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In Memoriam of Professor Pier Luigi Nordio, 1936-1998

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Although the *International Liquid Crystal Conference* in Strasbourg in July 1998 was a most notable exception, it is unfortunately true that the chemistry content of many liquid crystal meetings is painfully low. This fact, along with a strong desire to show the growing commonality of work in thermotropic and lyotropic liquid crystals, and in block copolymers, was enough to persuade a group of scientists in Bayreuth that it might be timely to organize a meeting primarily to present results on the chemistry and characterization of these mesophase materials. So, from 7–9 October 1998, around 100 delegates from the USA to Japan, via Europe, congregated in the old Franconian city of Bayreuth for two-and-a-half days of synthesis and structure under the title **CCMM'98**.

The meeting was organized by Dr Günter Lattermann, Professor Hans-Werner Schmidt and Dr Peter Strohriegel, and they chose to dedicate the meeting to the memory of their colleague, Professor Reimund Stadler, who had originally been an organizer, but tragically had died earlier in the year at the age of only 41.

MEETING REPORT

CCMM'98

Chemistry and
Characterization of
Mesophase Materials

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Exeter, UK

CCMM'98 was a mixture of short and long talks, and posters, and each session was characterized by lively and vigorous debate. The oral sessions were organized into thematically mixed blocks, and this served well to illustrate that there was much in common between the subject areas which formed the themes for the meetings, rather than to emphasize any artificial taxonomy.

Through a well-organized *BPP* (Bier, Pretzels und Posters) session and the next evening's *Franconian Brotzeit* featuring

many local specialities, the meeting developed an excellent spirit and atmosphere, which continued through to the last evening with a most marvellous dinner at the Schloss Thiergarten on the outskirts of the town.

For me, and I suspect everyone else who attended the meeting, it was a joy from beginning to end because it addressed the often underplayed relationship between structure and property which fundamentally underpins new developments in liquid crystals; so-called 'banana mesogens' and nanolithography by means of mesostructures formed by organic–inorganic hybrid materials, are only two of the more recent examples of what I mean. Thinking back only 15 or so years, the field of liquid crystal chemistry was predominantly about rods and discs. How things have changed. The synthetic chemist, in collaboration with structural chemists and physicists, is now having a field day which was previewed so well in Demus' excellent review given at the 1988 *International Conference* in Freiburg [1]. So congratulations to the organizers for a wonderful meeting and to the participants for some very exciting science!

Reference

- 1 DEMUS, D., 1989, *Liq. Cryst.*, 5, 75.



In memoriam of Professor Pier Luigi Nordio, 1936–1998

An appreciation
by C. Zannoni
Bologna University, Italy

It is with deep regret that we bring to the attention of the liquid crystal community the untimely death, on 20 October 1998, of Pier Luigi Nordio, Professor of Theoretical Chemistry at Padova University (Italy), and author of many important contributions to the theory of liquid crystals.

Pier Luigi Nordio was born in Padova on 18 May 1936 and he graduated in Chemistry in 1961 in Padova with Giovanni Giacometti with top marks *cum laude*. He started lecturing immediately, first in Bologna University from 1961 to 1964, then in Padova since 1966. He became Full Professor of Theoretical Chemistry in 1975 and was first appointed in Trieste and then returned to Padova University, where he has been since 1976. He served as a member of the Administration Board of the University in the years 1980–1981 and as Director of the Department of Physical Chemistry from 1985 to 1990. He directed various national and international level collaborative research projects. In particular he co-ordinated the European Union (EU) network '*Organization and Dynamics of Molecules in Ordered Phases: Integration of Experiments, Theoretical Models and Simulations*' (1993–1997). At the time of his death he was co-ordinating the Training and Mobility of Researchers (TMR) network '*Molecular Design of Functional Liquid Crystals*' (1997–2001) comprising liquid crystal groups from nine European Universities (Padova, Bologna, Freiburg, Hull, Nova de Lisboa, Patras, Southampton, Strasbourg, Zaragoza). These EU projects are approved on a very competitive basis and the fact that he was designated as a coordinator and successful in this effort is certainly a sign of the respect and consideration he received by his colleagues internationally.

Pier Luigi's links with the liquid crystal community were particularly strong. He was a member of the Italian and of the International Liquid Crystal Society and sat on the Editorial Board of *Liquid Crystals*. He was an invited speaker at a number of international liquid crystal meetings, including various NATO Schools starting with the famous one '*The Molecular Physics of Liquid Crystals*', organized by George Gray and Geoffrey Luckhurst in Cambridge in 1977, the *14th International Liquid Crystal Conference*, Pisa 1992, the *American Chemical Society Meeting 'Liquid Crystals: Fundamentals and Applications'*, Anaheim (California, USA) 1995 and many others.

