Material
Applied Radiation Physics in Industry and Earth Sciences	Waste Disposal and Waste residue
Radiation Medical Physics and Biophysics	Decommissioning of Facilities
Nonionizing Radiation (Microwaves and Laser Physics)	Training and Education
Radiation Dosimeter	Radiation Protection Regulations
Environmental Radioactivity	

For further information, including registration fees :

<http://www.rpc2004.com>

and to view the Proceedings of the previous ( 7th ) Radiation Physics and Protection Conference click on the "VII Conference Introduction and Report" button on the conference website.

### APIP

#### 15th Topical Conference on Atomic Processes in Plasmas

Gaithersburg, U.S.A.

March 19th - 22nd, 2007

This meeting is hosted by NIST. Topics covered by the conference will be selected from a range of fields including :

- High Energy Density Physics
- Magnetic Fusion Plasmas
- Astrophysical Plasmas
- Industrial Plasmas
- Laser-Produced Plasmas
- Fourth Generation Light Sources
- Small-scale Plasmas (table top short pulse lasers, electron beam ion traps, etc.)
- Low Temperature Plasmas
- Fundamental Data
- Modelling
- Plasma-Solid Interactions

**Web site :** <http://physics.nist.gov>

**Further Information :** [John Gillaspy](mailto:John.Gillaspy) **Email :** [apip@nist.gov](mailto:apip@nist.gov)

# MEMBERS STANDING FOR ELECTION TO IRPS COUNCIL, 2006

## Profile of Member Standing for President

### Dudley C. Creagh



*Professor and Director of  
Cultural Heritage Research,  
University of Canberra,  
Australia*

#### Qualifications :

BSc (1 Hons)  
Dip Ed (Qld)  
MSc (UNE)  
MSc (Brist)  
PhD (NSW)  
FInstP FAIP  
CPhys CEng

#### Professional Experience other than my University Involvement :

- Chartered Physicist and Consulting Engineer.
- Consultant on scientific conservation matters to the National collecting agencies (National Archives of Australia, Australian War Memorial, National Museum of Australia, National Film and Sound Archive, National Gallery of Australia, etc).
- Consultant to Australian government agencies on border protection matters.
- Consultant to the Australian Synchrotron Project.

#### Research areas :

- The scientific conservation of objects of cultural heritage significance, including Australian indigenous paintings and objects, important medals, aeroplanes, motor vehicles and the like.
- The design of advanced equipment for use in scientific experiments (ranging from x ray and infrared beamlines at synchrotron radiation sources to laboratory instruments such as x-ray interferometers and reflectometers).
- The development of protocols for the testing of a wide range of equipment used in border protection (including Raman systems for detecting street drugs, NQR systems for detecting explosives in baggage, neutron/photon systems for examining air cargo containers, and high energy x ray systems for examining shipping containers)
- The study of x-ray scattering by atoms (anomalous dispersion and absorption)

#### Previous Experience in National and International Scientific Activities :

Positions held in National and International Scientific Committees are as follows:

- Member, National Scientific Advisory Committee, Australian Synchrotron Project (2002-present)
- Member, Australian Synchrotron Research Program (1997-present)
- Member, Australian National Beamline Facility (1993-1997)
- Member, National Committee for Crystallography of the Australian Academy of Science (1993-1997)
- Chairman, Commission on Crystallographic Apparatus, International Union of Crystallography, 1982-1993

#### Involvement in IRPS Affairs :

My involvement commenced in 1987 with a project for the International Union of Crystallography, initiated by the IRPS, on the measurement of x ray attenuation. I have since held the positions of :

- Councillor (1990-2000)
- Editor of the IRPS Bulletin (1993-2000) (currently Associate Editor: the IRPS bulletin is assembled in my office, and my Research Associate, Shirley McKeown manages the IRPS website)
- Co-chairman of the Scientific Program (with Professor Malcolm Cooper) for the ISRP 9 meeting and workshop in Cape Town (2003)
- Vice-president (Australasia) (2000-present)

**Statement :** The IRPS is an international society unusual in the diversity of facets of science which it embraces. It was conceived of as a society which would make access to knowledge in every aspect of radiation physics available to scientists of all nationalities. It is an inclusive society in which members from all nations are encouraged to be participants. And it attempts to provide financial assistance to scientists from emerging nations to attend its activities and meetings.

My aim is to continue the existing work of the IRPS, and, where possible, improve the mechanisms by which knowledge of radiation physics and its uses can be disseminated to scientists and students in emerging nations.



## Profile of Member Standing for Secretary

### David A. Bradley

*Physics Department  
University of Surrey, U.K.*



Having served in the same position for the last three years, I am delighted to again be standing for the position of Secretary of the International Radiation Physics Society.

