



***Academic Seminar of the 17<sup>th</sup> General  
Assembly of CAS Members***



**Tuesday, Jun. 10, 2014**

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### **Addressing Global Challenges– Responsibilities of Scientific Think-tanks**

Issues to be highlighted including:

- 1) how to select a meaningful strategic study topic;
- 2) how to ensure the independence and impartiality of a strategic study and report;
- 3) how to maximize the impact and wide outreach of strategic studies and reports.

**Chair: Professor Dahe Qin, CAS Member**

- 08:30 - 08:50      Opening Address by Professor Chunli Bai, President, CAS
- 08:50 - 09:20      **The processes used by the U.S. National Academy of Sciences in responding to requests from the United States Government**  
Dr. Ralph Cicerone, President, National Academy of Sciences
- 09:20 - 09:50      **Science Academies and Society: A Swiss Perspective  
*Taking Science Into Decision-Making Processes***  
Professor Thierry Courvoisier, President, Swiss Academy of Sciences
- 09:50 - 10:20      **The EU National Science Academies' network EASAC: a European think-tank's context, experience and best practice in addressing global challenges**  
Dr. Christiane Diehl, Executive Director, European Academies Science Advisory Council
- 10:20 - 10:50      **Science Policy Advice from the Australian Academy of Science**  
Professor Chennupati Jagadish, Vice President, Australian Academy of Science

- 10:50 - 11:20      **Role of National Science Academies in Tackling  
Challenging Societal Problems**  
Dr. Krishan Lal, Immediate Past President, Indian National  
Science Academy
- 11:20 - 11:50      **Evidence-based policy advice and the global network of  
science academies**  
Professor Volker ter Meulen, Co-Chair, InterAcademy Panel
- 11:50 - 12:20      **Advising Society On Science**  
Ms. Rapela Zaman, Senior Policy Adviser, the Royal Society  
on behalf of Sir Paul Nurse
- 12:30                Adjourn



**Professor Ralph J. Cicerone** is President of the National Academy of Sciences and Chair of the National Research Council. His research has focused on atmospheric chemistry, the radiative forcing of climate change due to trace gases, and the sources of atmospheric methane, nitrous oxide, and methyl halide gases. His scientific work has involved him in shaping science and environmental policy nationally and internationally. The

Franklin Institute recognized his fundamental contributions to the understanding of greenhouse gases and ozone depletion and his public policy leadership in protecting the global environment with its 1999 Bower Award and Prize for Achievement in Science. In 2001, he led a National Academy of Sciences study of the current state of climate change, requested by President Bush. The American Geophysical Union, the world's largest society of earth scientists, awarded Dr. Cicerone its James B. Macelwane Award in 1979 for outstanding contributions to geophysics by a young scientist. He served as AGU president (1992-1994) and was awarded AGU's 2002 Roger Revelle Medal for outstanding research contributions to the understanding of Earth's atmospheric processes, biogeochemical cycles, and key elements of the climate system. In 2004, the World Cultural Council honored him with the Albert Einstein World Award in Science. Dr. Cicerone is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society. He is a foreign member of the Accademia Nazionale dei Lincei, the Russian Academy of Sciences, the Korean Academy of Science and Technology, Academia Sinica, the Real Academia de Ciencias, and the Royal Society. Dr. Cicerone was educated at the Massachusetts Institute of Technology (BSEE and captain of the baseball team) and the University of Illinois. He began his research career at the University of Michigan (1970-1978), where the Ralph J. Cicerone Distinguished University Professorship of Atmospheric Science was established in 2007. Dr. Cicerone continued his research at the Scripps Institution of Oceanography at the University of California, San Diego (1978-1980) and at the National Center for Atmospheric Research in Boulder, Colorado (1980-1989). In 1989 he joined the University of California, Irvine, where he was founding chair of the Department of Earth System Science and the Daniel G. Aldrich Professor of Earth System Science; Dean of the School of Physical Sciences; and Chancellor, immediately prior to his election as

Academy president in 2005. Dr. Cicerone served on the Secretary of Energy's Advisory Committee (2009-2013), and is a trustee of the Carnegie Corporation of New York.

**Dr. Ralph J. Cicerone** will describe the processes used by the U.S. National Academy of Sciences (and its sister academies, the National Academy of Engineering and the Institute of Medicine) in responding to requests from the United States Government. He will note specific provisions and processes that apply to the National Academy of Sciences. He will address President Bai's questions to the representatives of foreign academies.



## **Dr. Thierry J.-L. Courvoisier**

### **Education**

1971 High School diploma, Moraga, California

1972 maturit\_escienti\_que at the coll\_ege de Gen\_eve

1977 Physics diploma in theoretical physics at the Federal Institute of Technology in Zurich (ETHZ)

1980 PhD in theoretical physics with Prof. N. Straumann at the University of Zurich

### **Professional career**

1981-1984 European Space Operations Center (ESOC) in Darmstadt, Germany.

