

23rd Annual Conference

“Chemistry, Sciences, Culture and
Society in the making of Europe”



September 20-22, 2011
UNESCO - PARIS

PROGRAMME
& ABSTRACTS



Entrée Principale/Main entrance:
 4 place Jussieu – 75005 Paris
 Metro lines 7 & 10,
 Jussieu Station



- A) Zamansky Tower
- B) Minerals collection
- C) Hall 15 – 25
- D) Amphitheater 25
- E) Curie Posters
- F) Becquerel House
- G) Laboratory Curie



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Welcome to 23rd annual Conference of Academia Europaea !

English is the official language of the Conference

Committees

(* Member of Academia Europaea)

Honorary Committee

Amouyal, Edmond	Ecole Polytechnique, Palaiseau, F
Bigot, Bernard*	CEA & Fondation de la Maison de la Chimie, Paris, F
Bokova, Irina*	UNESCO, Paris, F
Carpentier, Alain	Académie des Sciences, Paris, F
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Devaquet, Alain	Université Pierre et Marie Curie, Paris, F
Férey, Gérard*	Académie des Sciences & Université de Versailles, F
Fuchs, Alain	Président CNRS, Paris, F
Homolle, Olivier	BASF France, SCF & Union des Industries Chimiques, Paris, F
Jullian, Sophie,	IFP Energies Nouvelles, Solaize & Rueil-Malmaison, F
Leroy, Maurice	Fédération Française des Sciences pour la Chimie, Paris, F
Moreau, Nicole	IUPAC President, Paris, F
Pomerol, Jean-Charles	Université Pierre et Marie Curie, Paris, F
Salençon, Jean*	Académie des Sciences, Paris, F
Walløe, Lars*	Academia Europaea, N

Scientific Committee

Buckingham, Margaret*	Chair section C2: Cell Biology, Institut Pasteur, Paris, F
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Verkhatsky, Alexei*	Chair section C3: Physiology & Medicine, University of Manchester, UK
Walløe, Lars*	AE President, University of Oslo, N
Yaniv, Moshe*	Chair section C1: Biochemistry & Molecular Biology, Institut Pasteur, Paris, F

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Che, Michel*	Université Pierre et Marie Curie, Paris, F
Cossy, Jeannine	ESPCI, Paris, F
Devilliers, Didier	Université Pierre et Marie Curie, Paris, F
Eisenstein, Odile	CNRS, Institut C. Gerhardt, Montpellier, F
Farge, Marie	Ecole Normale Supérieure Ulm, Paris, F
Fontecave, Marc*	Collège de France, Paris, F
Girerd, Jean-Jacques	Université Paris Sud, Orsay, Orsay, F
Gouzerh Pierre	Université Pierre et Marie Curie, Paris, F
Jacquesy, Agnès	Fédération Française de la Chimie, Paris, F
Langevin, Dominique	Université Paris-Sud, Orsay, F
Lavielle, Solange	Université Pierre et Marie Curie, Paris, F
Marquet, Andrée	Université Pierre et Marie Curie, Paris, F
Nenner, Irène	CEA, Saclay, F
Pileni, Marie-Paule*	Université Pierre et Marie Curie, Paris, F
Pradier, Claire-Marie	Université Pierre et Marie Curie, Paris, F
Sanchez, Clément	Collège de France, Paris, F
Sigamoney Rovani	UNESCO, Paris, F
Tkatchenko, Igor*	SCF, Paris, F
Vairon, Jean-Pierre	Université Pierre et Marie Curie, Paris, F
Verdaguer, Michel*	Université Pierre et Marie Curie, Paris, F

PROGRAMME

Private Academia Europaea committee meetings

Monday 19 September

**UPMC Zamansky Tower, floors 23 & 24
4, place Jussieu, 75005 Paris**



09.00-13.00 Meeting of the nomination subcommittee (sections B1-B5 and C1-C5) (room 23 02)

13.00-14.00 *Lunch*

14.00-16.00 Meeting of the nomination subcommittee (sections A1-A10) (room 23 02)

16.30-19.00 Plenary and Nomination committee (room 23 07)

20.00-22.00 *Dinner (room 24 00)*

Tuesday 20 September

**UPMC Zamansky Tower, floors 23 & 24
4, place Jussieu, 75005 Paris**

09.00-11.30 Board meeting (room 23 02)

09.00-11.00 Physics and Engineering (B3) section Meeting (room 23 04)

11.30-13.00 Council meeting (section Chairs and board Members only) (room 24 02)

13.00-14.30 *Lunch*

23 rd Annual Conference

Tuesday 20 September
UNESCO Headquarters
7 place de Fontenoy
75007 Paris

- 14.00-17.30** Registration (white counter on the left after entering the building)
- 15.00-16.30** Annual Business meeting (room XI)
(Academia Europaea Members only)
- 16.30-17.00** *Coffee break*
- 17.00-19.00** Social Sciences Section (room VI)
Sciences, Culture and Society: Mobility and Integration (cf. Annex)
- 17.15-18.00** **Transfer by Metro to Université Pierre et Marie Curie (Jussieu Station)**
Amphitheatre 25 – Hall 25-15
- 18.00-21.00** In the footsteps of Pierre and Marie Curie (Minerals Collection/
Movie/Exhibition/Historic Chemical Landmarks)
- Cocktail*



Wednesday 21 September
UNESCO Headquarters (room XI)
7 place de Fontenoy
75007 Paris

08.15-09.00 Registration (white counter on the left, after entering the building), then move to room XI (follow signs)

09.00-10.30 **Introduction to the Conference**

Welcome from UNESCO

Professor Maciej Nalecz, Director of Basic & Engineering Sciences

Welcome from the Academia Europaea

President Lars Walløe

Academia Europaea Awards

Erasmus Medal - Sponsored by Heinz-Nixdorf Foundation

Burgen Scholarships

Honorary Memberships

10.30-11.00 *Coffee break*

11.00-12.00 **Manuel Castells**

The 2011 Heinz-Nixdorf Erasmus Lecture
Communication Networks and Social Change

12.00-12.45 **Bernard Bigot**

The Scientific Challenges to Secure a Sustainable Worldwide Energy Supply for the 21st Century and beyond

12.45-14.00 *Lunch*

Scientific sessions of 23rd Annual Conference of the Academia Europaea
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Session 1: Chemistry Challenges

14.00-14.30	G�rard F�rey	Gold medal CNRS <i>From Interesting to Useful: the Contribution of Porous Solids to the Society</i>
14.30-15.00	Vivian W.W. Yam	L'Or�al Foundation & UNESCO 2011 Laureate <i>The World of Colours - From Fundamental Science to Energy and Materials</i>
15.00-15.30	Sophie Jullian	<i>Chemistry and Energy: Bond and Boundary from Oil to Biomass</i>
15.30-16.00	Discussion	
16.00-16.30	<i>Coffee break</i>	

Session 2: Chemistry and life

16.30-17.00	Maxime Schwartz	<i>Louis Pasteur and Chemistry</i>
17.00-17.30	Uwe Meierhenrich	<i>Aminoacids and Asymmetry of Life</i>
17.30-18.00	Discussion	

Session 3: European Challenges

18.00-18.30	Angeles Rodriguez Pe�a	<i>Research Networks for Global Sustainability</i>
18.30-19.00	Hermann Maurer	<i>Informatics at the Crossroads of Academia Europaea</i>
19.00-19.30	Discussion	

Thursday 22 september
UNESCO Headquarters (room XI)
7 place de Fontenoy
75007 Paris

Session 4: Chemistry & Society

09.00-09.30 **Thierry Audibert** *The Sweet Smell of Success*

09.30-10.00 **Gérard Liger-Belair** *Champagne Bubbles*

10.00-10.30 Discussion

10.30-11.00 *Coffee Break*

Session 5: Chemistry, Peace and War

11.00-11.30 **Franck James** *Michael Faraday and the Chemistry of War*

11.30-12.00 **Sally Horrocks** *Chemistry in the News: British Newsreels and Local Television during the 1950s and 1960s*

12.00-12.30 Discussion

12.30-14.00 *Lunch*

Introduction of sessions 6, 7 and 8 by Cinzia Ferrini

Session 6: Chemical Metaphors, Analogies and Transformative Codes in Making the Culture of Modern Europe

- 14.00-14.30** **Penelope Gouk** *Transforming Matter, Refining the Spirit: Alchemy, Music and Experimental Philosophy around 1600*
- 14.30-15.00** **Wolfgang Pross** *Genii, Homunculi and Golden Pots. Chemistry and Poetical Experiments around 1800*
- 15.00-15.30** Discussion
- 15.30-16.00** *Coffee Break*

Session 7: Chemistry between Natural Beauty and Art History

- 16.00-16.30** **Giorgio Paolucci** *The Beauty of Chemical Imaging*
- 16.30-17.00** **Philippe Walter** *Chemical Analysis and Painted Colours: the Mystery of Leonardo's Sfumato*
- 17.00-17.30** Discussion

Session 8: Transforming Social Matter: Chemistry and Civilization

- 17.30-18.00** **Ernst Pernicka** *Chemistry and Archaeology – 200 Years of Interaction*
- 18.00-18.30** Discussion
- 18.30-18.45** **Closing remarks**
Lars Walløe (President, Academia Europaea)
- 19.00-23.30** **Banquet**
Hervé This *When Physical Chemistry Meets People: Molecular Gastronomy, its Applications in Education, Technology and Technique (with practical demonstrations)*

SPEAKERS

- Manuel CASTELLS**
Heinz-Nixdorf Erasmus Lecture
Universitat Oberta de Catalunya, Barcelona, Spain
- Bernard BIGOT**
Fondation de la Maison de la Chimie, Paris and
CEA, Gif-sur-Yvette, France
- G rard FERREY**
Gold medal CNRS 2010
Universit  de Versailles, France
- Vivian W.W. YAM**
L'Or al Foundation & UNESCO 2011 Laureate
Hong Kong University, PR China
- Sophie JULLIAN**
IFP Energies Nouvelles
Solaize & Rueil-Malmaison, France
- Maxime SCHWARTZ**
Institut Pasteur, Paris, France
- Uwe MEIERHENRICH**
Universit  Nice-Sophia Antipolis, France
- Angeles RODRIGUEZ PENA**
President of Cost
Brussels, Belgium
- Hermann MAURER**
Technische Universit t Graz, Austria
- Thierry AUDIBERT**
Givaudan Fragrance
Argenteuil, France
- Communication Networks and Social Change*
- The Scientific Challenges to Secure a Sustainable Worldwide Energy Supply for the 21st Century and beyond*
- From Interesting to Useful: the Contribution of Porous Solids to the Society*
- The World of Colours - From Fundamental Science to Energy and Materials*
- Chemistry and Energy: Bond and Boundary from Oil to Biomass*
- Louis Pasteur and Chemistry*
- Aminoacids and Asymmetry of Life*
- Research Networks for Global Sustainability*
- Informatics at the Crossroads of Academia Europaea*
- The Sweet Smell of Success*

G rard LIGER-BELAIR

Universit  Reims, Champagne-Ardenne, France

Champagne Bubbles

Franck JAMES

Royal Institution of Great Britain London
United Kingdom

Michael Faraday and the Chemistry of War

Sally HORROCKS

University of Leicester
United Kingdom

*Chemistry in the News: British Newsreels and Local
Television during the 1950s and 1960s*