His research interests were wide and touched a number of topics mainly, but not only, dealing with liquid crystals. In the first few years after his *laurea* his

work was not directly connected with liquid crystals, but he worked mainly on quantum chemistry, including molecular orbital calculations of electron spin resonance (ESR) properties (e.g. hyperfine constants) in organic radicals. He then spent a postdoctoral period with Harden McConnell at Stanford University from 1964 to 1966 and some of the work from that period, particularly that introducing the use of spin probes [1] was particularly influential and is still very well quoted. At the end of the sixties the first experimental papers on ESR and NMR studies of solutes dissolved in nematic liquid crystals had started to appear and a number of linewidth effects had been observed, while a theory suitable to their interpretation was not yet available. Pier Luigi and his co-workers tackled the problem and his first papers dealing with liquid crystals, which developed a theory of rotational diffusion for a molecule in an anisotropic fluid and its application to ESR, were truly seminal and are now classical works [2]. They allowed the extraction of information on the rotational mobility of a molecule dissolved in liquid crystals from a variety of spectroscopic observables. Over the years Pier Luigi applied his rotational diffusion theory to the interpretation of data coming from many experimental techniques, including NMR, Dielectric Relaxation, Far Infrared and Neutron Scattering. Pier Luigi conserved a deep interest in the description of molecular motion throughout his career and the original theory of rotational diffusion for rigid molecules was generalized by him and his Padova School to flexible molecules and aliphatic chains, with the inclusion of segmental motions and conformational transitions [3]. More recently sophisticated generalized stochastic models going beyond diffusion were also being developed [4]. The range of applications further extended, with the increased power of the tools developed: a recent one is, for instance, the study of charge-transfer systems and the coupling between internal and solvent degrees of freedom and its effect on spectroscopic observables such as the Stokes shift [5].

Nordio's contributions to the theory of molecular relaxation and dynamics in liquid crystals have marked important developments and I believe will remain and maintain his memory. However, Pier

Luigi was also active and successful in developing statistical theories of liquid crystalline behaviour. It is a pleasure to recall that his first paper in this area was one on the mean field theory of biaxial molecules that we wrote more than twenty years ago together with Geoffrey Luckhurst, with whom I was doing my PhD in Southampton [6]. The collaboration of Pier Luigi with Geoffrey Luckhurst continued and increased over the years touching many topics: dimers with a flexible spacer and their transition properties [7], odd–even effects, re-entrant phases, biaxial nematics and molecular models for the interpretation of the orientational order of solutes of arbitrary complexity based on their molecule shape [8]. In this original approach the alignment of a solute in a nematic is estimated from a surface tensor obtained from the structure of the guest molecule. Pier Luigi and his group recently developed a molecular interpretation and prediction of chiral induction based on this type of shape model [9] and he was as keen as always to discuss it and compare its predictions with experimentalists in Italy, like Giovanni Gottarelli, and abroad.

Nordio's scientific contributions have been published in over 110 papers in international journals and multi-author books. A list, from 1994, can be found at the Padova group web site (<http://www.tmrlicrys.chfi.unipd.it/~theochem/pubs.html>). He also thought and wrote about the University, and how it should be organized and I would like to recall a recent article on a proposed reorganization of the Italian chemistry curriculum with his organic and inorganic colleagues Gianfranco Scorrano and Eugenio Tondello [10].

It is clearly impossible to summarize a lifetime's work and achievement and even just to mention the many deep and fruitful international collaborations in these few words, but I would like to say at least that Pier Luigi was an example of high standards in many ways.

All of his friends will not forget his clear deep thinking and rigorous approach, but also his sense of duty. To give an idea of what I mean, I would like to remember the professionalism and dignity with which he co-ordinated, just a few weeks before his death, the meeting of our TMR network in Praia da Rocha, Portugal. I met him at Bologna Airport, which he was able to reach only after leaving hospital,

at his request, on that very departure day. He never complained about physical problems, but instead he talked of science and of his many cultural interests, from history to nature, with the usual enthusiasm, strength and inspiration. His wife Francesca, his daughter Daria and sons Claudio and Michele should be rightly proud of his memory and can be sure that he will be remembered in the Italian and international scientific communities.