For me IRPS has very special meaning, not least because I have enjoyed very close association with

the Society since its inception, being one of the three people (assisting Richard Pratt and John Hubbell) who drafted the Constitution of the Society, and have been intimately involved both with the early life of IRPS-News (now the IRPS Bulletin) and the organisation of quite a few of the Society Symposia and its various Proceedings, from ISRP-2 until the impending ISRP-10.

The ethos of the Society includes the central ideas that not only should we be promoting the safe use of

radiations but also that the membership should be truly international, the varying economic realities not forming insurmountable barriers to any interested scientist wishing to join this family.

The challenges involved have been confronted head on and in so doing we have taken the series of symposia to Asia, North and Southern Africa, South America, Central and Western Europe, all in an effort to bring the meeting 'close' to the Society membership. It has been an immense undertaking, and one that has been a truly enriching experience, even as we struggle to maintain the ideals of the founding 'fathers'.

I find it particularly encouraging that we are being seen to maintain the strong scientific and communications/organisational capability of the Council, importantly regaining some of the youth that we first began with, while retaining a good degree of experience and the wisdom that goes with it.

Clearly, for me, the future of the Society is in safe hands and in whatever role the membership sees fit for this candidate, I would be proud to participate in maintaining the momentum of the Society.



## Profile of Member Standing for Treasurer

### Malcolm J. Cooper

*Physics Department  
University of Warwick, U.K.*



I have been associated with IRPS for well over a decade and was the co-organiser of ISRP-5 (Dubrovnik, 1991) and ISRP-9 (Cape Town, 2003).

During this time I have served the Society first as a Vice-President for Western Europe and more recently as its President (2000-3).

I have been able to attend most of its Council meetings and hopefully helped to guide its development.

My own research is certainly Radiation Physics - x-ray scattering studies of electron charge and spin density through both Compton scattering and diffraction - areas which have mushroomed with the proliferation of potent synchrotron radiation facilities.

The aims of the IRPS have always been truly laudable but now its symposia and associated workshops (a development which I helped to nurture) are, I believe, achieving more international prominence. The on-going challenge is to increase the membership and to secure a firmer financial base, so that we can really support Radiation Physics worldwide.

I would be happy to continue to serve IRPS as its Treasurer.



## Profile of Member Standing for Vice President – Eastern Europe

### Ladislav Musilek

Faculty of Nuclear Sciences and Physical Engineering,  
Czech Technical University in Prague, Czech Republic



#### University Education :

1963 - 68 :  
Czech Technical University  
in Prague, Faculty of  
Technical and Nuclear  
Physics (renamed later to  
Nuclear Sciences and  
Physical Engineering),  
Prague, Czech Republic.  
(Specialisation: Dosimetry  
and Application of Ionising  
Radiation)

#### Scientific and Pedagogical Degrees :

1977 PhD in experimental physics (CTU Prague)  
1983 Associate professor of nuclear and subnuclear  
physics (CTU Prague)  
1996 Professor of experimental physics (CTU Prague)

#### Appointments :

1968-71 : Research assistant at the Tesla Research  
Institute of Nuclear Instruments, Přemyslen near Prague.

1971 - now : CTU Prague, Faculty of Nuclear Sciences  
and Physical Engineering, Department of Dosimetry  
and Application of Ionising Radiation  
1971 : Research worker  
1975 : Lecturer  
1990-94.2 : Vice-dean of the Faculty  
1 Feb 94 - 31 Dec 2000 : Dean of the Faculty  
15 Feb 2000 to now : Vice-rector of CTU  
Prague for science and research

**Statement :** My reasons for membership of Council are :

- Education and professional record.
- Need of promoting nuclear and radiation sciences in  
the mostly anti-nuclear world.
- Belief that the radiation physics community should  
be organized and should sometime meet and that I  
can help with this goal.
- IRPS and ISRPs are good platforms for  
international links, collaboration and exchange of  
knowledge.

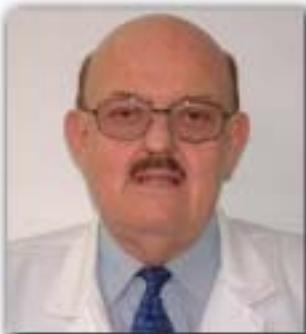
Radiation physics is not only my job, but also my hobby



## Profile of Member Standing for Vice President - Africa and Middle East

### Dan T. L. Jones

Medical Radiation Group,  
iThemba LABS, South Africa



Dan T L Jones, MSc, PhD  
[Nuclear Physics], MSc  
(Med) [Medical Physics],  
CPhys, FInstP, was born  
in Cape Town, South Africa  
and received his academic  
degrees from the  
University of Cape Town.