Penelope GOUK

Manchester, United Kingdom

*Transforming Matter, Refining the Spirit: Alchemy, Music
and Experimental Philosophy around 1600*

Wolfgang PROSS

Munich, Germany

*Genii, Homunculi and Golden Pots. Chemistry and
Poetical Experiments around 1800*

Giorgio PAOLUCCI

Sincrotrone Trieste S. C. p. A., Trieste, Italy

The Beauty of Chemical Imaging

Philippe WALTER

Universit  Pierre et Marie Curie
Paris, France

*Chemical Analysis and Painted Colours: the Mystery of
Leonardo's Sfumato*

Ernst PERNICKA

Institut f r Ur- und Fr hgeschichte und Arch ologie des
Mittelalters Eberhard Karls Universit  T bingen,
Germany

Chemistry and Archaeology – 200 Years of Interaction

Herv  THIS

Institut National de Recherches Agronomiques, Paris,
France

*When Physical Chemistry Meets People: Molecular
Gastronomy, its Applications in Education, Technology
and Technique (with practical demonstrations)*

ABSTRACTS

Communication Networks and Social Change

Manuel Castells

Social change happens when people think differently, thus inducing social movements if the institutions of society resist to change. The way people think depends of the emotional and informational stimuli they receive via their communication environment. The communication environment is defined by a given set of communication technologies and organizational forms. For a long time mass communication organized in the mass media with little interactivity and one-way messages has been decisive in shaping representations, attitudes and behaviour for society at large. In the last decade, the diffusion of Internet, and of wireless communication, has ushered in a new form of

communication: mass self-communication, based on horizontal communication networks that connect many to many, in chosen time, with potential interactivity in a multimodal process. This transformation of the communication realm has affected deeply processes of social movements, and socio-political change. The hows and whys of this transformation will be explored in this lecture on the basis of research conducted on the matter during the last decade, some of whose findings have been summarized and theorized in the book "Communication Power", (Oxford University Press, 2009).

Additional research findings obtained in 2010-2011 will expand the scope of this lecture providing the empirical grounding for new theoretical understanding of power in the network society.



Manuel Castells is University Professor and the Wallis Annenberg Chair in Communication Technology and Society at the University of Southern California, Los Angeles as well as Professor of Sociology and Director of the Internet Interdisciplinary Institute at the Open University of Catalonia, Barcelona. Between 1979 and 2003 he was Professor of Sociology and of Planning at the University of California-Berkeley. He has published 25 books, including the trilogy "The Information Age: Economy, Society, and Culture" (Blackwell, 1996-2000) translated in 22 languages. He is a Fellow of the Academia Europaea, as well as of the Spanish Royal Academy of Economics, the British Academy, the Mexican Academy of Sciences, and the American Academy of Political and Social Science. He has received 18 honorary doctorates from universities from around the world. He was a founding board member of the European Research Council, and a current board member of the European Institute of Technology. Among other distinctions, he has received the C.Wright Mills Award, the Lynd Award from the American Sociological Association, the Ithiel de Sola Pool Award from the American Political Science Association, and the Spanish National Prize of Sociology and Political Science.

The Scientific Challenges to Secure a Sustainable Worldwide Energy Supply for the 21 Century and Beyond

Bernard Bigot

The challenges imposed both by the unavoidable increase of the energy demand, whatever the amount of energy savings which have to be implemented in any case, and the progressive reduction of the availability of the fossil resources which represent now over 80% of the world energy consumption, associated the potentially damaging effects of a massive burning of fossil fuels on climate and environment in the meanwhile, raise the question of the long term worldwide security of energy supply and call for aggressive R&D programs.

There is real need is to develop sustainable low-carbon, safe, environmentally benign and economically competitive technologies as nuclear and renewable energies to build a flexible energy mix adapted to the specific needs of each country.

Some of the scientific challenges in the field of nuclear fission technologies, nuclear fusion technologies, solar technologies, biomass transformation and electricity storage technologies will be addressed.



Bernard BIGOT is, Professor of the French Universities and Chairman and Chief Executive Officer of the Alternative Energies and Atomic Energy Commission (CEA) in France.

Born in 1950, Bernard Bigot is a graduate of the Ecole Normale Supérieure. He is now “classe exceptionnelle” University Professor at the Ecole Normale Supérieure de Lyon. He is the author of several over 70 publications in the field of theoretical chemistry applied to the detailed understanding of the chemical reactions and materials sciences.

Bernard. Bigot was the Deputy Director, in charge of the Studies and ran a laboratory at the Ecole Normale Supérieure de Lyon from 1981 to 1993. From 1993 to 1997, he served as the Head of the Scientific and Technical Mission, then as the Director General of Research and Technology, at the French Ministry of Higher Education and Research. After returning to Lyon, he worked as the Deputy Director of Research at the Ecole Normale Supérieure (1998-2000) and then as the Director (2000-2003). He also directed the CNRS catalysis research institute from 1998 to 2002. He served as the chief of staff (Directeur du Cabinet) of Claudie Haigneré (Minister Delegate for Research and New Technologies) and the deputy chief of staff (Directeur adjoint du Cabinet) of Luc Ferry (Minister of Youth, National Education and Research), in 2002 and 2003.

He became the High Commissioner for Atomic Energy in 2003, and was appointed in early 2009 as the Chairman and CEO of the French Alternative Energies and Atomic Energy Commission (CEA is a national R&D agency with over 16 000 employees working in the field of defence and global security, nuclear and renewable energies, information and communication technologies, health technologies and the related basic sciences (physics, chemistry, biology, material sciences,...) with special emphasis on the conception, building and intensive use of world class large facilities).

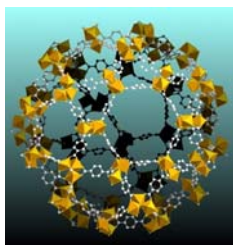
From Interesting to Useful: the Contribution of Porous Solids to the Society

Gérard Férey

The story of porous solids begins in 1756 in Sweden, but their tremendous development during the last twenty years make them now strategic materials.

The example of hybrid porous solids – which result from the three-dimensional association by strong bonds of inorganic and organic moieties – illustrates what the integrated approach of chemists must be, from pure academic research to industrial production, for providing solutions to current societal problems in the domains of energy, energy savings, sustainable development and health.

The mastery of 'tailor-made' syntheses implies the knowledge of the mechanisms of formation of these solids. Once elucidated, it allows, playing on their different characteristics (framework, pores and specific surface area), to introduce new properties, to tune the size of the pores, and even predict the structure of new solids for generating the applications and the industrial development in various domains.



For example, hybrid porous solids are excellent materials for hydrogen storage at 77K, and for greenhouse gases at room temperature. Their separating power for gas mixtures operates with low energy consumption. Beside, they are excellent catalysts and, recently, these *non-toxic* solids appear to be the best nanovectors for the storage and long-term delivery of anti-tumoral and anti-retroviral drugs. Their easy production at large scale leads for some of them to an industrial development.

Some references:

1. G. Férey *et al.*, *Science* **2005**, 309, 2040.
2. G. Férey, *Chem. Soc. Rev.* **2008**, 37, 191.
3. C. Serre, G. Férey, *Adv. Mater.* **2007**, 19, 2246.
4. P. Llewellyn *et al.*, *Langmuir* **2008**, 24, 7245.
5. G. Férey *et al.*, *Nature Mater.* **2010**, 9, 172.



Gérard Férey created the Institut Lavoisier (CNRS 8180) of the university of Versailles in 1996 after being Professor at the University of Le Mans (1967-1995) and Deputy-Director of the Chemistry Department of CNRS (1988-1992). Previously devoted to the structural chemistry and magnetism of inorganic fluorides, his research concerns since 1992 the synthesis, the structure, the mechanisms of formation, the structural prediction and the applications of inorganic and hybrid porous solids. Produced at the industrial scale, some of his solids find applications in the domains of energy (hydrogen storage, conducting solids), sustainable development (capture of CO₂) and health (storage and delivery of antitumoral and antiviral drugs). Author of more than 550 publications, 11 patents, he is known worldwide, with prestigious awards (USA, Japan, Germany, Spain, India). He received in 2010 the Gold Medal of CNRS, the highest distinction for a French scientist, all disciplines included.

Professor at the Institut universitaire de France (1999-2009), Member of the French Academy of Sciences (2003-...) and of several foreign Academies, Knight of the Légion d'Honneur, he now belongs to the French Committee of Ethics.

The World of Colours - From Fundamental Science to Energy and Materials

Vivian Wing-Wah Yam

A major global issue that the world is facing today is the upcoming depletion of fossil fuels and the fast-growing global demand for energy. Today, more than 80 % of the energy is generated from fossil fuels which include oil, gas and coal. This also translates into huge annual emissions of carbon dioxide that leads to massive environmental problems, particularly global warming, which could be disastrous. A major challenge confronting the world is to find the extra energy needed when our energy reserves based on fossil fuels are vanishing and when there is an urgent need and pressing demand for a carbon-neutral energy economy. Clearly there is an obvious demand for the development of clean sources of renewable energy. Solar energy is amongst one of the most attractive as there is more energy from the sun that hits the earth in one hour than all of the energy consumed on our planet in an entire year. Apart from the development of clean sources of renewable energy, developments related to increased energy efficiency, such as in the development of more energy-efficient lighting, would also lead to a reduction in the energy demand as lighting currently takes up about 19 % of the global energy demand. In this presentation, the basic concepts of colour and light, with the introduction of energy levels in the form of quanta, will be presented. Relevance to the encounters of daily life from dyes and pigments all the way to the more advanced technological applications including those of imaging and data storage systems such as optical memories, display and solid-state lighting systems such as organic light-emitting devices (OLEDs), solar energy conversion such as artificial photosynthesis and solar cells will be included.



Professor Vivian W. W. Yam is currently the Philip Wong Wilson Wong Professor in Chemistry and Energy and Chair Professor of Chemistry at The University of Hong Kong. She was elected to the Member of the Chinese Academy of Sciences since 2001 and Fellow of TWAS, the Academy of Sciences for the Developing World since 2006. She is the Laureate of the 2011 L'Oréal-UNESCO Awards For Women in Science, and recipient of a number of awards including the Royal Society of Chemistry (RSC) Centenary Medal, State Natural Science Award, Japanese Photochemistry Association Eikohsha Award, Fulbright Distinguished Scholar, Outstanding Women Professionals and Entrepreneurs Award, and Ten Outstanding Young Persons. She has published over 300 journal articles in international SCI journals and book chapters, and serves as the Associate Editor of the SCI journal, *Inorganic Chemistry*, published by the American Chemical Society. She also serves on the International Editorial Advisory Board of major SCI journals, such as the new RSC flagship journal, *Chemical Science*, *ACS Nano* of the American Chemical Society and Editorial Board of *Coordination Chemistry Reviews* (Elsevier), *Philosophical Transactions of the Royal Society A* (Royal Society) and many others. Her research interests include the photophysics and photochemistry of transition metal complexes and clusters, supramolecular chemistry, and metal-based molecular functional materials for luminescence sensing, optoelectronics, optical memory and solar energy conversion.

