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John W. Gray

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The G.W. Gray Medal

an Introduction by Professor G.W. Gray

At the British Liquid Crystal Society (BLCS) Committee Meeting at Imperial College on 28 September 1995, it was generously agreed that a Society Award should be instituted to commemorate my receiving the 1995 Kyoto International Prize Laureate in Advanced Technology. That the award would carry my name was of course an honour which I greatly appreciate, and it seemed good to me that the Award would not necessarily be annual, but rather be made from time to time to recognize overall contributions of excellence to liquid crystal research and technology by individual researchers. The award will therefore not go to young researchers whose merit is recognized in other ways through the Glenn Brown Awards and the BLCS Young Scientist Prize, but rather be made to more senior scientists who have made notable contributions to the subject over a number of years, but clearly before they move on with the passage of time to being candidates for even more prestigious national or international awards.

In addition to a scroll and a description of the recipient's work to appear in *Liquid Crystals Today*, it was later agreed with me by the Chairman, Professor Luckhurst, that a Medal should be struck especially to mark the Award.

It has been unanimously agreed by the Committee of the Society that the first recipient of the G.W. Gray Medal should be John Goodby, Professor of Organic Chemistry and Head of the Liquid Crystals and Advanced Organic Materials Research Group at the University of Hull.

We were anxious to announce this at the Annual BLCS Meeting at Preston and this was done (despite the fact that on that occasion the Medal was not yet available; it takes time to design and strike medals) in a presentation by me to John Goodby at the Conference Dinner. I hope however that on a future public occasion I will have the opportunity to hand over the first medal and complete the presentation to John Goodby.

It is now my pleasure to present the following account of John Goodby's exceptional work and career in the field of liquid crystals.

Professor John W. Goodby **First Recipient of the G.W. Gray Medal (1996)**

Following his graduation from Hull University with Honours in Chemistry in 1974, John Goodby elected to join the Liquid Crystal Group headed at that time by me. His quality and ability to bring mathematical aspects of his training to bear upon his project were quickly evident, and in 1977, he completed an excellent PhD thesis entitled simply 'Smectic Liquid Crystals'. Following his doctoral studies, he stayed on in my group as a Post-doctoral Research Assistant, and work in the period until 1979 was highly productive, combining new research with results from his PhD studies and involving fruitful collaborations with Alan Leadbetter of Exeter University and the Rutherford Appleton Laboratories and with John Lydon of the University of Leeds. During the period 1976–1980 we co-authored 22 papers which I feel can honestly be said to have put the world of smectics, as then known, to rights, sorting out the chaotic nomenclature situation that had developed, in which the liquid crystal community was using reversed nomenclature systems for the same phases; establishing the existence and nature of smectic F and smectic I phases, and leading on to the division of smectics into the two classes of true smectics and the so-called crystal smectics, really soft crystals with lamellar structures.

In 1979, with my encouragement, John Goodby took a very brave course of action by accepting an appointment at AT & T Bell Laboratories in New Jersey, that power house of invention and individual talent populated by the 'brightest and the best' and raising several Nobel Laureates at its internal seminars. It was probably a daunting experience to go there, but his quality and strength of purpose, and I am sure the support of a very good wife, saw him through the early stages to his acceptance as a most valuable synthetic organic chemist who could not only produce novel materials that stimulated or fitted in with the interests of the very bright physicists there, but also be fully involved in the interpretation and analysis of emergent results of the greatest significance to the field of liquid crystals.



Professor John W. Goodby

Stemming from his period at Bell Laboratories (1979–1988), some 100 papers were published, involving collaborative work with scientists like Pat Cladis, Ron Pindak, Jay Patel and many others. The range of topics was large, and I can only note some examples such as seminal contributions made on the 'duality of B phases', with recognition of the differences between hexatic smectic B and crystal B phases and their identification, on free standing smectic films, on Blue Phases and cholesteric glasses, on the implications of new phases for miscibility groupings, on new ferroelectric and pyroelectric LC materials and devices, on the thermodynamics of phase transitions, on antiphase behaviour, on new alignment techniques, on the role of chirality in LC systems, on lipid membranes and the LC properties of cell components, and on the concept of a LC analogue of the Abrikosov Phase leading on later to the identification and study of the new Twist Grain Boundary phases.