After stints in Nuclear  
Physics research at the  
University of Wisconsin,

Madison WI, USA and the former South African  
Atomic Energy Board, he entered the field of Medical  
Physics at Cape Town's Groote Schuur Hospital.

Since 1978 he has led the fast neutron and proton  
radiation therapy programs at iThemba LABS  
(Laboratory for Accelerator Based Sciences) [formerly  
National Accelerator Centre], Somerset West

(Cape Town), as Head of the Medical Radiation Group.

He has published more than 100 papers and given over  
300 conference presentations. His special interests are  
nuclear techniques in medicine, radiation therapy and  
dosimetry. He is a member of the International  
Commission on Radiation Units and Measurements  
(ICRU) and has served, and continues to serve, on  
numerous international committees and advisory bodies  
concerned with aspects of medical radiation. He is an  
Expertise Editor of Radiation Physics and Chemistry  
and was organiser of the 9<sup>th</sup> International Symposium on  
Radiation Physics (ISRP-9) in Cape Town in 2003.

He has served two terms as Vice President for Africa  
and the Middle East of the IRPS and wishes to continue  
in this capacity in order to promote the study of Radiation  
Physics and foster the ideals of the IRPS in the region,  
and in particular in developing countries in general. He  
is particularly interested in encouraging young Africans  
to pursue careers in the field and sees the IRPS as a  
vehicle for this.



## Profile of Member Standing for Vice President - Australasia

### Christopher T. Chantler

School of Physics,  
University of Melbourne, Australia



Assoc. Prof. C.T. Chantler has made seminal developments in the computation of X-ray atomic form-factor theory, and his theory is the current NIST reference database on the subject. This database is accessed 10000 to 20000 times per month (since its inception) by X-ray scientists, academics,

commercial groups and others. It has addressed serious flaws of earlier computations used for several decades. The tabulation has been confirmed by several of the best data sets, compared to other models. Numerous reviews have been made of the latest development of this work.

He has 83 refereed papers published or in press in major journals, including regular *Phys. Rev. A* and *Phys. Rev. Letts* papers in the fields of the X-ray interaction of matter, absorption and scattering, XAFS and XANES, and tests of QED, especially in fundamental developments of experimental, analytical and theoretical techniques. Several of his publications have been cited 20-118 times since 1995. The work in medical radiography has led to a patent and subsequent commercialization. Chantler has over 195 conference presentations and publications.

Chris Chantler has collaborated with most major researchers in the field of experimental highly-charged atomic investigations of quantum electrodynamics and has led several groups studying precision accelerator-based and EBIT-based tests of QED. He was a Visiting Fellow in the Quantum Metrology Division at NIST, USA, from 1992-94, Scientific Program Chair of the International Conference on X-ray and Inner-shell Processes 2005; and is guest editor of the refereed Proceedings in Radiation Physics & Chemistry; Chair of ISRP 2009; and on the international advisory committee for other major conference series including the X-ray and Inner-shell Processes series.

Honours have included: a Lindemann Fellow of the E.S.U. of the Commonwealth (1991-92), a St Anne's College Drapers' Company Junior Research Fellow (1989-91), and Shell Australia Postgraduate Scholar for Science & Engineering (1985-88). He has been a Member of the Australian Optical Society [AOS] Council since 1996; the Associate Editor, Australian Optical Society News since 1995; a Member of the Optical Society of America and the American Institute of Physics since 1993; and a Member of the Australian Institute of Physics since 1992.

He has developed new experimental techniques, some one hundred times more accurate than prior methods in the X-ray regime, for the determination of attenuation and absorption coefficients and the imaginary component of the atomic form factor. These experimental results lie at the core of a new understanding of the interaction of light with matter, especially in the practical sense of developing new analytical tools for XAFS. Recent work by his group has led to improvements in the understanding of theory (as measured by the reduced  $\chi^2$  fitting of experimental data) of a factor of 100. His experimental work recently on molybdenum is some 100 - 250 times more accurate than all previous literature in experiment or theory and will hopefully establish a new benchmark for future work in this and related fields.

His research interests include fundamental measurements of quantum electrodynamics, especially using x-rays; synchrotron and EBIT experiments; and the study of the interaction of x-rays with matter via form-factor theory and experiment.

**Statement :** The International Radiation Physics Society is an important communication and outreach opportunity and sponsors a broad-based and major conference series as well as specific workshops and more local meetings. I have attended the International Symposia regularly and consider them to be some of the most useful and collegial conferences on the calendar. This led me to lead the (successful) bid for Australia to hold ISRP 2009 in Melbourne. I look forward to serving and growing the community in a variety of ways.



## Profile of Member Standing for Vice President - South and Central America

### Anselmo S. Paschoa



Anselmo S. Paschoa was born in Rio de Janeiro, Brazil. He holds a Ph.D. from New York University. He is a Senior Consultant for research at the Laboratory of Radioecology and Global Changes (LARAMG) of the State University of Rio de Janeiro (UERJ).