Chemistry and Energy: Bond and Boundary from Oil to Biomass

Sophie Jullian

Life has evolved within a bounded biosphere, practically unable to exchange matter, and limited to energy exchanges of radiative nature, with the outer space. Chemical bonds store electro-magnetic energy at various levels in molecular or condensed species, according to favourable redistributions of electrons with respect to isolated atoms. Differences in chemical potential maybe converted into work, at rates controlled by the heights of energy barriers separating products from reactants in the free energy landscape. Catalysts are chemicals able to reduce such barriers specifically. Living organisms evolve through a selection of catalysts, and sustain themselves as highly negentropic (organized) chemical open systems. Any available form of inert chemical energy (fossil hydrocarbons, mantellic gases, sulfides) may be exploited by foodwebs, but most of them rely primarily on solar energy input through photosynthesis. The overall minimal production of entropy by life did not significantly affect neither local nor global dynamic equilibria until the pre-industrial era, on the contrary it seems as if life had optimally organized its biosphere (e.g. from CO₂ rich to O₂ rich atmosphere, vegetal cover, fertile soils...).

"Homo Sapiens Technicus" (HST) is now changing rapidly and industrially its environment, through its exponential expansion and entropy production (proportional to its energy consumption), for the better and for the worse. This technological amplification relies on the emerging Science, including Chemical Science. Conscious Science must be promoted in order to avoid all kinds of ruins. It inspires in particular environmentally friendly technological innovations.

IFP Energies nouvelles (IFPEN) has been founding its action in this spirit for more than five decades. It is concerned with the production and use of energy, mainly chemical and for transportation end uses. Its five strategic priorities have been set therefore so as to develop

processes and vehicles aiming at minimal entropy production (Eco-friendly Production, Eco-efficient Processes, Innovative Transport), and to contribute securing accesses to primary energy (Renewable Energies, Sustainable Resources). Examples will be given to illustrate how fundamental chemical knowledge is harnessed and developed by IFPEN so as to reach its targets: advances in chemical analysis for identifying and quantifying the relevant bonds to break or create, so as to upgrade fossils hydrocarbons or degrade biomass into clean fuels; advances in catalysis for process intensification and atom economies, including local characterization techniques of solids, computational chemistry, and high throughput experimentation; advances in multi-scale modeling as a crucial toolbox of optimal process design and control. Last but not least, Cycle Life and Impact Analysis methodologies have become essential in our effort to measure the environmental boundaries of our innovations.

Tentative prospects will cover dreams and nightmares, i.e. the desired smart energetic uses, and unwanted entropic misuses, of chemical bonds, to sustain the next generations.



Sophie Jullian, 52, graduated as an engineer from the École Supérieure de Chimie Industrielle de Lyon (CPE) and as a doctor of chemistry from the Pierre et Marie Curie University in Paris, France. She has also been an auditor at the Institut des Hautes Etudes pour la Science et la Technology (IHEST, the class of Hubert Curien 2009). She joined IFP in 1983, working in the field of separation by adsorption processes within the applied Physical Chemistry and Analysis Division and

became project manager for gas treatment processes. In 1998, she was appointed head of the Thermodynamics and Transfers Department, before becoming Director of the Development Division at IFP-Lyon in 2001, then Director of the Process Research Division in 2005. She had been Director for Development at IFP-Lyon and Vice-chairman for the Axelera competitiveness cluster since 2008.

Louis Pasteur and Chemistry

Maxime Schwartz

For most of our contemporaries, Louis Pasteur is mainly known as the man who invented the rabies vaccine. However, his contributions to science were far more numerous. His work on crystallography led to the notion that molecules are three-dimensional objects and he founded the concept of chirality. He then discovered a new world, the world of microbes; not that he was the first to see them but he was the first to demonstrate their ubiquity and their role in many natural processes such as fermentation and putrefaction. He also showed that these microbes did not appear as a result of spontaneous generation. In parallel with Robert Koch, in Germany, he proved the role of microbes in infectious diseases, thus opening the way to the rationalisation of hygiene and the treatment and prevention of infectious diseases. Finally, after Jenner, who had discovered in the case of smallpox the concept of vaccination two centuries before, Pasteur showed how to produce vaccines from the very microbes that caused the diseases. This conference will show that chemistry, the discipline in which Pasteur had been trained, underlies several of his discoveries.



Maxime SCHWARTZ defended in 1967 a PhD thesis prepared under the guidance of Jacques Monod at Institut Pasteur. He then spent two years of post-doctoral studies in the laboratory of James D. Watson at Harvard University before coming back to Institut Pasteur where he remained for most of his scientific career. He has been employed both by the National Centre for Scientific Research (CNRS) and Institut Pasteur. In 1986, he reached a position of full professor in both institutions.

Most of his scientific work dealt with the molecular biology of bacteria. From 1975 to 1987, he directed the Unit of Molecular Genetics at Institut Pasteur. From 1985 to 1987 he was the Scientific Director of the institute and then became its General Director, a position which he occupied for 12 years.

During the years that followed (2001-2006) he was the Scientific Director of the French Food Safety Agency (AFSSA), where he also chaired an expert committee in charge of giving advice to the government on the licensing of genetically modified organisms.

He published in 2001 "How the cows turned mad", which was translated in English, Japanese and Russian, and, in 2008, together with François Rodhain, "Microbes or Men, who will win?" In 2009, he published, together with Jean Castex, a book on the Franco-American controversy regarding the discovery of the AIDS virus. In 1999, he also published, with Annick Perrot "Pasteur, from microbes to vaccines".

Amino Acids and the Asymmetry of Life

Uwe Meierhenrich

"How did life originate and why were left-handed molecules selected for its architecture?" This question of high public and interdisciplinary scientific interest is the central theme of this presentation. It is widely known that in processes triggering the origin of life on Earth, the equal occurrence, the parity between left-handed amino acids and their right-handed mirror images, was violated. The balance was inevitably tipped to the left – as a result of which life's proteins today exclusively implement the left form of amino acids.

The presentation will describe how the basic building blocks of life, the amino acids, formed. After a comprehensible introduction to stereochemistry, the author addresses the inherent property of amino acids in living organisms, namely the preference for left-handedness. What was the cause for the violation of parity of amino acids in the emergence of life on Earth? All the fascinating models proposed by physicists, chemists, and biologist will be vividly presented including the scientific conflicts. Meierhenrich will describe the attempt to verify any of those models with the chirality module of the ROSETTA mission, a probe built and launched with the mission to land on a comet and analyze whether there are chiral organic compounds that could have been brought to the Earth by cometary impacts.



The truly interdisciplinary presentation aims to attract pupils, students, and researchers with general interest in natural sciences.

Meierhenrich is professor for Bioanalytical Chemistry and teaches at the University of Nice Sophia Antipolis in France.

Meierhenrich arose in a family of teachers and professors. He studied chemistry at the Philipps-University Marburg and obtained a Ph.D. degree in Physical Chemistry at the University of Bremen by Thiemann. Meierhenrich became Post-doc at the Max Planck Institute for Solar System Research in Katlenburg-Lindau and at the French Synchrotron Center LURE. In 2003 Meierhenrich obtained the habilitation with the academic publication "The Origin of Biomolecular Asymmetry" at the University of Bremen. In 2005 he became full-professor in Bioanalytical Chemistry at the University of Nice Sophia Antipolis in France.

Meierhenrich's name is connected with the identification of amino acids in space. In preparation of the cometary Rosetta-Mission of ESA the so-called interstellar ice was simulated in the laboratory, in which 16 amino acids were identified. Further experiments at the French Soleil Synchrotron and the Danish ISA synchrotron let assume that life's homochirality also originated under interstellar conditions.

In 2011 the Horst Pracejus-Prize of the GDCh awarded Meierhenrich's discoveries on chirality and the asymmetry of life.

Research Networks for Global Sustainability

Ángeles Rodríguez-Peña

Science and Technology have been essential for the development of our modern societies and constitute the basis for economic and societal wealth. After decades of nearly 'unlimited' growth, global sustainability has become THE major challenge for our world of tomorrow. Research cooperation is fundamental to address these problems in a global context and Europe is fully committed to not tackling this endeavour alone.

For 40 years, COST – European Cooperation in Science and Technology – has played a pivotal role in bringing together scientists from all areas and aspects of research and technology development to create long-lasting networks of scientific collaboration. As the sole pan-European intergovernmental framework, and through its inclusiveness, it leverages national research investments based upon researchers' proposals to jointly develop new ideas and initiatives across all scientific disciplines. In doing so, it contributes to the European Research Area and complements national or international funding schemes such as the Framework Programmes. COST specifically encourages free and open thinking which both allows it to identify and tackle emerging problems, well before they are perceived as such, whilst also generating the intellectual potential necessary to develop the smart, sustainable and inclusive societies of tomorrow. It does so at the global level with special attention to providing dedicated networking opportunities for early career researchers– the human capital of our future.

Chemistry and its interface with most scientific disciplines play a central role in tackling and finding viable answers and solutions. COST networks (called Actions) in the 'Chemistry and Molecular Sciences and Technologies' (CMST) domain address many aspects in this context: from bio-nanoscience to modern healthcare; from photosynthetic chips to new catalytic methodology; and from biomass derived sustainable fuels to new kinetic models for cleaner combustion.

COST has shown through examples how research networking is essential to develop solutions towards a sustainable future for our world.

Dr Ángeles Rodríguez-Peña presides over the COST Committee of Senior Officials (CSO).



Dr Rodríguez-Peña has been Special Advisor to the Technical Cabinet of the Secretary General of Innovation at the Spanish Ministry for Science and Innovation since January 2011.

As former Deputy Director General for European Programmes, from 2007 to 2010, she headed the Spanish delegation in the Scientific and Technical Research Committee of the Council of the European Union (CREST) and as a member of the newly-named European Research Area Committee (ERAC). She also represented Spain in the

Strategic Forum for International Science & Technology Cooperation (SFIC), another CREST level created by the Council of the European Union. From 2002 to 2007, she was Deputy Head of International Affairs at the Spanish National Research Council (CSIC) responsible for European Science Foundation (ESF) relations as well as European policy fora such as the Framework Programme.

After obtaining her Ph.D. in Biology in Madrid, Spain, she obtained a postdoctoral fellowship from the European Molecular Biology Organisation in 1981 to join the former Imperial Cancer Research Foundation – now Cancer Research UK – in London, United Kingdom, where she remained as an associated scientist until 1986. She went back to Spain with yet another fellowship for 'brain gain' until she obtained a permanent position at CSIC and started her own research group. Her scientific activities then allowed her to spend time as a visiting scientist at Harvard Medical School in Boston, USA, and at the Karolinska Institutet in Stockholm, Sweden. Between 2002 and 2004 she was a seconded national expert at the Research Directorate-General of the European Commission in Brussels, Belgium.

Teaching is Dr Rodríguez-Peña's hidden love which she is able to combine with her career thanks to an honorary professorship at the Universidad Autónoma de Madrid in Spain obtained in 1995.