References

- [1] STONE, T., BUCKMAN, T., NORDIO, P. L., and MCCONNELL, H. M., 1965, Spin-labeled biomolecules. *Proc. Nat. Acad. Sci.*, **54**, 1010.
- [2] NORDIO, P. L., and BUSOLIN, P., 1971, Electron spin resonance lineshapes in partially oriented systems. *J. Chem. Phys.*, **55**, 5485; NORDIO, P. L., RIGATTI, G., and SEGREGRE, U., 1972, Spin relaxation in nematic solvents. *J. chem. Phys.*, **56**, 2117.
- [3] MORO, G., FERRARINI, A., POLIMENO, A., and NORDIO, P. L., 1989, Models of conformational dynamics. *Reactive and Flexible Molecules in Liquids*, edited by T. H. Dorfmueller (Dordrecht: Kluwer) p. 107; FERRARINI, A., and NORDIO, P. L., 1992, Diffusion models for the dynamics of flexible molecules. *J. chem. Soc., Faraday Trans.*, **88**, 1733.
- [4] NORDIO, P. L., and POLIMENO, A., 1994, Extended Fokker-Planck model molecular rotations in liquids. *Chem. Phys.*, **180**, 109; MORO, G. J., NORDIO, P. L., NORO, M., and POLIMENO, A., 1994, A cage model of liquids supported by molecular dynamic simulations. I. The cage variables. *J. chem. Phys.*, **101**, 693.
- [5] SAIELLI, G., BRAUN, D., POLIMENO, A., and NORDIO, P. L., 1996, Approximate description of Stokes shifts in ICT fluorescence emission. *Chem. Phys. Lett.*, **257**, 381.
- [6] LUCKHURST, G. R., ZANNONI, C., NORDIO, P. L., and SEGREGRE, U., 1975, A molecular field theory for uniaxial nematic liquid crystals formed by non-cylindrically symmetric molecules. *Mol. Phys.*, **30**, 1345.
- [7] FERRARINI, A., LUCKHURST, G. R., NORDIO, P. L., and ROSKILLY, S. J., 1994, Prediction of the transitional properties of liquid crystal dimers. A molecular field calculation based on the surface tensor parametrization. *J. chem. Phys.*, **100**, 1460.
- [8] FERRARINI, A., MORO, G. J., NORDIO, P. L., and LUCKHURST, G. R., 1992, A shape model for molecular ordering in nematics. *Mol. Phys.*, **77**, 1.
- [9] FERRARINI, A., MORO, G. J., and NORDIO, P. L., 1995, A shape model for the twisting power of chiral solutes in nematics. *Liq. Cryst.*, **19**, 397; 1996, Simple molecular model for induced cholesteric phases. *Phys. Rev. E*, **53**, 681.
- [10] NORDIO, P. L., SCORRANO, G., and TONDELLO, E., 1997, Diploma, laurea, dottorato, *Chimica e l'Industria*, **5**, 579.

PEOPLE IN THE NEWS

Professor Frank Leslie presented the G. W. Gray Medal to Professor Roy Sambles of Exeter University, UK at the annual British Liquid Crystal Society Conference which took place in Leeds in April 1998. The George Gray Medal is awarded from time to time to eminent scientists in the field of liquid crystals by the British Liquid Crystal Society, and previous recipients include Professor John Goodby and Professor Frank Leslie.

Roy Sambles is best known in the liquid crystal community for his work on the optics of liquid crystals, and his first paper in the area published in 1987 demonstrated the potential of using guided waves in order to explore fully the alignment in liquid crystal cells. This was the forerunner for the subsequent development of the half-leaky and fully-leaky techniques developed by Roy and Fuzi Yang, which allow very

**GEORGE GRAY
MEDAL TO
PROFESSOR
ROY SAMBLES**

accurate determination of alignment in thin cells. Roy initially exploited these techniques in liquid crystal research primarily with Steve Elston (now at Oxford) and latterly with Fuzi Yang, shedding genuine light on the otherwise rather murky chevron textures in ferroelectric smectics. In addition, at Exeter,

Roy initiated the first studies in the UK of gratings and liquid crystals, work continued successfully at DERA Malvern by two of his students, Guy Bryan-Brown and Emma Woods. Recently, Roy has recorded another notable first through his work in molecular electronics on molecular rectifiers, succeeding in demonstrating such a device which has long been the aim of other international groups.

During the presentation of the medal, Frank Leslie commented that for any society or community to remain active and enthusiastic it must attract from time to time new members with fresh ideas and new techniques. He went on to say that Roy and his co-workers at Exeter have proved a very good example of this in the context of the British Liquid Crystal Society. Peter Raynes and Mike Clarke were responsible in the early days of Roy's research in liquid crystals for persuading him that it was a fruitful area for his waveguided techniques. How right they were!