LARAMG,  
State University of Rio de Janeiro, Brazil

He was Professor of Radiation Physics at Pontifical Catholic University of Rio de Janeiro (PUC-Rio) until July 2005.

He is member of several international program committees on Radiation Physics and Environmental Sciences.

Professor Paschoa is currently Chairman of the Local Organizing Committee and member of the International Scientific Committee for the 8<sup>th</sup> International Symposium on the Natural Radiation Environment (NRER-VIII) which will be in Rio de Janeiro, Brazil, 6-13 October 2007.

Professor Paschoa was Director for Radiation Protection, Nuclear Safety and Safeguards at the Brazilian Nuclear Energy Commission (CNEN) from May 1990 to August 1992, and was a member of the U.S. National Academy of Sciences Committee on the Evaluation of Guidelines for Exposure to Naturally-Occurring Radioactive Materials.

Over the years he has been Visiting Professor at the University of Utah, Guest Scientist at Brookhaven National Laboratory, and Visiting Scientist at Memorial Sloan-Kettering Cancer Center. He was member of the International Working Group on Reducing the Threat from the Loss of Control of Hazards and Potentially Hazardous Materials of the Institute for International Studies, Stanford University.

Throughout his career he has published more than 130 scientific articles and papers and attended over 120 scientific meetings throughout the world. In due time, he will publish a book of poems selected from the few hundreds that he has written throughout his adult life.

Professor Paschoa is currently Vice President of the International Radiation Physics Society for Central and South Americas.



## Profile of Member Standing for Vice President - South East Asia

### Suprakash C. Roy



Professor Roy has been a Professor of Physics at Bose Institute, Calcutta, India, since 1986, after receiving his PhD degree from Calcutta University and gaining postdoctoral experience at the University of Pittsburgh and Yale University, U.S.A.

Physics Department  
Bose Institute, India

His major research interests are in photon-atom scattering, radiation damage in solids and liquids, radiation detectors and medical physics.

He has more than 100 publications to his credit and is a regular visitor to the University of Pittsburgh, USA in connection with the co-operative research on photon-atom scattering with Professor Richard H. Pratt.

Professor Roy was awarded the JSPS Invitation Fellow for the year 2000 by the Japan Society for Promotion of Science. He has been appointed Visiting Associate at the Fa.M.A.F, National University of Cordoba, Argentina under the TWAS-UNESCO Associateship Scheme at the Centres of Excellence in the South by the Third World Academy of Sciences in 2001 for three years.

He has been associated with the International Radiation Physics Society (IRPS) from the time when it was not formally established, and was Membership Secretary of the IRPS and Associate Editor of the IRPS News for about 15 years after its foundation.

He is currently the Vice-President (South-East Asia) of the International Radiation Physics Society.

For further details, one may visit the website:  
<http://www.boseinst.ernet.in>

**Statement:** I would like to be Vice President for South East Asia in order to foster and nurture the growth of radiation physics in the South-East Asian Region and in India in particular, which I have been doing for years.



## Profile of Member Standing for Vice President - Western Europe

### Jorge E. Fernandez

*Energetics, Nuclear Engineering  
and Environmental Control Department,  
University of Bologna, Italy*



After obtaining his M.Sc. in Physics (1977) and his Ph.D. in Physics from the University of Cordoba in Argentina (1985), Professor Fernandez was a Researcher in atomic and nuclear spectroscopy at institutes in Buenos Aires and Cordoba.

From 1994 on, he has been affiliated with the University of Bologna, Italy. He is Professor at the Energetics, Nuclear Engineering and Environmental Control Department of this University, a Researcher of the Italian Institute of Nuclear Physics (INFN), and a consultant to several companies and institutes in Italy and abroad. In the past he was affiliated with the former Italian National Institute for Physics of Matter (INFM).

His interest is mainly in the fundamental physics of the interaction of x-rays with matter, including polarisation effects and their implications for applications. In particular:

- Transport models (deterministic and Monte Carlo) for polarised and unpolarised photons, and for charged and neutral particles.
- Coupled transport problems involving photons and charged particles.
- Problems of multiple scattering.

- Applications in X-ray and gamma spectroscopy (EDXRS, XANES, electron microprobe, computed tomography), medical physics, environmental physics, industrial diagnostics, and cultural heritage (non-destructive methods).
- Applications of LIDAR techniques.

He is the author of over 80 articles, 2 books, 1 patent and several computer codes (SHAPE, MSXRF, MCSHAPE) related to XRS.

He organised the European EDXRS Conference in 1998, was the guest editor of the two issues of X-Ray Spectrometry that contained the proceedings of this Conference, and he continues as a Member of the International Advisory Committee for the European Conferences on X-Ray Spectrometry.