The outpouring of excellent research during that period is striking, but has to be assessed alongside other demanding activities he undertook during these years—the major effort he gave to the production of our book on *Smectic Liquid Crystals—Textures and Structures* published in 1984 and the preparation of his excellent thesis for the degree of DSc awarded by the University of Hull in 1988. It is no surprise that these dynamic years at Bell Laboratories were marked by two Excellent Contribution Awards for Research made by the Company in 1985 and 1988, and his own promotion from his initial position as Member of the Technical Staff in Device Materials to

Supervisor of the Liquid Crystal Materials Research Group at AT & T Bell Laboratories.

In order to ensure that the Liquid Crystal Group at Hull, then totalling over 20 personnel, had the benefit it deserved of his quality of leadership when eventually I left, I persuaded John Goodby to return to the UK in 1988, having secured an appointment for him as STC-Thorn EMI Industrial Reader in Chemistry. We worked together for two years until he was awarded a Personal Professorship and I left to join Merck UK Ltd in 1990.

As Head of the Liquid Crystals Group, John has continued his excellent and original research work, maintaining and extending valuable research contracts, and further building up the group to some 32 personnel. In 1989 he obtained Fellowship of the Royal Society of Chemistry and in 1991 Fellowship of the Royal Microscopical Society, the latter recognizing that he is surely the world's leading authority in LC phase identification based on microscopic textures. In 1994-95, he was Amersham International Senior Research Fellow of the Royal Society and he is currently Visiting

Professor of Organic Chemistry at the University of Picardie.

Since returning to Hull, his research publications have continued at a very high level, first as he caught up with the backlog from work at Bell Laboratories and then involving new work at Hull as he became established there. Significant amongst these have been his publications establishing and extending knowledge about the new Twist Grain Boundary phases, on antiferroelectric and ferroelectric materials and phases, in the fields of discotics, organo-metallics and liquid crystal polymers and in association with colleagues at the University of Picardie, in developing his earlier studies of carbohydrate liquid crystals.

Full of new ideas and concepts, there is much for us to anticipate from the future research activities of John Goodby, for he is alert to the shifting needs of the subject, perhaps away from display technology and towards the role of ordered fluid assemblies, thermotropic and lyotropic, in nonlinear optics, sensors, specialized coating materials, and biological and pharmaceutical systems.

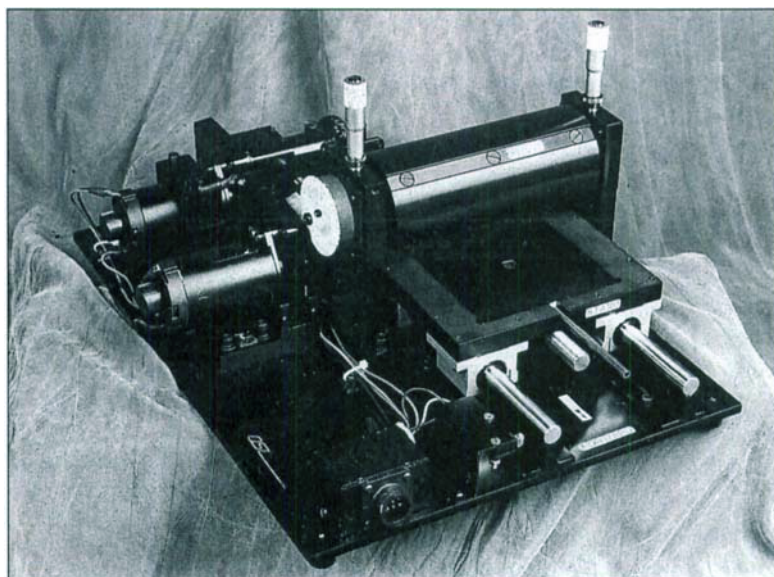
At the young age of 43, John Goodby has over 200 research publications to his name and he has co-authored two books. He is also writing further books and is co-editor with me of the Taylor & Francis Series on Liquid Crystals (14 volumes planned) and with me and other co-editors of the three volume *Handbook of Liquid Crystals* to be published by VCH as successor to the original handbook by Kelker and Hatz.

With this track record, there can be no dispute that John Goodby is the recipient *par excellence* of the first G.W. Gray Medal. There is in him a quality of mind and understanding of a very high level, and if there are those who read this and are unfamiliar with his quality, I recommend that they read a recent paper reflecting his interests in frustrated structures which appeared in *Liquid Crystals*, 1995, **19**, 376. To me this paper epitomizes not only the depth, but also the encompassing nature of John Goodby's outstanding knowledge of this challenging and multidisciplinary subject that we refer to over-simply as liquid crystals.

G.W. Gray

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