Informatics at the crossroads of Academia Europaea

Hermann Maurer

In this talk it will be shown that almost no area within the scope of Academia Europaea remains untouched by tools offered by Informatics. New attempts in the recognition of patterns are one such tool that will deeply influence research in such diverse areas as archaeology, chemistry, biology, medicine and many others. Examples will be presented. The talk will also claim that a strong Academia Europaea can significantly contribute to the well being of society and economy in Europe. To dramatically increase the strength of Academia Europea is only possibly by a combination of pulling top brains of Europe into Academia Europaea, then bringing them to work together, and finally to make results widely available in a form comprehensible to all persons interested. To do this the server AE-INFO at www.ae-info.org can be THE essential tool if Academia Europaea manages to convince enough members to actively contribute, and if some outside funding for improving communicational tools and above all editorial efforts can be obtained. The presentation concludes with a number of highlights from the current AE-INFO server, and explains why a fully computerized nomination procedure for 2012 and beyond is essential.



Study of Mathematics at the Universities of Vienna (Austria) and Calgary. System Analyst with the Government of Saskatchewan, Mathematician-programmer with IBM Research in Vienna. Ph.D. in Mathematics from the U. of Vienna 1965.

Assistant/ Associate Professor for Computer Science at the U. of Calgary 1966-1971. Full Professor for Applied Computer Science at the U. of Karlsruhe, 1971-1977, Visiting Professor at SMU (Dallas), U. of Brasilia, and at the U. of Waterloo; Adjunct Professor at Denver U. 1984-1988; Professor for Computer

Science at the U. of Auckland in 1993 (on leave from Graz), visiting Professor at Edith Cowan U. (Perth, Australia) in 2003. Full Professor at the Graz U. of Technology since 1978, Dean of Studies 2000-2004, Dean of the new school of computer science 2004-2007.

Maurer received a number of awards, among them the Integrata-Prize (for Human Software) in 2000 and the 'AACE Fellowship Award' of the Association for the Advancement of Computing in Education in 2003; he became Foreign Member of the Finnish Academy of Sciences in 1996 and member of the Academia Europaea in 2000, where he was elected chairman of the section Informatics in April 2009. In 2001 he was awarded the "Austrian Cross of Honours for Arts and Science Class I", and also the "Large Medal of Honour of the Province of Styria". He received Honorary Doctorates from the Polytechnical University of St. Petersburg, the University of Karlsruhe, and the University of Calgary.

Maurer is author of twenty books, about 700 contributions in various publications, Editor-in-Chief of the 'Journal of Universal Computer Science' and member of over a dozen Editorial Boards. He is chairperson of steering committees and member of program committees of numerous international conferences. He founded the Conference series ED-MEDIA, eLearn and I-KNOW. He was project manager of a number of multimillion-dollar undertakings including an optical storage device, the development of a colour-graphic microcomputer (MUPID), an electronic teaching system COSTOC, multi-media projects such as "Images of Austria" (Expo'92 and Expo'93), various electronic publishing projects such as "PC Library", "Geotheek", "J.UCS" and "Brockhaus Multimedial"; . He founded or co-founded 20 companies totalling over 1500 employees today, among them the first second generation Web Based Information System Hyperwave. He was involved in the multimedia part of a number of museum projects including Ars electronica Center (Linz, Austria) the Papa Tongarewa (Wellington, New Zealand) and the Odyseum (Cologene, Germany). He participated in or headed a number of national and EU projects. He successfully supervised more than 400 M.Sc. theses and more than 50 doctorates. He has given over 1000 talks world-wide. He has been an outspoken critic of some data-mining activities in the WWW. Since 1980 he has been member and official of the charitable organisation Kiwanis.

The Sweet Smell of Success

Thierry Audibert

An overview of the Innovation within the Fragrances and Flavours Industry.

How fragrances affect perception of product superiority in Consumer Products application within Fast Moving Consumer Goods Industry

Global Head Research & Technology Fragrances
Born in 1960 - Joined Givaudan in 1986

Thierry has an organic chemical engineering degree from Marseille University and over 22 years of experience with Givaudan. In 1986, he joined Roure perfumery school in Grasse before becoming consumer products perfumer in Grasse, Hong-Kong, and then in Geneva in 1991 at the time of the merger with Givaudan.

Thierry moved into sales in 1996 and then as Head of Research and Technology.
He has held his current post since 2009.

Champagne Bubbles

G rard Liger-Belair

At the end of the 17th century, an obstinate and rigorous monk, dom Pierre P rignon (1638-1715), gave birth to the Champagne in the Hautvillers Monastery, close to Epernay city. If the fatherhood of Champagne is still a matter of debate and controversy, everyone should however acknowledge that Dom P rignon devoted his life carefully considering, testing and improving each step leading to the elaboration of a sparkling white wine of high quality. Today, after nearly three centuries, the champagne has undoubtedly become a myth.

The amazing ballet of bubbles in a champagne flute is not foreign to his incredible notoriety. The effervescence animates the champagne, almost bringing it to life... This is now over a decade that we have investigating the physicochemical processes which are the origin of the effervescence and foam of champagne and sparkling wines.

Upon the last decades, the science of bubbles and foams has considerably developed. Physicists, chemists and mathematicians have passion for these fragile objects whose properties are extraordinary. Nevertheless, few scientists chose to focus on bubbles and foams in the case of champagne and other sparkling wines. Yet, concentrated wine in the restricted volume of a champagne flute, all stages in the life and death of a bubble are present. The bubble arises from a submerged particle, develops inside the glass, closing up to the surface, where it inexorably ages, then vanishes. Each of these steps deserves attention because the physicochemical mechanisms occurring in a flute are very subtle.

I invite you to a journey into the heart of a flute of champagne at the scale of the bubble We will unravel each stage of the life of the bubble, starting from its birth, on the wall of the glass, to its

final explosion at the surface, liberating the exhalation of wine aroma.



G rard Liger-Belair was born in Beyrouth (Lebanon) in 1970. He studied Fundamental Physics in Paris VI University. He received his PhD in Physical Sciences in 2001, from Reims University, where he was appointed

Associate Professor in 2002 and full Professor of Chemical Physics in 2007. He is presently the leader of the “Bubble Team” in the Laboratory of Oenology and Applied Chemistry. He has been investigating the physics and chemistry behind the bubbling properties of carbonated beverages (including champagne, sparkling wines, beers and fizzy waters) for several years. He is the author or co-author of many articles and books on this topic. He is the recipient of several scientific award, including the 2004 Award for Professional/Scholarly book in Physics from the Association of American Publishers for his book “Uncorked, the science of champagne”, published in 2004 by Princeton University Press. He also has a passion for micro-photography. His series of “bubble” photographs, at the juncture between pure Science and modern Art, have appeared in numerous exhibitions and art galleries. His current interests include the science of bubbles, foams and thin films, and their broad interdisciplinary applications.

Michael Faraday and the Chemistry of War

Frank James

In 1829 Faraday was appointed a member of the Resident Scientific Committee of the British Admiralty and Professor of Chemistry at the Royal Military Academy, Woolwich. For the Admiralty Faraday quickly became their only scientific adviser in which role he commented on the chemical aspects of many military projects including the plan to use ships filled with burning sulphur to attack the Russian Baltic naval fortress of Cronstadt during the Anglo-French war against Russia in the mid-1850s. At the Royal Military Academy the future officers of the Royal Artillery and Royal Engineers for two decades learnt their chemistry from Faraday. This talk will consider how effective or otherwise was the contribution of Faraday and other scientific figures to developing Britain's military capability and the impact this had on scientific practice in the nineteenth century.



Frank James is Professor of the History of Science at the Royal Institution, where he is also Head of Collections and Heritage. His main research concentrates on the physical sciences in the nineteenth century and how they relate to other areas of society and culture, for example art, business, media, religion, technology and the military. He is editor of the *Correspondence of Michael Faraday*, of which five volumes (out of six) have been published.

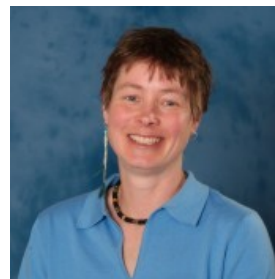
He has edited a number of collections of essays including *'The Common Purposes of Life'* – a set of essays on the Royal Institution. His *Michael Faraday: A Very Short Introduction* was published by OUP in November 2010.

He has been President of the Newcomen Society for the History of Engineering and Technology, the British Society for the History of Science and the History of Science Section of the British Science Association. He is chair of the National Organising Committee for the XXIVth International Congress for the History of Science, Technology and Medicine to be held in Manchester in July 2013 and was recently elected a Corresponding Member of the Académie internationale d'histoire des sciences.

Chemistry in the News: British newsreels and local television during the 1950s and 1960s

Sally Horrocks

During the 1950s and 1960s stories about science, including chemistry, were a regular feature of newsreels, cinemagazines and television news. These representations of science frequently commanded far larger audiences than the specialist programming which has more frequently been studied by historians and alongside them played a role in shaping public perceptions of science. This paper examines the ways in which chemists and chemistry were represented to the British public through the news during a period of growing affluence and prosperity. It argues that the image of chemistry presented here was overwhelmingly positive and peaceful, contributing to improved consumer products and safeguarding the public. Chemistry was firmly embedded in the realm of everyday life and domestic modernity. Chemists themselves emerge as ingenious and understated heroes of the modern age, willing to accept great responsibility but looking just like ordinary people.



Sally Horrocks is based in the School of Historical Studies at the University of Leicester. She has published on the history of industrial research and development and is currently completing a monograph on women scientists in Britain from World War II to the Sex Discrimination Act.

Recently she has been appointed as senior academic advisor to the Oral History of British Science, a National Life Stories project in conjunction with the British Library and she is currently President of the British Society for the History of Science.

Transforming Matter, Refining the Spirit: Alchemy, Music and Experimental Philosophy around 1600

Penelope Gouk

This paper explores the relationship between alchemy, music, and experimental philosophy as it was understood by early modern philosophers who sought to discover the hidden powers of nature and the ultimate principles of matter. In particular it focuses on the beliefs and practices of a small group of alchemists around 1600 who identified themselves with Paracelsus, the German physician who earlier in the sixteenth century had advocated a radical programme of medical and social transformation that coincided with the upheavals of the European Reformation. These Paracelsians conceived their alchemy in profoundly Christian terms and sought to acquire wisdom through revelation by the Holy Spirit (spiritual alchemy), not simply through experiments (material alchemy). A famous engraving of 1595 depicts the theosopher and physician Heinrich Khunrath at work and prayer in his alchemical “laboratory”, a word that he coined to embody this dual process. However, although this image has been used by historians of science to illustrate the overlap between magic, religion and the emerging experimental philosophy, little of substance has been said either about the musical instruments that are prominently displayed in the foreground of this picture, or the inscription below that recommends sacred music as a cure for sadness and a remedy against evil spirits. Starting with the instruments themselves and moving to the harmony that they both create and embody, my paper explains the transformative role that music played in Khunrath’s mental universe. At one level I show how actual music, as embodied sound, was understood to move the spirits that mediated between body and soul, and therefore could be used not only to counteract the melancholic effect of too much

study but also to elevate the soul towards the divine. At a more fundamental level I discuss the musical models which were used as a means of conceptualising the activity of the essential spirit inherent in matter that was central to his alchemical practice. Finally, I argue that the Paracelsians’ search for soul medicines was not just about healing individuals but part of the broader alchemical quest to restore harmony to the social body in the face of political and religious fragmentation.