He organised the 5th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications (IRRMA-V) in 2002 and was one of the guest editors of the special issue of Nuclear Instruments and Methods B213 containing the proceedings of that Conference.

He is Co-Chair of the Scientific Committee of the 10th International Symposium on Radiation Physics (ISRP-10) 18-22 September 2006, Coimbra (Portugal) and Co-Chair of the satellite Workshop on the Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors 15-17 September, 2006, Coimbra, Portugal

He was member of the Advisory Board of X-Ray Spectrometry from 2000-2003.

He serves the International Radiation Physics Society as Executive Councillor (elected in 2003).



## Profile of Member Standing for Vice President - North East Asia

### Zhengming Luo

*Institute of Nuclear Science and Technology,  
Sichuan University, P.R. China*



Professor Zhengming Luo graduated from Tsinghua University in Beijing, Faculty of Engineering Physics, Experimental Nuclear Physics in 1963.

He then worked at China Institute of Atomic Energy (1963-1964), China Institute of Radiation Protection

(1964-1971, and 1981-1987), Southwestern Institute of Physics (1971-1981) and Sichuan University (1987-present).

He became a Professor at Sichuan University in Chengdu in the People's Republic of China in 1987. Now he is the Director of the Key Lab for Radiation Physics and Technology of the Education Ministry of China and also Director of the Center for Radiation Physics, Sichuan University.

He has served as an IRPS Vice President for the past ten years. He has been an editor of the IRPS recognized journal Radiation Physics and Chemistry. He has also edited the Chinese Journal of Radiation Research and Radiation Processing. He spent many years as a Visiting Professor at the Karolinska Institute. (1989-1997). He has also a long-term collaboration with IAEA (1991-present)

Prof. Luo's awards include a fellowship from the Alexander Von Humboldt Foundation which he used to spend two years at the University of Munich. He has also received several awards of Scientific and Technical Progress from State, Education Ministry and China Nuclear Industry Corporation. Research by Prof. Luo has focused on:

- theory and algorithms for photon and charged particle transport, including bipartition model for charged particle transport and 3 universal codes for electron, ion and photon transport;
- cavity theory based on virtual source concept and perturbation theory of radiation fields;
- measurement of inner-shell ionization cross sections by electron impact based on thin-target -thick-substrate technique;
- the particle-surface interaction for fusion technique;
- dose algorithms of electrons, photons and protons in radiotherapy, developing China's first IMRT Radiation Treatment Planning System.
- the study of inverse problems in mathematical physics.

From 1976 through 2005, he was the author or co-author of 160 papers.

**Statement :** As Vice President for North East Asia, I would like to make efforts to promote and strengthen the understanding, exchange and cooperation between Chinese radiation physicists and the international radiation physics community.



## Profile of Member Standing for Vice President - North America

### William Dunn

Mechanical and Nuclear Engineering Department,  
Kansas State University, U.S.A.



Dr. Bill Dunn has enjoyed a career of thirty years in research on radiation physics and engineering, after studying in the early 1970s under Robin Gardner at North Carolina State University where he received both M.S. and

Ph.D. degrees in Nuclear Engineering.

He spent five years at Carolina Power and Light Company, where, among other things, he conducted both radioactive and inert tracer flow-rate experiments at the H.B. Robinson nuclear power-plant. He then moved into radiation research, first at North Carolina State University and next at Research Triangle Institute.

He co-founded Quantum Research Services, Inc., in 1988 as a contract research firm specializing in radiation applications, and he served as its president until joining the faculty of the Department of Mechanical and Nuclear Engineering at Kansas State University in 2002

Bill's research interests include radiation detection and dosimetry, particle transport, radiation measurement applications, and Monte Carlo simulation.

Bill has been involved in planning the series of Industrial Radiation and Radioisotope Measurement Applications (IRRMA) conferences that began in 1988.

He has been working for the last several years to realize a loose but supportive alignment between IRPS and IRRMA and is Chairing the Committee to host the *Workshop on Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors*, which will be held just prior to the upcoming ISRP-10, in Coimbra, Portugal.

**Statement :** I am delighted to be a candidate for Vice President, North America (VPNA), of IRPS because I embrace the mission that our Society serves. It seems to me that IRPS is the only society that not only places primary emphasis on radiation physics, as opposed to applications, but also truly encourages international participation. I was fortunate to learn about IRPS in its early years and, after joining, I attended the third Symposium (held in Ferrara, Italy) in 1985. I believe it was there that I met John Hubbell, the current VPNA and one who has served the Society with distinction from its founding. An engineer by training but a physicist by heart, I am an enthusiastic candidate to serve the Society. If elected, I will do my utmost to help the Society realize its early vision of providing a forum for scientists and engineers from all parts of the world to meet, to interact, and to teach and learn the wonderful subject of radiation physics.



