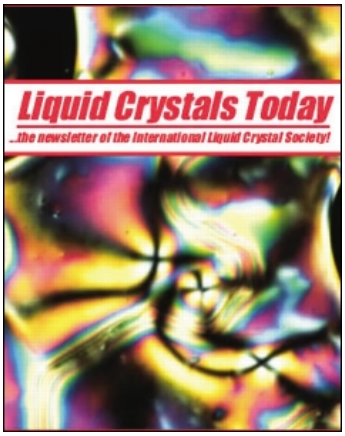

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Professor K. Praefcke Symposium

G. W. Gray

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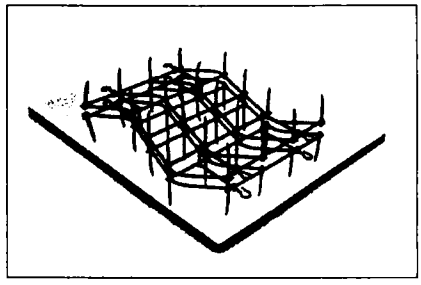
PEOPLE IN THE NEWS

Professor K. Praefcke Symposium

To mark the retirement of Klaus Praefcke, Professor of Organic Chemistry at the Technische Universität Berlin, the Faculty of Chemistry and the Collaborative Research Centre on 'Anisotropic Fluids' held a Symposium entitled 'Discs and columns in liquid crystals' on 25 June 1998.

Tributes to Professor Praefcke's long service to the University as teacher and researcher — from 1971 as Professor of Organic Chemistry — were paid by senior Faculty Officers of the University, by Professor S. Hess, Chairman of the Collaborative Research Centre and by Professor V. Egorov, Vice-President of the University of Ivanovo in Russia where Professor Praefcke is an Honorary Professor.

Both the affection in which Professor Praefcke is held as a person and the very high international reputation of his research were reflected in the large audience consisting of family members, students past and present, colleagues from within the Universities of Berlin, and collaborators from many parts of Germany and other countries throughout the world.



This figure shows the assemblage 'Mirrored harrow' (1.45 x 1.16 m) by K. Praefcke, 1992, displaying an old iron harrow, formerly used by his forefathers in agriculture work, on mirror glass visualizing a smectic bilayer phase based on a network of hydrogen bridges.

Professor Klaus Praefcke with speakers at the Symposium 'Discs and columns in liquid crystals', held in his honour at the Technical University of Berlin, 25–26 June 1998. Left to right; front row: Professor Nadia Usol'tseva (Ivanovo State University, Russia), Professor Dr Klaus Praefcke (Technical University of Berlin), Dr Anne-Marie Giroud (CNRS, Grenoble). Middle row (left to right): Professor Dr S. Hess (Sonderforschungsbereich, Anisotropic Fluids), Professor C. Zannoni (University of Bologna), Professor G. W. Gray (University of Southampton). Back row: Professor G.R. Luckhurst (University of Southampton), Professor S. Chandrasekhar (Centre for Liquid Crystal Research, Bangalore), Professor D. Walba (University of Colorado).

The research reputations of the speakers who had willingly accepted invitations to attend also reflected Professor Praefcke's international standing — Professor G. W. Gray, UK, Professor S. Chandrasekhar, India, Dr Anne-Marie Giroud, France, Professor G.R. Luckhurst, UK, Professor C. Zannoni, Italy and Professor D. Walba, USA. The last five of these speakers gave presentations on aspects of their research allied to Professor Praefcke's own work since he first published in the field of liquid crystals in 1977. These talks stimulated much discussion in the sessions, at lunch and during the closing reception.

The scientific programme was opened by Professor Gray, whose presentation entitled 'The research contributions to science by Professor Klaus Praefcke' gave an exposition of the diversity, quality and significance of Professor Praefcke's research work during his professional life at the TU Berlin. His research publications over 37 years number some 290 and cover many topics,

but two broad areas emerge marking his earlier work on the synthesis and spectroscopy of organic materials (1961–1990) overlapping with his more recent and finally dominant (1977–1998) research in the field of liquid crystals.

In the earlier period, many firsts in the synthesis of diverse nitrogen heterocycles and compounds of S, Se and Te were achieved by novel methods of synthesis. This research was in parallel with seminal kinetic and mechanistic studies of new photochemical processes, and exacting stereochemical studies of strained carbocycles such as tetrabenzoheptafulvalene, cyclobutane carbonitriles and the diastereoisomers of perhydropyrene, including the one giving the famous 'jumping crystals'.

In the second area, Professor Praefcke's research has been of very great significance in the field of liquid crystals, but in this short review, one can only highlight some of his achievements: the first syntheses of S, Se and Te calamitics and of S-containing discogens; a possible case of atropisomerism in a discogen; extensive studies of inositol systems and other carbohydrates, and the role of hydrogen bonding in building up disc-shaped aggregates determining whether the systems are calamitic or columnar; radial multiynes yielding not only LC hydrocarbons, but also accessible materials forming novel discotic nematic (N_D) and N^*_D phases; fascinating examples of phase induction in TNF doped systems; new metalorganyles and their ability to form induced lyomesophases with TNF and alkanes; an elegant new example of chirality in mixed achiral systems; and imaginative synthetic studies, including work on giganto-heterocycles, directed at biaxial nematics.

On the following day, delegates were treated to a wonderful tour of Berlin during which the history of the city and its academic institutions were expertly explained by Professor Praefcke who acted as guide. On final departure, the view was expressed widely that in retirement some outlet must still be found for the varied talents of this very fine scientist who has added so much to the already strong research reputation of the Technische Universität Berlin.

Contribution from Professor G. W. Gray, CBE, FRS

Industrial Development of Plastic PDLC: Is There A Future?

H. Hakemi

Electrooptical Films Group, SniaResearch, Snia BPD (Fiat Group), Via Borgonuovo 14, 20121 Milan, Italy

The interest in research and development of *plastic* liquid crystal technology originates from the stabilization of liquid crystals with a polymer matrix for manufacturing of large-area flexible electro-optical films which can be used as electrically switchable shutters, panels and privacy windows in the building, residential and transportation sectors, as well as reflective displays. In figure 1, we show typical examples of PDLC applications as electro-optical windows. The display applications of PDLC are not within the scope of the present article.

The first scientific curiosity in PDLC film technology began in the early 1980s, when industrial and commercial activities began at Taliq/Raychem in the USA based on the invention of micro-emulsion (ME) technology by Fergason. This approach has also been known as the Nematic Curvelinear Aligned Phase (NCAP). Following the invention of the phase separation (PS) method at Kent State University in the late 1980s, the industrial activities concerning PDLC entered a new phase of development, and since the beginning of 1990s the PS-based PDLC products began to appear in the worldwide market along with ME-based PDLC. The major industries which have developed and commercialized PDLC films and windows