Penelope Gouk is currently an Honorary Research Fellow in History at the University of Manchester. She took her doctorate at the Warburg Institute in London on the subject of ‘Music in the Natural Philosophy of the early Royal Society’ and went on to hold a series of postdoctoral research fellowships at Oxford and Manchester before becoming a Senior Lecturer in History at Manchester. Dr Gouk has wide-ranging and interdisciplinary interests in early modern European intellectual and material culture, most of which stem from her fascination with sound as an object of scientific and historical enquiry. This research has notably focused on the use of musical models in early modern medical and scientific thought and on musical healing from a cross-cultural perspective. Her publications include *Music, Science and Natural Magic in Seventeenth-Century England* (1999) and the edited volumes *The Second Sense: Studies in Hearing and Musical Judgement from Antiquity to the Seventeenth Century* (co-edited, 1991); *Musical Healing in Cultural Contexts* (2000); and *Representing Emotions: New Connections in the Histories of Art, Music and Medicine* (co-edited, 2005). She is currently working on a book about early modern understandings of music’s effects and how these changed between the Renaissance and the Enlightenment.

Genii, Homunculi and Golden Pots. Chemistry and Poetical Experiments around 1800

Wolfgang Pross

Before Antoine Laurent Lavoisier discovered oxygen, leading natural philosophers like Benjamin Franklin or Joseph Priestley had already assigned to chemistry a leading strategic role as to the future development of natural sciences. The publication of Lavoisier's *Method of Chemical Nomenclature* (1787) and the *Elementary Treatise on Chemistry* (1789) provided the basis for a science that helped to reconsider established concepts of mass and matter. But the professionalization of chemistry did, in the eyes of the public, neither eliminate the heritage of alchemistic notions nor prevent haphazard generalizations of scientific ideas; on the contrary, the popular vitalistic concepts of Brownism or Mesmerism were eager to avail themselves of the achievements of the new discipline. Chemistry seemed to promise to solve the riddles of organic life and to help to sustain an anthropocentric outlook on the animal kingdom. A major case in this respect was Alexander von Humboldt's allegory *Vital Force or The Rhodian Genius* (1795), where the author drew a sharp line between life forces and inanimate matter. Despite the fact that Humboldt retracted this view very quickly, his point was taken up by some important literary texts, as by Goethe in his *Elective Affinities* (1809) or in the Homunculus-episode in part II of *Faust* (publ. 1832). Even E. T. A. Hoffmann's famous romantic tale of *The Golden Pot* (1816) seems imbued, in spite of going back to the tradition of Paracelsus, with problems chemistry posed to the public apperception of the new science.



Wolfgang Pross studied Modern Languages and Philosophy at the Universities of Munich, Pavia (Italy) and Oxford. In 1974 he took his Ph.D. with Ludwig-Maximilians-University Munich, with a study on the poet Jean Paul Friedrich Richter. In 1974/75, he was Volkswagen Research Fellow at St Antony's College, Oxford. From 1975 to 1988 he was teaching at the German

Institute at the University of Munich and held guest professorships at the universities of Giessen and Vienna. In 1986 he passed his habilitation for German and Comparative Literature in Munich, with a study on the concept of organism in the work of Kant's pupil and Goethe's friend Johann Gottfried Herder. From April 1988 to January 2011, he has been Professor at the University of Bern (CH); from 1999 to 2001 he was Dean of the Philosophical Faculty of his University.

In his research, he has been focussing on Enlightenment in European literature, culture and philosophy of history, writing on Diderot, Goethe, Albrecht von Haller, Herder, Lichtenberg, Metastasio, Rousseau and Spinoza, further on Mozart and the theatre of 18th century; several of his essays dealt with the history of Italian literature from Renaissance to 19th century. Seminal studies treated the relationship of literature and social and natural sciences between 1600 and 1850 and questions of historical anthropology, culminating in an extensively commented edition of Herder's *Ideas towards a Philosophy of the History of Man* (publ. in 2002, 2 vols.).

Wolfgang Pross lives since his retirement in Munich.

The Beauty of Chemical Imaging

Giorgio Paolucci

In the last decade, the methods to map the chemical composition of matter have seen terrific developments, both in the space resolution, which is now of the order of a few nanometers, and in the ability to distinguish different chemical species. In particular, the development of modern synchrotron radiation sources allows to understand the inner secrets of the arrangement and motion of atoms and molecules in matter by directly mapping their positions and properties. Illustrative examples of the present research in these fields will be presented and commented.



Giorgio Paolucci got his “Laurea” in physics at the University of Rome “Sapienza” in 1981.

After a short period at the University of Calabria he spent two years at the Fritz Haber Institut der Max Planck Gesellschaft in Berlin (Germany), working in the group of prof. Alexander M. Bradshaw. In 1984 he moved to Trieste, in the group of prof. Renzo Rosei. Until 1987 he was involved in the start-up of the TASC national laboratory. In 1987 he joined the project for the Elettra national synchrotron radiation facility. He coordinated the design and operation of the SuperESCA beamline until the year 2000. From 1998 to 2000 he also coordinated the surface science division of Elettra. From January 2001 to March 2006 he has been director of the Experimental Division of the laboratory. Since January 2006 he is member of the strategic board of the laboratory. In the period 2006-2011 he was Research Project Coordinator. Presently he is in charge of International Relations and of the User Programs. GP’s main scientific activity is in the field of photoelectron spectroscopy of surface species. He published over 130 papers on refereed journals.

He has been advisor of several students for their thesis and lecturer of Solid State Physics at the Catholic University of Brescia. Presently he lectures the course “Applications of Synchrotron Radiation” at the University of Trieste. In 2000 GP was awarded the honor of “Ufficiale” of the “Ordine al Merito della Repubblica Italiana” by the president of Italy, Mr. Carlo Azeglio Ciampi.

Chemical Analysis and Painted Colours: the Mystery of Leonardo's Sfumato

Philippe Walter

At the end of the 15th century, Italian painters explored the new effects made possible by the use of the oil medium. They created a sense of depth and relief following the Flemish technique of glazes, which allowed the spreading of very thin and translucent layers, rich in medium and with low pigment content. A striking example is given by the realisation of the shadows in the paintings of Leonardo da Vinci: the Master used the so-called "sfumato" technique based on the use of glazes to obtain a 'smoky' aspect for the creation of flesh tones, with very subtle contours that seem to have no hard edges. This technique has become famous nowadays, mainly because of the perfection of the art works it has allowed to achieve.

Analytical characterisations of glazes on the paintings of Leonardo and his followers allow us to improve our knowledge about this technique. As sampling of so high valuable painting areas is impossible, then an experimental non invasive approach is required. X-Ray fluorescence measurements were realised on seven paintings of Leonardo da Vinci preserved in the Louvre's museum. This technique is widely used for qualitative determination of the pigments but it is very difficult to interpret the data quantitatively in the case of layered structures such as easel paintings.

In order to access to the composition and thickness of each layer of the carnations, we have developed a new procedure, based on the use of differential X-ray attenuation and fluorescence. Beyond the characterisation of the palette, we obtained in depth information on how Leonardo modelled his shadows. Comparisons between the different paintings of Leonardo, and also with contemporaries' works of art, permit to highlight specific features in the Leonardo technique.



Dr. Philippe Walter is research director at the Center for research and restoration of the museums of France (C2RMF-CNRS), located in the Louvre museum in Paris. He is developing new analytical tools adapted to the study of ancient materials, with the ion beam analysis facility AGLAE in his laboratory, but also with synchrotron radiation and home-made portable instruments using X-rays. His main research interests are focused on the use of analytical

chemistry to understand the development of chemistry for health and beauty during Antiquity or the elaboration of new painting materials, for instance during the Renaissance period. He received a MS degree in physics at the Ecole Normale supérieure de Lyon and a PhD degree in geochemistry from Paul Sabatier University, Toulouse, France in 1993. He organized exhibitions in Cairo (2002) and Paris (2008) to show to the general public the applications of his works for the understanding of the history of body care and cosmetics. He belongs to the CNRS since 1995 and he has received in 2008 the silver medal of this French research organization.

Philippe Walter, Centre de recherche et de restauration des musées de France, CNRS - UMR171, Palais du Louvre, Paris, France

Chemistry and Archaeology – 200 Years of Interaction

Ernst Pernicka

The application of chemical techniques for the investigation of materials and fabrication methods of archaeological objects reaches back to the beginning of modern analytical chemistry at the end of the 18th century. This was the time when the physical-chemical laws were formulated, that formed the basis for quantitative chemical analyses. The materials studied included archaeological objects like coins from the beginning on. It is also the period when public museums, like the British Museum in London (1759) or the Louvre in Paris (1791) were first established. The discovery of Pompeii in 1748 triggered the interest in daily life and handicraft in antiquity.

Insofar it may not come as a complete surprise that the first quantitative analysis of any alloy by Martin Heinrich Klaproth at the end of the 18th century was performed on a Roman coin. From then on the idea developed that the chemical composition of metals could be used for dating and for provenance determination. Although the basic concepts were developed then it took almost another century until the development of physical methods for chemical analysis allowed multi-element analyses on small samples with large throughput. It is no coincidence that this method, atomic emission spectrometry, was immediately applied to archaeological finds. Large analytical programs were started with high hopes. These were seemingly disappointed after the Second World War as no clear conclusions could be drawn. In this situation new chemical techniques like isotope provide new impetus for such studies so that after almost two centuries it has indeed become possible to determine the provenance of materials and even people to a large extent. This will be demonstrated on a few examples like Troy and the Sky Disc of Nebra.



Ernst Pernicka is professor for Archaeometry and Archaeometallurgy at the Institute of Prehistory and Medieval Archaeology at the University of Tübingen since 2004. Born in 1950 in Vienna, Austria, he studied chemistry and physics at the University of Vienna, completing his studies with a PhD on medieval glazed pottery from Iran and Afghanistan. He spent some twenty years as senior researcher at the Max-Planck-Institute for Nuclear Physics at Heidelberg, specializing in cosmochemistry and archaeometry. He also taught at the University of Heidelberg where he received his habilitation in 1987 with a work on ore deposits in the Aegean and their exploitation in antiquity. 1997 he moved to the University of Technology Bergakademie Freiberg in Saxony as full professor for archaeometallurgy. His major research interest is the development and application of chemical and physical methods to various topics and materials of cultural history. These include methods of authentication of antiquities. The focus of his present research is the origin and development of metallurgy in the Old World. Besides teaching at the University of Tübingen Ernst Pernicka is also scientific director of the Curt-Engelhorn-Zentrum Archäometrie in Mannheim.

When Physical Chemistry Meets People: Molecular Gastronomy, its Applications in Education, Technology and Technique (*with practical demonstrations*)

Hervé This

Today, as there is much confusion between science and technology, it is useful for all parts of society to understand clearly what science is, and how technology is different. This has importance both for funding science, but also for the organization of sound relationship between scientific laboratories and the industry, and also for a better appreciation of the advances of both fields.