1984-1988 Space Telescope European Coordinating Facility at ESO (European Southern Observatory) in Garching bei Muenchen (Germany).

1988 Senior scientist SERC fellow (4 months) in Preston, UK.

Since 1988 University of Geneva, full professor since 1999.

Sabbatical stays in the UK, in Germany and Chile.

Teaching in Geneva, Lausanne, at CERN and in numerous specialised schools.

Initiator and director of the ISDC (INTEGRAL Science Data Centre, then Data Centre for Astrophysics)

July 2009-June 2010 Skipper of the sailing yacht CERES around the Atlantic Ocean

### **Research, teaching and publications**

High energy astrophysics. Observations using satellites and ground based telescopes.

Modeling of accretion processes onto black holes and neutron stars.

Supervision of 16 doctoral thesis.

Teaching in general astronomy, high energy astrophysics and cosmology.

Author or co-author of more than 400 publications cited more than 5000 times.

Author of 2 books:

High energy astrophysics: An introduction Springer Verlag 2012

CERES en Atlantique, recit et reexions d'un Suisse en mer Ed. Slatkine 2012

### **External functions**

Expert for ESO, ESA, PPARC (UK), The Swedish national space board, Belgian Science policy, Science Foundation of Ireland, Fonds National Suisse, SRON (The Netherlands), the Swedish Academy of Sciences. Member of visiting committees in France and Italy.

President of the European Astronomical Society (EAS)  
President of the Swiss Academy of Natural Sciences  
President of the Swiss Academies of Arts and Sciences  
Editor in chief of Astronomy and Astrophysics Reviews  
Member of the council of the Swiss Institute of Metrology (METAS)  
Vice-president of the European Academies Science Advisory Council (EASAC)  
President of the Dudley Wright Foundation  
Corresponding member of the Societe Royale des Sciences de Liege  
Member of the International Academy of Astronautics  
Former president of the Space Research Commission of the Swiss Academy of Sciences  
Former Swiss delegate to the Science Programme Committee of ESA  
Former member of the Federal Space Airs Commission  
Former member of the council of the Centre de donneesstellaires in Strasbourg  
Former president de la foundation of the autonomous theological faculty of the university of Geneva  
Former president of the assembly of the professors of the University of Geneva (Senat)  
Former member of the Astronomy committee of the UK

***Science Academies and Society: A Swiss Perspective***

***Taking Science Into Decision-Making Processes***

*Dr. Thierry J.-L. Courvoisier*

*President of the Swiss Academies of Arts and Sciences*

*President of the Swiss Academy of Sciences*

Addressing problems in modern societies often requires a significant level of scientific understanding. Taking this element into the decision-making processes is the task of academies. In describing how we approach this task in Switzerland, I will attempt to draw some general conclusions from this analysis. At the same time, efforts to improve the interaction between science and society are on-going worldwide, and progress is achieved through tenacious efforts, rather than following simple universal recipes.



**Dr Christiane Diehl** is Executive Director of EASAC (the European Academies' Science Advisory Council), the body through which the national science academies of EU member states jointly provide science-based policy advice to the institutions of the EU. She is also Deputy Head of Department of International Relations at the German National Academy of Sciences Leopoldina, where the EASAC Secretariat is based. She

did her M.A. at the University of Mainz/Germany and her doctorate at Oxford University (Oriental College)/UK with a thesis on Ethics. She has worked in academia and the charity and public sectors, with an emphasis on science communication.

***The EU National Science Academies' network EASAC: a European think-tank's context, experience and best practice in addressing global challenges***

*Dr Christiane Diehl*

*EASAC Executive Director*

*EASAC Secretariat*

*c/o German National Academy of Sciences Leopoldina*

*Jägerberg 1, 06108 Halle, Germany*

This presentation will focus on the experience of the European science academies in jointly providing science-based policy advice on global challenges in Europe, in particular to the EU and its many institutions. With the growing importance of the legislative and executive powers and influences of the EU in Europe, it has become a crucial task for the national science academies of EU member states to present their independent expert advice to the decision-takers and opinion-formers not only to their own national governments but also to the institutions of the EU. Over the past 12 years, EASAC has gained a lot of experience in how to find and select topics for its advice, set up and run expert groups and communicate the advice at which the academies' experts have arrived. The presentation will also draw on the "Science-Policy-Dialogue" workshops that EASAC set up for representatives of its member academies over recent years.