## Profile of Member Standing for Executive Councillor - Full Term

### Odair Dias Gonçalves

National Nuclear Energy Commission,  
Rio de Janeiro, Brazil



Odair Dias Gonçalves, born 25 June 1952 is a physicist with a PhD Degree in Nuclear Physics, obtained at the Instituto de Física of the Federal University of Rio de Janeiro (UFRJ), Brazil in 1987.

Since then he has been cooperating with scientists from many parts of the world, such as Germany, Portugal, England and USA (to where Richard Pratt was the first one to invite him). Most of his collaborators are now close friends and IRPS members like Mic Farquarson, Isabel Lopes, Richard Pratt, David Bradley, Paul Bergstrom and Anselmo Paschoa.

Odair is the author and co-author of about 50 papers and 3 scientific books. He has been working at the Federal University of Rio de Janeiro (UFRJ) since 1975. Over a period of twenty-eight years of work, he built his career as a teacher, researcher, university professor and academic adviser. He acquired experience in various areas, such as Nuclear Physics, Nuclear Instrumentation, Nuclear Energy, Radiation Protection, Medical Physics and Radiation Physics. Lately, he was head of the Gamma Rays Laboratory at the Physics Institute, a facility devoted to the study of interactions of KeV and MeV photons with matter.

In 1993 he was appointed as President of the National Nuclear Energy Commission (Comissão Nacional de Energia Nuclear - CNEN), the Brazilian nuclear regulatory organ, with 3000 employees and comprising five research institutes and offices all over the country.

He was always interested in the social aspects and consequences of science, including financing and policies, having taken part in many activities:

- Member of the "Experts Group" designated to evaluate the National Nuclear Energy Commission (CNEN) Activities: 2002
- Member of the Sponsorship Commission of the Deutscher Akademischer Austauschdienst (DAAD): 1986 - present
- Consultant to the *National Council for Scientific and Technological Development* (CNPq): 1986-present
- Member of the "Experts Group" of *The Brazilian Physics Society* (SBF) designated to evaluate the National Nuclear Brazilian Policy: 1989 - 1991
- Regional Secretary of *The Brazilian Physical Society* (SBF): 1988 - 1989

His administrative tasks as head of The Brazilian Nuclear Energy Commission brought new obligations and valuable experience to his life, most notably:

- Head of the Administrative Council of the companies: *Indústrias Nucleares Brasileiras* and of the *Nuclebrás Equipamentos Pesados*
- Advisor and second for the Brazilian representative at the *Governors Board of the International Agency of Atomic Energy in Vienna Austria*
- Brazilian Representative in the *Nuclear Suppliers Group*
- Brazilian Representative at the *ABACC, Agência Brasil Argentina de Contabilidade e Controle*

**Statement :** I have attended the ISRPs since São Paulo. The society and the International Symposia, through the contact with distinguished scientists, were of significant relevance to my career. It will be an honor to be part of the International Radiation Physics Society Office.



## Profile of Member Standing for Executive Councillor – Full Term

### Ziyu Wu

*Beijing Synchrotron Facility,  
Chinese Academy of Sciences,  
PR China*



Ziyu Wu gained his PhD in Physics in 1988.

- 1988-1989 : Post-doc, International Centre for Theoretical Physics and International School for Advanced Studies, Trieste, Italy.
- 1990-1994 : Researcher, Theoretical Group Laboratori Nazionali di Frascati dell'INFN,

Frascati, Italy.

- 1995-1997 : Visiting researcher, Institut des CNRS, Materiaux de Nantes, Laboratoire de Chimie des Solides, Nantes, France.
- 1997-2000 : Senior researcher, Commissariat l'Energie Atomique, LPS, CE Saclay, France.

He has been a full professor of Physics at the IHEP since 2000 and is Research Director of the Beijing Synchrotron Radiation Facility of the Institute of High Energy Physics.

He has published more than 150 scientific publications in international journals promoting new research areas

in China: the investigations of the interaction between biological systems and nanostructures with synchrotron radiation spectroscopies; the investigations of the structure-function relationship of metalloproteins with synchrotron radiation spectroscopies.

He is a vice chairman of the Chinese Synchrotron Radiation Committee, chairman of the Applied Research subcommittee of the IHEP and a member of the Executive Committee (EC) of the International XAFS Society (IXS).

In 2001 he was awarded in China with The State Outstanding Youth Fund.

In 2002 he was elected as a member of the Scientific Committee of the X-ray and Inner-shell Processes Conference.

His Academic career includes the position of Associated Scientist of the Laboratori Nazionali di Frascati of the Istituto Nazionale di Fisica Nucleare (INFN) in Italy since 2000.