In no field is this difference more important than for food, where the situation is paradoxical. In homes, citizens cook almost as they would have done centuries ago, spoiling up to 80 % of the consumed energy for processes whose goal was never rationalized. A lot of toxic compounds are consumed with no reluctance, and even when the public is being told of the risks, no behavior change is achieved. At the same time, when the food industry is using additives which security was extensively studied, in quantities much lower than those consumed at home, consumer fears being poisoned. All this is based on "ilchemistry", the ignorance of the wonderful world of molecules, compounds, processes... Indeed, much has to be done in order to improve this situation, and even among chemists. One should probably make a distinction between chemistry, as a science, looking for the mechanisms of phenomena, and technology, i.e. improving technique using the results of science (not only). It should be explained that there will never be any "chemistry" in the kitchen, or in the plate, as chemistry, producing knowledge, does not produce food!

In this regard, the scientific discipline called "Molecular Gastronomy" should be helpful from many point of views. First, it can produce knowledge on culinary transformations. This scientific knowledge can be used by technology, and technique later on, but it can also change the mind of the public. A new appreciation of food can be the result of scientific explorations of cooking. Then, educational programmes based on Molecular Gastronomy can be introduced at any level of education, general or professional. This will certainly lead to new practices.

In restaurants, the culinary trend called Molecular Cuisine is still developing, and a new way of cooking called "Note by Note Cuisine" is being introduced: it means cooking with pure compounds, such as acoustic music is using only pure waves. The first Note by Note meals were produced during the last 3 years, and one Note by Note dinner was even offered to about 150 guests the day before the Opening Event of the International Year of Chemistry. New moves are in progress.



Hervé This, Chemist at INRA and Professor at AgroParisTech, is Director of the Molecular Gastronomy Group, in the Laboratory of Chemistry, AgroParisTech,

After his degree from the Ecole Supérieure de Physique et de Chimie de Paris (ESPCI Paristech) and graduation in Literature (University Paris IV), he began his studies in the laboratory that he had at home, while he was pursuing a career in scientific publishing, first at *Belin Publishing inc*, then at *Pour la Science*, the French Edition of *Scientific*

American. At the same time, he was collaborating to *France Culture*, and was Scientific Director of the scientific TV series *Archimedes (Arte)* and *Pi=3.14 (France 5)*.

He created the scientific discipline called Molecular Gastronomy in 1988, with Nicholas Kurti (1908-1998). After his PhD (1995) on *La gastronomie moléculaire et physique*, he was invited by Jean-Marie Lehn to conduct his studies at the Laboratoire de Chimie des Interactions Moléculaires, of the Collège de France.

He moved to this lab full time in 2000, being appointed by INRA.

In April 2006, while he was moving to AgroParisTech, the French Academy of Sciences asked him to create *Fondation Science & Culture Alimentaire*, of which he was appointed the Scientific Director. Hervé This has been frequently requested by French Ministries to develop projects: new curricula for teaching culinary practices, new ways of teaching science in schools and in colleges, creating an *Advanced Studies Institute for Gastronomy...* Member of many committees, he runs monthly Seminars of molecular gastronomy and Courses on Molecular Gastronomy, delivering many lectures. He writes regular columns in journals, and he is the author of several books. Honorary member of various culinary Academies, Member of the Académie d'Agriculture de France; Member of the Académie de Stanislas; Member of the Royal Academy of Sciences, Arts and Letters of Belgium; Member of the European Academy of Science, Arts and Letters, he is the recipient of many awards such as the Franqui professorship (University of Liège), the Grand Prix des Sciences de l'Aliment by the *International Association of Gastronomy*. Hervé This is Officer in the Ordre des Arts et Lettres, Officer in the Ordre du Mérite Agricole, Officer in the Ordre des Palmes Académiques, and Knight in the Order of the Légion d'Honneur.

CHAIR PERSONS

Lars Walløe

**Welcome, Lecture: B. Bigot
and Closing Remarks**



Lars Walløe is Professor emeritus of Physiology at the Faculty of Medicine of the University of Oslo where he has previously also been professor of applied statistics and cybernetics. He has also been part-time Research Director at the Institute of Marine Research in Bergen and part-time Professor at the Department of Arctic Biology at the University of Tromsø. His current research (as emeritus) is in the field of cardiovascular control mechanisms in man and in other large mammals. He has previously developed non-invasive ultrasound instruments for such studies, but he has also published on neuronal nets, statistical methodology, historical demography, population biology, and reproductive epidemiology.

Professor Walløe is President of Academia Europaea and Scientific Adviser to the Norwegian Government on Marine Mammals. He has been President of the Norwegian Academy of Science and Letters, Chairman of the Norwegian Population Panel, Director of the Norwegian research program on acid rain, Chairman of the Norwegian Research Board for Environment and Development and Chairman of the Standing Committee for Life and Environmental Sciences of the European Science Foundation.

Anne Buttimer

Heinz-Nixdorf Erasmus Lecture: M. Castells



Anne Buttimer is currently Emeritus Professor of Geography at University College Dublin. She received her Ph.D. in geography at University of Washington (Seattle) in 1965 and since then has held research and teaching positions in Belgium, Canada, France, Scotland, Sweden, and USA. Anne has authored several books and articles on subjects ranging from social space and urban planning to the history of ideas and environmental policy. Some of her work has been published in translation to Dutch, French, German, Japanese, Latvian, Polish, Portuguese, Russian, Spanish, Swedish, and Russian. Her academic interests include the history and philosophy of science, urban and social geography, migration and identity, environmental experience, nature and culture, environment and sustainable development, human dimensions of global change. She has received many awards and honours, including a post-doctoral fellowship from the Belgian American Educational Foundation 1965-1966; Fulbright-Hays Visiting Professor in Social Ecology to Sweden 1976; Association of American Geographers Honors Award 1986; Ellen Churchill Semple Award, University of Kentucky 1991; Royal Geographical Society (UK) Murchison Award 1997; Royal Scottish Geographical Society Millenium Award 2000; She served President of the International Geographical Union 2000-2004 and was appointed Chair of the Social Sciences Section of Academia Europaea 2010 and member of the Scientific

Advisory Board for the Austrian Academy of Sciences 2010. Doctor, *honoris causa*, University of Joensuu, 1999; Doctor *honoris causa*, Tartu University 2004; August Wahlberg Medal in Gold from King of Sweden 2009.

Alain Fuchs

Session 1: Gérard Ferey



Alain Fuchs has been appointed as president of CNRS by the Council of Ministers on January 20th, 2010, on the recommendation of the Minister of Higher Education and Research. He will take over from Catherine Bréchnignac, whose term has come to an end. Dr. Fuchs, Senior Professor, former CNRS Senior Researcher, has been director of the

Ecole Nationale Supérieure de Chimie de Paris (ENSCP, Chimie ParisTech) since January 1st, 2006.

Born in Lausanne (Switzerland) on April 10th, 1953, Dr. Fuchs obtained his degree at the École polytechnique fédérale de Lausanne. A chemical engineer, he completed a PhD at Paris-Sud University in Orsay in 1983.

In 1995, he became a Senior Professor of Chemistry at Paris-Sud University. He directed the Chimie physique des matériaux amorphes (Physical chemistry of amorphous materials) laboratory from 1997 to 2000. He then founded the Orsay Laboratoire de chimie physique (Laboratory of physical chemistry), which he directed until 2006. Dr. Fuchs was also a visiting professor at the University of California in 1999.

His field of research is modelization and molecular simulation of the behavior of confined fluids, and has resulted in a number of industrial collaborations.

From 2004 to 2007, Dr. Fuchs was President of Section 13 (Physical Chemistry--Molecules, Environments) of the National Committee of Scientific Research, which is based at CNRS. A

former member of the scientific committee of CNRS's "Science and citizens" program (from 1997 to 1999), Dr. Fuchs also served as Senior Advisor on calculation to the CNRS Chemistry Department (1997-2003).

An elected member of the CDEFI permanent (Conférence des directeurs des écoles françaises d'ingénieurs) since 2007, he has also been on the educational board of INSTN (Institut national des sciences et techniques nucléaires), which is affiliated with the CEA (French Atomic Energy Commission), and of the Comité de coordination des formations en sciences et technologies du nucléaire since 2009. A former member of the scientific board of CECAM Lyon (Centre européen de calcul atomique et moléculaire) from 1999 to 2008, he was also president of the physical chemistry division of the Société française de chimie and the Société française de physique from 2002 to 2005.

Dr. Fuchs is a knight of the Order of Academic Palms (1996), member of the Board of directors of the International Adsorption Society, and Fellow of the Royal Society of Chemistry.

Dominique LANGEVIN

Session 1: Vivian W.W. Yam



Dominique Langevin is Professor and Director of Research, CNRS Laboratory of Solid State Physics, University of Paris-Sud, Orsay, France. Professor Dominique Langevin is an experimenter and an observer who is fascinated with surfaces. Throughout her scientific career, virtually all her research activities have been centered on the dynamic behavior of interfaces, a field that is relatively unexplored due to the lack of easy-to-use experimental techniques. She is recognized as one of the leading scientists in the field of soft matter and surface science, although the impact of her contributions goes far beyond. Over the years, the practical applications of her work have been extremely valuable for industry in a wide range of sectors, from petroleum to laundry detergents, milk proteins, hair products, nuclear waste treatment, and even the construction of a foam module for the International Space Station.

Dominique Langevin began her career in the Physics Laboratory of the Ecole Normale Supérieure in Paris in 1967, where she studied light scattering at the liquid surface. This was an entirely new area of study, to which she made pioneering advances at the theoretical level and developed much of the experimental method. She then turned to more complex fluids, applying her ideas and methods to liquid crystals. She determined, for the first time, the molecular orientation of liquid crystals at liquid interfaces.

She and her team clarified the unusual wetting behavior of microemulsions, bringing important insights to the understanding of ultra-low surface tension, of particular interest to the petroleum industry for oil recovery. Dominique Langevin's microemulsion studies in many ways demonstrated the importance of the surfactant monomolecular layer at the interface between oil and water. In her work on macroscopic water-air and water-oil interfaces, she has obtained novel experimental observations and developed theories to interpret them. Since the 1990s she has made many key contributions to the understanding of foams, with numerous applications for industry.

Dominique Langevin is the author of some 150 scientific publications and has received a number of prizes and awards. She has played an instrumental role in developing European level networks and consortia, and continues to be a scientific leader as well as a scientist.

Sierd CLOETINGH

Session 1: Sophie Jullian



Professor Sierd Cloetingh is Royal Netherlands Academy Professor of Earth Sciences at Vrije University Amsterdam, The Netherlands, and the President of the International Lithosphere Programme.

Sierd Cloetingh studied geology and geophysics at the University of Groningen, The Netherlands, and continued with his PhD in geophysics in the Utrecht University, The Netherlands.

In 1988 he was appointed professor of Tectonics at the Vrije University, The Netherlands. Starting in the 1990's Cloetingh developed collaborative research programmes with scientists from Eastern Europe, with a special interest in fostering young researchers. Out of the 50 students that completed their PhD under Cloetingh's supervision 18 came from outside The Netherlands.