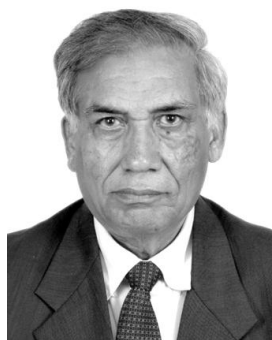




**Professor Chennupati Jagadish** is an Australian Laureate Fellow, Distinguished Professor and Head of Semiconductor Optoelectronics and Nanotechnology Group in the Research School of Physics and Engineering, Australian National University. He is also serving as Vice-President and Secretary Physical Science of the Australian Academy of Science. He is serving as Vice-President of IEEE Photonics Society, Director of Australian National Fabrication Facility, ACT node and Convener of Australian Nanotechnology Network. Prof. Jagadish is an Editor/Associate editor of 6 Journals, 3 book series and serves on editorial boards of 17 other journals. He has published more than 770 research papers (510 journal papers), holds 5 US patents, co-authored a book, co-edited 5 books and edited 12 conference proceedings and 10 special issues of Journals. He won the 2000 IEEE Millennium Medal and received Distinguished Lecturer awards from IEEE NTC, IEEE LEOS and IEEE EDS. He is a Fellow of the Australian Academy of Science, Australian Academy of Technological Sciences and Engineering, TWAS, IEEE, APS, MRS, OSA, AVS, ECS, SPIE, AAAS, IoP (UK), IET (UK), IoN (UK) and the AIP. He received Peter Baume Award from the ANU in 2006, the Quantum Device Award from ISCS in 2010, IEEE Photonics Society Distinguished Service Award in 2010, IEEE Nanotechnology Council Distinguished Service Award in 2011 and Electronics and Photonics Division Award of the Electrochemical Society in 2012. He has recently been elected as an Honorary Member of MRS India and Academician of the Asia Pacific Academy of Materials. He holds Thousand Talents Plan (short term) Professorship at UESTC, Chengdu, Honorary Professorship at Nanjing University and honorary appointments at Tokyo University and Anna University, India.

*Science Policy Advice from the Australian Academy of Science*

The Australian Academy of Science celebrates its 60th anniversary this year. Founded by Australian Fellows of the Royal Society it has much in common with that distinguished body. In this presentation a summary will be provided of how the Academy provides the Science Policy advice to the Australian Government and the community at large. Examples of recent initiatives include two popular “Question & Answer” booklets in the areas of climate change and immunisation. The Academy provides a wide range of advice on direction setting for the various scientific disciplines represented by its twenty-two National Committees. Its International Section contributes widely to science policy advice on the international stage via inter-academy bodies and the international scientific unions.



**Dr. Krishan Lal** is Honorary Professor, Indian Institute of Technology (IIT), Kanpur, Honorary Professor for Life, University of Delhi, Delhi and Visiting Professor, Panjab University, Chandigarh. He was IBM India Fellow at Watson Research Centre, New York; Visiting Professor, University of Tokyo, Tokyo, Technical University Darmstadt, Darmstadt and Sr. Visiting Scientist at Physikalisch-Technische Bundesanstalt, Braunschweig. He was Visiting Professor IIT Delhi and Jamia Millia Islamia and Adjunct Professor, IIT Kharagpur. Also, served as Treasurer, INSA; Member, Advisory Board, CSIR; Director, CEL Sahibabad; Chairman, Research Advisory Board, of National Council of Science Museums, Member, Research Council of CSIR laboratories and Advisory/ Academic Councils of several reputed institutes and universities.

Dr. Lal's students and collaborators had organized two International Conferences in his honour sponsored by International Union of Crystallography.

Dr. Krishan Lal has been Chairman of six International Symposia/Workshops/Schools. He has delivered more than 100 invited talks in reputed national/international conferences.

Dr. Krishan Lal has: edited 9 Books/Volumes, published 22 Invited Papers in journals / Chapters in Books, more than 100 research papers in refereed journals and 7 patents to his credit.

## ***Role of National Science Academies in Tackling Challenging Societal Problems***

*Immediate Past President, Indian National Science Academy, New Delhi*

*Laue-Bragg Chair Professor, Amity University UP, NOIDA*

*DST Ramanna Fellow and Former Director, National Physical Laboratory, New Delhi*

In recent times, there has been a rapid growth in number of scientists, particularly in developing Asian countries like China and India. This has led to increased generation of new and important research results and extending frontiers of knowledge. The capability of addressing societal problems has improved substantially. Science academies provide advice to policy makers that are based on sound evidence. Collectively, international Academy organizations like ICSU-The International Council for Science, International Partnership of Academies an umbrella organization comprising of the Global Network of Academies, the InterAcademy Council and IAMP (full) are producing study reports, which are relevant to the developed economies as well as upcoming nations. The focus on promotion of excellence in science is not lost sight of. The G-Science network of Science Academies of the G-8 plus countries have been preparing statements on issues of global concern. These have been inputs of the scientific community to the top political level of the world to evolve suitable policies for societal benefits. The Indian National Science Academy had hosted the G-Science meeting of 2013. The following two signed statements were issued: Driving Sustainable Development: Role of Science Technology and Innovation; and Drug Resistant Infections-A global threat to humanity. The regional networks of academies like AASSA-the Association of Academies and Science Societies of Asia are actively working to promote scientific research including promotion of science literacy. In our region annual Summits of South Asian Science Academies are being organized on an annual basis by Indian National Science Academies. The deliberations are focused on issues that are typical of this region including novel techniques of teaching, integrating science, technology and innovation, health related problems, challenges in agriculture production in the context of climatic changes and increasing population, meeting energy demands for rising needs of economy and improving life styles.

