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Editorial

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Editorial

This Special Issue of *Molecular Physics* is dedicated to Pierre Turq on the occasion of his 70th birthday. Pierre was born in Paris, graduated from the Ecole Nationale Supérieure de Chimie de Paris in 1965, obtained the Agrégation de Sciences Physiques in 1967 and his PhD degree (supervised by Prof. Marius Chemla) from the Faculté des Sciences de Paris in 1970. From 1965 to 1978, he was maître assistant (assistant professor) at Faculté des Sciences d'Orsay and at Faculté des Sciences de Paris, and in 1978, he was appointed professor of chemistry at Université Pierre et Marie Curie (UPMC) in Paris, where he is now emeritus professor. From 1994 to 2005, Pierre was head of the Laboratoire Liquides Ioniques et Interfaces Chargées; under his vigorous scientific leadership the laboratory, associated with UPMC and the Centre National de la Recherche Scientifique (CNRS), evolved into one of the leading Electrochemistry laboratories in Europe. Pierre attracted and guided a cohort of particularly gifted and motivated students from the leading French Grandes Ecoles and Universities. The laboratory, now called 'Physicochimie des Electrolytes et Nanosystèmes Interfaciaux', brings together several experimental, theoretical and numerical modelling groups, with strong mutual interactions, which mirror Pierre Turq's broad range of competencies, in a collective effort to gain a global understanding of complex charged systems in the bulk and at interfaces.

In the 1970s, Pierre Turq, together with his colleague Frédéric Lantelme and the leading American electrochemist Harold Friedman, pioneered the application of Brownian Dynamics simulations to transport phenomena in ionic solutions. He was also among the first to study the structure and dynamics of simple molten salts using Molecular Dynamics simulations. In an important paper combining linear response theory and simulation, Pierre, together with Lantelme and Peter Schofield, determined the subtle isotope effect, i.e. the mass dependence of ionic dynamics in the melt. In another pioneering paper, Pierre Turq collaborated with Luc Belloni and Maurice Drifford (from the electrochemistry group at Saclay) to characterise counterion diffusion in polyelectrolyte solutions. Later, in the 1990s, Pierre and his collaborators joined forces with Lesser Blum and Werner Kunz to develop semi-analytic theories, based on the mean spherical approximation of the structure, thermodynamics and conductance of molten salts and associated electrolytes.

Around the turn of the millennium, Pierre Turq and his co-workers turned to a systematic investigation of suspensions of charged colloids as well as of water and ion dynamics near interfaces or in highly confined geometries, in close association with various experimental probes, including neutron scattering, dielectric relaxation and Nuclear magnetic relaxation (NMR). The ultimate objective of this ground-breaking research effort is a quantitative understanding of aqueous and ionic transport in clays, in relation with the long-term geological storage of nuclear waste. These technologically crucial investigations are carried out in close collaboration with ANDRA (Agence nationale pour la gestion des déchets radioactifs) and the Commissariat à l'Energie Atomique (CEA). The intricacy of the problem of ion transport in complex porous materials, such as clays, naturally led Pierre Turq and his group to rely on multi-scale descriptions bridging the length and time-scale gap between microscopic degrees of freedom and collective mesoscopic behaviour. On a closely related subject, Pierre coordinated a 10-year project involving CNRS, CEA, ANDRA and EDF on the physical chemistry of actinides in solution and at interfaces.

Pierre Turq's long-standing international collaborations across the world led to several prolonged visits as visiting research scientist at Oxford (1977) and Rome (1982, 1995), or as visiting professor at Regensburg (1979, 1987) and Canberra (1980). Reciprocally, Pierre and his group attracted many distinguished visitors to his laboratory at UPMC, which led to fruitful and lasting collaborations. He organised a number of scientific workshops in France and in Germany, and chaired the International Conferences on Solution Chemistry held at Vichy (1997) and Montpellier (2011).

Through his papers, reviews, books and scientific leadership, Pierre Turq has achieved a lasting impact on modern advances in the physical chemistry of ionic liquids and solutions, polyelectrolytes, colloidal dispersions and their transport through complex porous materials. He has guided generations of young French and European scientists to challenging areas in this field. A summary of his group's recent scientific achievements is provided by the collective review contributed to this Special Issue by a group of his past and present colleagues and collaborators. Pierre is a highly cultivated, witty person and a generous host to his visitors and friends. He and his wife Laure

are outstanding cooks and great connoisseurs of Burgundy (and other) wines, who enjoy entertaining their guests in style.

His students, collaborators, colleagues and friends wish Pierre a happy 70th birthday, and look forward to his future scientific contributions and inspiration.

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