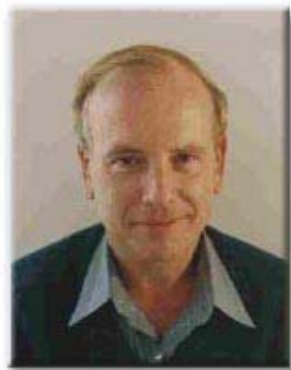
In 1994 he was elected member of Academia Europaea and became chair of its Earth and Marine and Earth and Cosmic Sciences sections. In 2008 he became Academia Europaea's Vice-President. Cloetingh chairs the Scientific Committee of ESF TOPO-EUROPE, a European Large Scale Collaborative Research Programme (EUROCORES). From 1998 to 2000 he was president of the European Geophysical Society. He is member of the Scientific Council of the European Research Council (ERC), the Royal Netherlands Academy of Arts and Sciences and foreign member in several academies, for example the Royal Norwegian Academy of Sciences, Norway, Heidelberg Academy, US, and the royal Danish Academy of Science, Denmark.

Cloetingh's research has focused on tectonics, lithosphere dynamics, sedimentary basin evolution, intraplate deformation

and sea level rise. He has an extensive publication record, including over 250 scientific papers in international peer-reviewed journals. Cloetingh is also the chief editor of the international journal "Global and Planetary Change".

Alexander Levitzki

Session 2: Maxime Schwartz



In 1970, Alexander Levitzki became a Senior Scientist at the Department of Biophysics, Weizmann Institute of Science. In 1974, he became an Associate Professor at the same institute.

In 1974, he became an associate Professor at the Hebrew University of Jerusalem. In 1976, he was promoted to Professor of Biochemistry at the Hebrew University of Jerusalem. He has

been Visiting Scientist at the National Cancer Institute, and Fogarty International Scholar, NIH, Bethesda, Maryland, Visiting Scholar at Stanford University in California, Visiting Professor at the University of Oregon (Eugene) and Visiting Professor at the University of California, San Francisco. He is also a member of the Israel Academy of Sciences and Humanities and was the head of its science section.

Research

Alexander Levitzki is known for developing specific chemical inhibitors of cancer-induced protein kinases. He was the first to develop systematically tyrosine phosphorylation inhibitors (tyrphostins) against a wide spectrum of protein tyrosine kinases. Levitzki demonstrated (1993) that such an inhibitor of Bcr-Abl kinase induces death of chronic myeloid leukemia (CML) cells. This work led to the development of Gleevec by Novartis (1996) that is currently used, with great success, for therapy of patients afflicted by this disease. Levitzki also pioneered the inhibitors of EGF receptor, PDGF receptor, Her-2/neu, Jak-2, VEGFR and peptide based cell permeable PKB/Akt

inhibitors. Levitzki also showed that PDGFR kinase inhibitors (PDGFR directed tyrphostins), released from nanoparticles or from a drug eluting stent can be used to inhibit restenosis after balloon angioplasty.

In 2006 his research team developed a method for inducing brain tumor cells to "commit suicide".

Awards

In 1990, he was awarded the Israel Prize, in life sciences (following in the footsteps of his father, Jacob Levitzki, who had received the prize, for exact sciences, in 1953).

In 2005, he was awarded the Wolf Prize in Medicine for "pioneering signal transduction therapy and for developing tyrosine kinase inhibitors as effective agents against cancer and a range of other diseases".

Margaret Buckingham

Session 2: Uwe Meierhenrich



Margaret Buckingham obtained her MA and PhD at the University of Oxford. In 1971 she moved to France where she is presently professor and a CNRS Research Director.

Since 1987, Buckingham has served as the head of the Molecular Genetics of Development Unit at Institut Pasteur, where she had completed a post-doc in Prof. François Gros' lab.

More recently, she served as Director of the Department of Developmental Biology at the same institute and chaired the Development Biology and Reproduction section of CNRS from 2001 to 2004. Buckingham is member of several scientific organizations such as EMBO, the French Academy of Sciences and Academia Europaea.

She was awarded several prizes and honors including:

- Boehringer Prize of European Federation of Biochemistry Societies (1980)
- Jaffé Prize from the French Academy of Sciences (1990)
- Médaille d'argent du CNRS (1999)
- Chevalier de la Légion d'Honneur (2002)

Gilberte Chambaud

Section 3: Angeles Rodriguez Peña

Section 3: Hermann Maurer



Gilberte Chambaud graduated from Ecole Normale Supérieure - Fontenay aux Roses, F. In 1972, she joined the academic staff of Ecole Normale Supérieure - Paris. She obtained a Doctorat ès Sciences at Université Pierre and Marie Curie (Paris 6) in 1980. She was promoted to full Professor at Ecole Normale Supérieure - Paris in 1987. She was Guest Professor for one year at University of Frankfurt am Main (Germany) in 1991. She joined the University of Marne-

la-Vallée in 1992 as Professor in Chemistry.

She was Deputy Director at the Chemistry Department of the Ministry of Education in 2003-2005.

From 2006 to 2011, she was Scientific Director of Chemistry at CNRS (National Center for Scientific Research, Paris).

Her research activities concern theoretical Molecular Physical Chemistry. She gave reliable predictions in terms of reactivity, stability and identification of intermediate molecular species, structural determination of molecular systems and accurate spectroscopic characterisation. Her main results concern the determination of electronic structures and properties, using highly correlated electronic methods, and the determination of rovibrational spectra. A large part of her activity is also devoted to the structure and spectroscopy of metallic compounds (MX, MX₂). She was able to determine, for the first time, the interaction between successive layers of molecules physisorbed on metal surfaces. She largely contributed to the development of codes for

rovibrational spectroscopy (determination of energy levels and transition intensities) involving all the dimensionality of angular momenta couplings. Recently, she directed her efforts toward mechanical and piezoelectric properties of nanowires of semiconductors such as ZnO, AlN and doped systems.

Author of more than 120 publications, 150 Conference Proceedings and 8 books in Physical Chemistry and organizer of 5 International Conferences, she is regularly invited to give talks at national and international conferences.

Coordinator of the European Network of Theoretical Chemistry Laboratories (THEOCHEM II) in 2000-2003. President of the Education Division of the French Chemical Society in 2000-2004. Since 2005, she has been member of the European network "Tuning Project" for the European harmonization of the University trainings at Bachelor and Master levels. Since 2006, she has been the Director of the French Network of Theoretical Chemistry that she created.

Agnès Jacquesy

Session 4: Thierry Audibert

After a PhD at the University of Nancy, and a post-doctoral stay at MIT as research associate, Dr Rose Agnès Jacquesy created, with her husband, a laboratory in Poitiers, mainly devoted to natural products and reactions in superacidic media. She joined Paris as Deputy-Director of the Chemistry Department of CNRS (1983-1988) and of the Environment Programme (1981-1983).

She was in charge of the Research Center of Ecole Polytechnique (24 labs, 1988-1990), and then with the management of CNRS activities in Lyon (about 100 labs, 1991-1995).

Back to Paris, first as Deputy-Director of the Life Sciences Department of CNRS, she finally joined the Ministry of Research as Deputy-Director of the Department “Energy, transport, environnement and natural resources”, mainly in charge with marine and agricultural research.

Since her retirement, she organised many scientific events and she is still member of several comities of the Ministry of Ecology.

She is Knight in the Ordre de la Légion d'Honneur.

Paul Rigny

Section 4: Gérard Liger-Belair



Paul Rigny is a physical chemist who paid particular attention to the dynamics of molecules in solid molecular compounds, from inorganic fluorides to lyotropic liquid crystals. He developed this research in the nuclear research center of Saclay, at the time a temple of nuclear magnetic resonance and relaxation. He then moved to research management as chief of the Physical chemistry Department in Saclay and then as director of the Department of Chemistry of the CNRS. Now retired, he is chief editor of *L'Actualité Chimique*, the general journal of the Société Chimique de France.

Graham Hutchings

Section 5: Franck James



After graduating (1972) and obtaining his PhD in biological chemistry (1975) at University College London, G.J. Hutchings spent his initial career (1975-1984) in industry with appointments in both research and production at ICI in the UK and AECI in South Africa. In 1984, he started an academic career at the University of the Witwatersrand before returning to the UK at the University of

Liverpool in 1987. He was Professor and Deputy Director of the Leverhulme Centre from 1995 to 1997. He was invited to become Professor of Physical Chemistry at Cardiff University in 1997 and was until 2006 the Head of the School of Chemistry. Graham Hutchings is presently the Director of the Cardiff Catalysis Institute and Pro-Vice Chancellor Research at Cardiff University.

Graham Hutchings has obtained numerous awards worldwide. In 2009, Professor G.J. Hutchings was elected Fellow of the Royal Society.

Professor G.J. Hutchings works in heterogeneous catalysis. He has extensive collaborative links within the UK, (Imperial College, Cambridge, Birmingham, Liverpool, Glasgow), as well as internationally (Fritz Haber Institute in Berlin, Lehigh University, USA, University of Witwatersrand, South Africa).

The research of his group which collaborates extensively with the industry (including Johnson Matthey, BP, Sasol BNFL, Dow) focuses on:

- The study of gold nanocrystals as novel active heterogeneous catalysts and their characterisation.

- The design of selective oxidation and hydrogenation catalysts and their study using in situ spectroscopy.
- The design of enantioselective heterogeneous catalysts, in particular using chirally modified zeolite catalysts

Peter Goelitz

Section 5: Sally Horrocks



Peter Goelitz was born in 1952 in Eschwege, Germany. He studied chemistry in Goettingen (PhD 1978 with Prof. de Meijere). 1978/1979 postdoc at IBM in San José, California (with Dr. Robert D. Miller). He joined the editorial team of *Angewandte Chemie* in October 1980. In November 1982 he was promoted to become the Editor-in-Chief of *Angewandte Chemie*, a position he has held ever since. In 1988 Peter Goelitz became the founding editor of *Advanced Materials* of which he was the Editor-in-Chief until the end of 1991. In 1995 he founded, together with Prof. J.-M. Lehn, *Chemistry - A European Journal* of which he was the Editor-in-Chief until he stepped down at the end of 2001. He is the founding editor of *ChemBioChem* and *ChemPhysChem* (2000), *Small* (2005), *ChemMedChem* and *Chemistry - An Asian Journal* (2006), the latter one in close cooperation with Prof. R. Noyori and the chemical societies of China, India, Japan, and Korea. More recently *ChemSusChem* (2008) and *ChemCatChem* (2009) were founded under his leadership.

Most of the above-named new journals are published in close cooperation with or on behalf of scientific societies; e.g. *Angewandte Chemie* is owned by the German Chemical Society, *Chemistry - A European Journal* is co-owned by 16 European chemical societies, and *Chemistry - An Asian Journal* by 12 chemical societies in Asia and the Pacific.

Peter Goelitz has developed *Angewandte Chemie* from a predominantly German journal to a truly international one in which today most published manuscripts are from the USA (1.), Germany (2.), and Japan (3.). The many innovations at *Angewandte Chemie* have become models for the development of chemistry journals around the globe. In recognition of his achievements Peter Goelitz received the Literature Prize of the German Chemical Industry Association (1991), the Gmelin-Beilstein Medal of the German Chemical Society (2000), the President's Award by John Wiley & Sons (2000), and the Medal of the French Chemical Society (2005), and the Burckhardt Helferich Award of the University of Leipzig (2008). He is a member of numerous professional societies.