In pure scientific domain the author has found that improvements in precision measurements always provide deeper insight into nature of materials. For example, by employing high resolution X-ray diffraction has led to improved knowledge about real crystals and their interaction with external fields and radiation..



**Professor Dr Volker ter Meulen**

*Co-Chair, IAP – the global network of science academies*

*German National Academy of Sciences Leopoldina*

Volker ter Meulen qualified as MD in 1960. He received his post-doctoral training in virology in the USA, at the Children's Hospital of Philadelphia. On returning to Germany in 1966 he specialised in paediatrics and was subsequently Visiting Scientist at the Wistar Institute for Anatomy and Biology in Philadelphia and at the Viral and Rickettsial Disease Laboratory in Berkeley, from 1969-1970. In 1975 he became a full professor and Chairman of the Institute of Virology and Immunobiology at the University of Würzburg. He retired in 2002, having twice been elected Dean of the Faculty of Medicine of Würzburg University. During his research career, ter Meulen worked on molecular and pathogenic aspects of viral infections in man and animals, in particular on infections of the central nervous system. Due to the recognition of his research achievements and his experience in heading a Medical Faculty, ter Meulen has on numerous occasions been invited to give policy advice on research matters to German research organisations and to state and federal ministries of science in Germany. Internationally, ter Meulen has served on a number of committees of organisations and scientific societies/unions in the area of virology and infectious diseases, covering a broad spectrum of important issues connected to human and animal pathogens. From 2003-2010, ter Meulen was President of the German Academy of Sciences Leopoldina. Under his leadership, the Leopoldina strengthened its international commitments in different inter-academic councils and was appointed National Academy of Sciences in 2008. From 2007-2010, he was President of the European Academies Science Advisory Council (EASAC), the association of the National Science Academies of the European Union, which is the IAP associated regional network for Europe. In 2013, ter Meulen was elected co-chair of IAP.

### *Evidence-based policy advice and the global network of science academies*

The changing landscape of science encompasses an ever faster pace of discovery, the emergence of new centres of research excellence worldwide and increasing international and inter-disciplinary linkages between scientists. There are also growing opportunities for sound science to inform policy options for tackling the major societal challenges, for climate change, environment, food and energy security and public health.

The InterAcademy Partnership (IAP) is now pursuing an expanded strategic role to ensure that the collective voice of science is heard. In doing this, IAP benefits from a well-tested, merit-based academy tradition in utilising the processes of scientific culture, relying on rigorous collection of evidence, transparency in procedures, robust peer review and consensus, with explicit exposure of areas of controversy.

IAP represents thematic and affiliated regional networks with the aims to share good practice in providing evidence-based policy advice and generate critical mass to tackle complex issues of global relevance. Recent IAP work will be presented to exemplify how priorities are set to cover a broad range of topics and how outputs are targeted to multiple audiences.

As well as starting new global projects, academies can capitalise on work at the national and regional levels to globalise previous outputs for additional purposes with policy-makers and the general public worldwide. There is sustained synergy in deliverables when messages to the global policy-making institutions are complemented by continuing academy activity at the national and regional levels. This globalisation of academy activities helps to develop long-term relationships at all policy-making levels, while also contributing to capacity building in academy advisory functions and augmenting other academy work in research and education.



**Sir Paul Nurse**, is the President of the Royal Society. He took up the post to start his five year term on 1 December 2010. Paul Nurse is a geneticist who works on what controls the division and shape of cells. He was Professor of Microbiology at the University of Oxford, CEO of the Imperial Cancer Research Fund and Cancer Research UK and President of Rockefeller University New York. He is currently Director and Chief Executive of the Francis Crick Institute.

He was awarded the Nobel Prize for Physiology or Medicine in 2001 and the Royal Society Copley Medal in 2005.

*“Advising Society On Science”* will be delivered by Rapela Zaman on behalf of Sir Paul Nurse, President of the Royal Society. The presentation will cover some central principles about advice based on science generally and will go on to present three specific examples (climate science, genetically modified organisms and earthquakes) which illustrate some of the common challenges that can emerge. Finally, the presentation will consider the responsibilities of those giving scientific advice to society.