As senior scientist, he is now the coordinator of the *Key Important Project* of the National Natural Science Foundation of China and of the *Knowledge Innovation Program* of the Chinese Academy of Sciences.

Professor Wu is a specialist in X-ray absorption fine structure spectroscopy (XAFS) and photoelectron spectroscopy (PES) and he is involved both in experiments and in the development of new software.



## Profile of Member Standing for Executive Councillor – Full Term

### Fiona E. McNeill

*Medical Physics and Applied Radiation Sciences  
Unit, McMaster University, Canada*



My main area of radiation physics research over the last twenty years has been the development and application of systems to measure trace toxic metals in vivo.

The two main techniques that I have investigated have been x-ray

fluorescence analysis and neutron activation analysis. My recent graduate students have investigated the possibility of measuring arsenic in skin and cadmium in bone using x-ray fluorescence analysis and manganese in bone using neutron activation analysis.

As we are using radiation techniques to probe the human body, careful radiation dosimetry is essential.

One of my recent graduate students therefore carefully characterized the neutron field from the McMaster University KN accelerator.

This dosimetry work has led into other applications, and I am now collaborating with radiation biologists at McMaster, looking at the biological effects of neutrons and low energy x-rays on in vitro cell systems.

My main area of teaching has been radiation physics at the senior undergraduate and post-graduate level.

I enjoy teaching physics and hope that I can communicate my passion and fascination with radiation physics to students. As the numbers of students enrolled in physics programmes are falling around the world, I believe that encouraging students into the field of radiation physics and educating them to a high standard, is one of the most important things that we can do.



## Profile of Member Standing for Executive Councillor – Full Term

### Marcelo Rubio

*CEPROCOR, Argentina*



Marcelo Rubio is a physicist at the Centro de Excelencia en Productos y Procesos de Córdoba (CEPROCOR) in the Province of Córdoba, Argentina.

He has worked in the Radiation Laboratory of CEPROCOR since 1995.

He also has been a Professor at the Facultad de Matemática, Astronomía y Física

(FAMAF) of the University of Córdoba since 1978. During the period 1988-1992 he was Vice-Dean of the Faculty.

After obtaining his M.Sc. in Physics (1978) and his Ph.D. in Physics from the University of Córdoba in Argentina (1985), Professor Rubio became a researcher in atomic and nuclear spectroscopy, with international appointments in Brazil and Italy, and is responsible for

bringing a number of research projects from Argentina to the Frascati and Campinas LNLS Synchrotron.

He held postdoctoral positions at the University of Rome "La Sapienza" in Medical Physics, serving as President of the Argentinean Society of Medical Physics in 1991/93. His research progressed from traditional fundamental parameters applied to XRF to diagnostic radiology to characterization of biopolymers by SRXRF and x-ray microtomography, the focus of his present activities.

Dr. Rubio is author or co-author of more than 36 scientific publications in international journals, and 53 scientific papers as proceedings of international conferences, Latin-American prospective studies or virtual articles. He is author or co-author of 6 book-chapters on XRF and scientific-opinion documents.

In the field of scientific policy activities, Dr. Rubio was State Secretary of Science and Technology of the Province of Córdoba (1995-1999) and chief of the Scientific Advisory Councillor of the National Government (2000/2001).

Dr. Rubio was one of the founders of CEPROCOR and manager of the  $\mu$ Sat VICTOR project that launched successfully in 1996 the first microsatellite of Argentina.



## Profile of Member Standing for Executive Councillor – 3 Years

### Francesc Salvat

*I.E.C.,  
University of Barcelona, Spain*



Francesc Salvat gained his M.S. degree in Physics from the University of Barcelona, Spain, in 1977; subsequently, he obtained his PhD in Atomic Physics in 1983. Most of his teaching and research career has been with the University of Barcelona, where he is a Professor of Atomic Physics.

He has been Visiting Professor at the University of Toledo, Ohio (USA), and at the Universidad Nacional de Córdoba, Argentina, and Visiting Scientist at the University of Stockholm, Sweden, and at KEK, Japan.

He has served as corporate board member of the European Microbeam Analysis Society, and in multiple

scientific and organizing committees of international conferences. He keeps consulting contracts with several renowned companies.

Dr. Salvat's research interests include collision theory, Monte Carlo simulation of radiation transport and its applications to radiotherapy, detector characterization, electron probe microanalysis, and x-ray generators. He is the leader of the group that develops and maintains the general-purpose Monte Carlo code system PENelope for the simulation of electron-photon transport.

Recently, his work has been oriented to the development of numerical algorithms for the calculation of cross sections for electron interactions in gases and solids, and the production of reference databases.

