



Editorial

This special issue of *C. R. Chimie* contains contributions from the participants of the first trilateral symposium organized by the Académie des sciences of France, the German National Academy of Sciences Leopoldina and the Chinese Academy of Sciences, which was held in Paris, October 7–8, 2010. This multidisciplinary meeting was entitled “Future of sciences, sciences for the future: Chemistry and its interfaces with biology and physics”.

Developments in science and technology have never been as rapid as now. The implications are considerable for the scientists, the decision-makers in science policy and for the public (everyday's life has already changed considerably within one generation!). Faster and more effective communication of the scientific results from the international academic community to peers, to application-oriented institutions and industries as well as to policy- and decision-makers represents a real challenge and is therefore a global issue.

Chemistry plays a central role in modern society because it is closely associated with a major industry which directly or indirectly delivers products needed in everyday life. However, chemistry, be it the chemical industry or the science of chemistry itself, has suffered from a somewhat negative image since the 1970s. Although this has improved considerably in recent times, some misconceptions still remain in public opinion. In reality, chemistry plays a unique role in solving current problems the world is facing. Facing the challenges of health, nutrition, energy, and environmental control as well as management of natural resources by the development of “green” and cost-effective processes are crucial topics on the agenda of current chemistry. These challenges provide a major incentive for young people to join this very active branch of science! Moreover, chemistry is not just a core science in itself, it is also actively expanding into other fields such as biology and physics, offering great opportunities for collaborative efforts in the quest to design and create new materials with unprecedented chemical, biological or physical properties. The central role of chemistry has therefore to be effectively translated in research and teaching.

It appeared therefore particularly appropriate and timely to organize a high level Chemistry Symposium under the auspices of the National Academies of France, Germany and China. Chemists from these three countries were invited not only to share the most recent results in their respective fields, but also to promote international scientific exchanges and inspire the next generation of chemists for future challenges.

Initiated by Pierre Braunstein, member of the French and German Academies, the meeting began with a welcome by the representatives of the three academies and members of the organizing committee, Professors Jean-Francois Bach, *secrétaire perpétuel* de l'Académie des sciences (France), Manfred T. Reetz, Senator of the German National Academy of Sciences Leopoldina (Germany) and Wen-Hua Sun (Chinese Academy of Sciences), who also provided information regarding their respective Academies.

Following the excellent lectures given by the various speakers, a round-table discussion led by Pierre Braunstein focused on the various approaches, existing or to be implemented, for promoting sciences, with chemistry being in the focus, aimed at decision-makers in scientific institutions and science management and at younger scientists representing the next generation. The participation of Professors Odile Macchi, Member of the Académie des sciences (mechanical sciences and informatics), Jean-Pierre Kahane, Member of the Académie des sciences (Mathematics), Yves Quéré, Member of the Académie des sciences (Physics), Wen-Hua Sun, Manfred T. Reetz, Gerhard Erker (University of Münster), and Michael Veith (Sarrebrücken) was most welcome and provided a broad perspective covering different disciplines and approaches. Moreover, numerous contributions originated from the audience.

From the discussions, there was a clear consensus that chemistry plays a crucial role in modern society, specifically because a myriad of products result from it. Common examples are therapeutic drugs, textiles, fragrances, paints, computer materials, automobile components,

spacecraft materials and many others. Basic research in chemistry is an absolute requirement to generate novel molecules, understand new properties, and design on-purpose molecules. Approaches allowing an optimum use of natural resources, through catalysis and atom economy, alternative solutions for energy and tools in controlling pollution result from new knowledge acquired in academia and implemented in industry. This implies that governments should not only focus on applied research, which of course is important, but should by every means emphasize basic research. It is one of the responsibilities of the national academies to convey this seemingly trivial message to the governments, because politics sometimes focuses only on the final products!

Another conclusion that was reached concerns the role of chemistry as a core discipline. It became clear that chemistry itself develops at a rapid pace, and that therefore continued research is needed. In addition, chemistry plays a key role in stimulating and enabling novel lines of research in an interdisciplinary manner, namely at the interface of chemistry, physics and biology where its impact is gaining increasing significance. Therefore, national and international exchanges are essential. Here again, the national Academies take on an important “catalytic” role for promoting and supporting such actions. It is clear that chemistry is not just a service science, rather it takes the lead in many facets of research regarding biology, medicine, materials science and physics. Indeed, several of the actual lectures at the Paris symposium clearly demonstrated this point. It was also concluded that at least some of the teaching in chemistry at the university level needs to be adjusted to include more basic information regarding R&D in biology, medicine, material sciences and physics. The considerable importance of training the school children to experiment and think in a scientific way (cf. “La main à la pâte” initiative) was essential to attract the best and most motivated students toward scientific careers and to develop a better understanding of science within the society.

The three academies represented at this symposium face different economic situations, and promotion of science should target decision makers in order to better share knowledge and resources, including human resources. This is often mentioned, but concrete steps need to be taken to foster this important matter. It is simply not possible for each country to fill all the gaps in research, and certainly not only in chemistry. Therefore, more actions need to be undertaken to develop cooperative projects, meetings, and scientific publications. Here once more, the national academies can put this on their agenda more so than in the past. Interestingly, at this Paris meeting which was the first of its kind, at least one new international cooperation was initiated!

Finally, it remains for the organizers to thank the speakers for their contributions and their willingness to prepare a manuscript for publication, the participants, and acknowledge the support of the academies involved and of various sponsors, the French Embassy in Beijing, the German Embassy in Paris, the CNRS, INSERM, CEA, the Laboratoires Servier and the Institut de Chimie des Substances Naturelles (Gif-sur-Yvette). We are grateful to the Fondation Simone et Cino del Duca for hosting the meeting in their superb location.

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