Cinzia Ferrini

Introduction to Sessions 6, 7 and 8



Cinzia Ferrini is Aggregate Professor in History of Philosophy at the University of Trieste (2000), specialized in Modern Philosophy, Classical German Philosophy and History of Ideas. Graduation (1982) and Ph.D. (1989) at the University of Rome 'La Sapienza' on Hegel's category of Measure and his Philosophy of Nature. Visiting doctoral student at SUNY, Stony Brook (USA, 1985-86). Temporary research and teaching position at the Erasmus Universiteit Rotterdam (1988-9), Scientific assistant at the University of Bern (1992-3), A. v. Humboldt fellow at the University of Wuppertal (1994-5), Konstanz (1996-9) and Jena (2005, 2008) with research projects on Hegel's early celestial mechanics and its sources; Hegel confrontation with ancient thought (Aristotle, Skepticism) and tragedy (Sophocles, Schiller); Kant's paradigm shift, mechanical and finalistic explanation; Kant and chemistry; Kant and Hegel on animality and environment; Hegel's transition to Organics and his Idea of Life. Elected as independent member in the AE Council in 2007 and co-opted in the Board (2009). Publications in profiled journals (selection: *The Owl of Minerva* (1988), *Rivista di storia della filosofia* (1991, 1992, 1993) *Hegel-Jahrbuch* (1991), *Archivio di Filosofia* (1991, 2010), *Philosophia Naturalis* (1994), *Archiv fuer Geschichte der Philosophie* (2000), *Hegel-Studien* (2002, 2010), *Studi Kantiani* (2002), *Bulletin of the Hegel Society of Great Britain* (1999, 2007)) and many

international Proceedings. Books: *Guida al 'De orbitis'* (Haupt, 1995), *Scienze empiriche e filosofie della natura* (Guerini, 1996), *Dai primi hegeliani a Hegel* (La Città del Sole, 2003). Editor of the international collection *Eredità kantiane* (Bibliopolis 2004). Contributions to *The Blackwell Guide to Hegel's Phenomenology* (Wiley-Blackwell 2009) and *A Companion to Hegel* (Wiley-Blackwell 2011). Referee (2001) for the *Journal of the History of Philosophy*, member of the Editorial Board of *Jahrbuch für Hegelforschung* (1995).

Anne Fagot-Largeault

Session 6



Anne **Fagot-Largeault**, PhD (Stanford 1971), MD (Paris 1978), Docteur ès lettres et sciences humaines (Doctorat d'Etat, Paris 1986). **Currently** professor of the College de France (philosophy of life science). Member of the French Academy of Sciences, of the International Academy of Philosophy of Science; associate member of the Royal Academy of Belgium (humanities section). Honorary president of the International Institute of Philosophy. Member of the College of experts of the French Biomedicine Agency for the research on human embryos and embryonic stem cells. Member (2007-2011) of the Executive Committee of the DLMPS (Division of Logic, Methodology and Philosophy of Science, of the International Union of History and Philosophy of Science). Has been (and still is) a member of Data and Safety Monitoring Committees for international clinical trials in aids, cancer, cellular therapy. **Carrier**: she worked as a full time professor in philosophy in high school (1961-1966), then as an assistant professor at the university of Paris-12 (1971-87), and full professor in philosophy of science at the universities of Paris-10 (1987-95) and Paris-1 (1995-2001); she did her inaugural lesson at the College de France in 2001. Her medical practice at the Henri Mondor hospital (Assistance publique de Paris, one full day a week, 1978-2003) was mostly as a psychiatrist in the emergency room; her ongoing

cooperation with the hospital psychiatry wards is now directed towards the methodological and ethical problems in psychiatric investigations. Her **research**, centered on the philosophy of life sciences, developed along three lines: (1) diagnostic reasoning, inductive logic, statistical and probabilistic methods, heuristic procedures; (2) investigation of causal links, validation of causal hypotheses, causal explanation, evolution and the ontology of becoming; (3) ethics of medical practice and investigation, methodology of clinical & of epidemiological research, epistemology of bio-medical sciences, bio-medical anthropology. Her list of **publications** counts around 250 titles, including a dozen of **books**, among which: *Médecine et probabilités*, Paris: Didier-érudition, 1982; *L'homme bio-éthique. Pour une déontologie de la recherche sur le vivant*, Paris: Maloine, 1985; *Les causes de la mort. Histoire naturelle et facteurs de risque*, Paris: Vrin, 1989; with D. Andler et B. Saint-Sernin, *Philosophie des sciences*, 2 vols., Paris: Gallimard, 2002; with S. Rahman and J.M. Torres, *The Influence of Genetics on Contemporary Thinking*, Dordrecht: Springer, 2007; and *Médecine et philosophie*, Paris: PUF, 2010. See list of publications, www.college-de-france.fr.

Jean-Charles Pomerol

Session 7



Jean-Charles Pomerol, is professor of computer science at Université Pierre et Marie Curie of Paris. He has held the posts of vice-president of sciences, vice-president of the university's scientific council and director of the department of industrial relations and technology transfer and is now Vice-chancellor of Pierre et Marie Curie university.

Between 1995 and 2000, he was project leader at the CNRS (Centre National de la Recherche Scientifique; French national centre for scientific research), responsible for computer science, signal processing and automation. Prior to that, he was director of the UPMC UFR (Unité de Formation et de Recherche; teaching and research department) of computer science and for six years he was director of the CNRS-UPMC laboratory for artificial intelligence.

Jean-Charles Pomerol obtained an undergraduate teaching degree in mathematics in Paris in 1964 and passed the 'agrégation' (competitive examination for admission to the professoriat) in mathematics in 1968. He completed his doctorate in mathematics and economics in 1973 and, in 1980, his doctorat d'Etat (post-doctoral degree) at Université Pierre et Marie Curie on the subject of convex analysis and optimisation. He was a teacher at Lycée Saint-Quentin, an upper secondary school in the French département of Aisne, before becoming a lecturer at Université Versailles Saint-Quentin-en-Yvelines, then senior lecturer at UPMC and finally professor.

Jean-Charles Pomerol's early career was devoted to game theory and convex analysis. Between 1974 and 1981, he

published, independently or in collaboration with P. Levine and other colleagues and students, twenty-nine articles in the field of convex programming, including ten in international journals (SIAM Journal of Control, SIAM Review, Mathematical Programming, Operations Research (ORSA), J. of Mathematical Analysis and Applications, Canadian Mathematical Bulletin, Archiv der Mathematik). In the 80s, Jean-Charles Pomerol turned to computer science, particularly computer-assisted decision support and expert systems. He played a role in the development of decision support systems including various operational research models and expert systems. During this period, Jean-Charles Pomerol developed various concepts at the frontier of multi-criteria decision support and artificial intelligence.

He founded the Journal of Decision Systems in 1992 and remained the editor for ten years. The journal's quarterly issues are devoted to computer-based decision support systems. Jean-Charles Pomerol is the editor of Revue Française d'Intelligence Artificielle and a member of the editing team of Revue Française de Gestion. He is also the computer science coordinator for the *Traité des sciences de l'ingénieur*

Pieter C. Emmer

Session 8



Pieter C. Emmer studied History and Economics at the University of Leiden and obtained a Ph.D in Economics at the University of Amsterdam in 1974. Since that year he has been teaching at the History Department of the University of Leiden as professor in the History of the Expansion of Europe and the

related migration movements.

He was a visiting fellow at Churchill College, Cambridge, UK (1978-79), at the Wissenschaftskolleg Berlin (2000-2001) and at the Netherlands Institute for Advanced Study (2002-2003), Wassenaar, The Netherlands. He served as visiting professor at the University of Texas at Austin (1986-87) and at the University of Hamburg, Germany (1996-97).

Pieter Emmer is member of the Editorial Boards of the eJournal of Portuguese History, Journal of Imperial and Commonwealth History, Jahrbuch für Geschichte Lateinamerikas, Studien zur historischen Migrationsforschung, Journal of Caribbean History, Revue d'histoire maritime, and author of *The Dutch in the Atlantic Economy, 1580-1880* (Aldershot, 1998) and *De Nederlandse slavenhandel, 1500-1850* (Amsterdam, 2000) (*The Dutch Slave Trade, 1500-1850*, translations in English and French forthcoming). At this moment he is one of the editors of *Migration, Integration, Minorities*, a European

Encyclopaedia to be published by Cambridge University Press.

In 2004 Pieter Emmer was elected as ordinary member of the Academia Europaea.

ANNEX

Academia Europaea Social Sciences Section
Tuesday 20 September 2011, 17.00-19.00,
Room VI, UNESCO Headquarters, 7 place de Fontenoy, Paris 7

Round table discussion:

Sciences, Culture and Society: Mobility and Integration

Organiser & Chair of the meeting:

Anne Buttimer (University College Dublin, anne.buttimer@ucd.ie)

Local Organiser & Convenor:

Anne-Marie Guillemard (Paris Descartes Sorbonne, amg@ehess.fr)

Speakers:

Maria Paradiso (University of Sannio, Benevento, paradiso@unisannio.it)

Mobility and North African democratic movements: The role of ICTs

The paper presents a field study carried out at the Italian Lampedusa island in March 2011, focusing on the first station of incoming migrants and aiming at investigating the exposure of migrants to information and communications technologies (ICTs) while still in their North-African countries of origin, and the influence of ICTs on recent democratic movements and mobility. In Lampedusa one can observe a flow of young and secular migrants who demonstrate three distinct profiles of mobility. New ICTs (Internet, facebook, mobile phones, and digital cameras) are shown to constitute factors of integration for migrants in new societies, even for people with low educational qualifications living in disadvantaged and rural areas. Migrants' image of Europe as a 'transparent' society and their search for peer conditions in society should be incorporated in discussions leading to hopefully more unified European policies for mobility and integration, also in collaboration with Mediterranean neighbours.

Jacques Poot (National Institute of Demographic & Economic Analysis (NIDEA), University of Waikato, jpoot@waikato.ac.nz)

Strangers on the Move: Advances in Migration Impact Analysis

The paper addresses the need for a quantitative migration impact assessment, and focuses in particular on the international impacts of migrants in a given countries, i.e., trade, tourism and FDI. It will be a mix of a review and recent empirical findings. It concludes that migration contributes significantly to the openness of a country and hence to extensive welfare benefits.

Sture Oberg (Uppsala University, nils.sture.oberg@gmail.com)

Migration and Policy Making in Europe

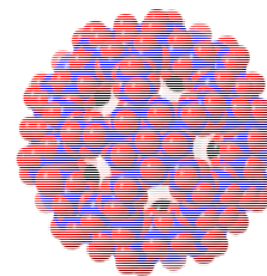
A short introduction will include an overview of migration flows through the European history. Explanations and disciplinary research on present international flows will be discussed in relation to available information. What do we really know and where are the more important knowledge gaps? Policy measures used to stimulate or restrict international migration flows will be presented, with examples from theoretical literature and debate. A novelty will be a presentation of an early theoretical study, probably the earliest, of the relation between migration and policy measures. This study is not known in the history of migration theory.



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= Heinz Nixdorf Stiftung



23rd Annual Conference Academia Europaea - September 20 –22, 2011, UNESCO-Paris, France