He has published more than 90 scientific papers, and contributed about 100 communications to international conferences.

He has been supervisor of 10 PhD students.



## Profile of Member Standing for Executive Councillor – 3 Years

**Isabel Lopes**

Department of Physics  
University of Coimbra, Portugal



Isabel Lopes has worked in the field of radiation physics for more than twenty years. In the 80's, she studied under Armando Policarpo at Coimbra University, Portugal, Werner Schmidt at Hahn-Meitner Institut of Berlin, Germany, and Tadayoshi Doke at Waseda University of Tokyo, Japan. She was an invited researcher of the Hahn-Meitner Institut and she was awarded a fellowship from the Japan Society for Promotion of Science (JSPS).

Since she gained her Ph.D. in Radiation Physics from the University of Coimbra in 1990, she has worked in several national and international research projects on the use of liquefied rare gases for radiation detectors.

Her main research interests lie in the development of liquid-rare-gas radiation detectors from the point of view of both the physics processes involved in the radiation detection and their applications to the search for rare events, to medical imaging with radionuclides, and to nuclear and high energy physics experiments. She is also interested in the charge transport and discharge processes in dielectric liquids.

Her current main research program is centred on the development of liquid and two-phase detectors for the search of non-baryonic dark matter in the framework of the UK Dark Matter Collaboration (UKDMC).

Her list of publications is available at <http://www-lip.fis.uc.pt/~isabel/publications.htm>

She is currently Associate Professor of the Physics Department of Coimbra University and researcher of the Laboratory of Instrumentation and Experimental Particle Physics (LIP).

Among other international duties, she currently serves as Chair of the Technical Committee on Dielectric Liquids of the IEEE Dielectric and Electrical Insulation Society (IEEE-DEIS).

**Statement :** There are two main features of IRPS that strongly motivate me to serve the Society. First, it provides an international forum of researchers engaged in a large variety of different topics, both fundamental and applied, under the broad umbrella of Radiation Physics. Personally, I find this diverse and interdisciplinary character very stimulating and important.

Second, it truly promotes international links, collaborations and exchange of knowledge.

I am very keen to contribute to maintain and reinforce these roles of IRPS. In addition, I would like to work towards enhancing the Society's appeal to young researchers.

# Election Ballot Form

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For all posts, except those of executive councillors, vote for one by marking the appropriate box. For executive councillors, you may vote for up to four candidates who are running for the full six-year term and up to two candidates for three-year slots that have arisen due to vacancies. For all positions you may write in names of other members of the Society and cast your ballot for them.

## President (vote for one)

Dudley C. Creagh (Australia)   
\_\_\_\_\_

## Secretary (vote for one)

David A. Bradley (UK)   
\_\_\_\_\_

## Treasurer (vote for one)

Malcolm J. Cooper (UK)   
\_\_\_\_\_

## Vice Presidents:

### Western Europe (vote for one)

Jorge E. Fernandez (Italy)   
\_\_\_\_\_

### Eastern Europe (vote for one)

Ladislav Musílek (Czech Rep.)   
\_\_\_\_\_

### F.S.U. (vote for one)

Andrei V. Korol (Russia)   
\_\_\_\_\_

### North America (vote for one)

William L. Dunn (USA)   
\_\_\_\_\_

### South & Central America (vote for one)

Anselmo S. Paschoa (Brazil)   
\_\_\_\_\_

### South East Asia (vote for one)

Suprakash C. Roy (India)   
\_\_\_\_\_

## North East Asia (vote for one)

Luo Zhengming (P.R. China)   
\_\_\_\_\_

## Africa & Middle East (vote for one)

Dan T.L. Jones (South Africa)   
\_\_\_\_\_

## Australasia (vote for one)

Chris Chantler (Australia)   
\_\_\_\_\_

## Executive Councillors:

### Six years term (vote for four)

Odair D. Gonçalves (Brazil)

Fiona E. McNeill (Canada)

Marcelo Rubio (Argentina)

Ziyu Wu (P.R. China)

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### Three years term (vote for two)

Isabel Lopes (Portugal)

Francesc Salvat (Spain)

\_\_\_\_\_

Use this ballot to vote. The double envelope system is recommended for its return, to preserve the secrecy of your ballot. Place the ballot in a small unsigned envelope. Enclose the envelope in a larger envelope, signing and printing your name and showing your return address (this is needed to establish the validity of your ballot) and mail it to:

David Bradley, IRPS Secretary  
Centre for Nuclear and Radiation Physics, Department of Physics, University of Surrey,  
Guildford, Surrey GU2 7XH, UK

Your ballot must be received at the address given above by **1 September, 2006**, in order for it to be sure to be counted. The ballots will be counted, and the result announced at ISRP-10 in Coimbra, Portugal, 17-22 September, 2006

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