



Molecular Crystals and Liquid Crystals Incorporating Nonlinear Optics

Publication details, including instructions for authors and
subscription information:

<http://www.tandfonline.com/loi/gmcl17>

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Nicholas E. Geacintov & Charles E. Swenberg

Version of record first published: 22 Sep 2006.

To cite this article: Nicholas E. Geacintov & Charles E. Swenberg (1989): Martin Pope: A
Biographical Sketch, *Molecular Crystals and Liquid Crystals Incorporating Nonlinear Optics*, 175:1,
xiii-xvi

To link to this article: <http://dx.doi.org/10.1080/00268948908033741>

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MARTIN POPE: A BIOGRAPHICAL SKETCH

Martin Pope's parents were born in a small village in Poland. They migrated to the United States in their mid-teens, and were married in New York City. They lived in a small flat in a crowded tenement in the lower East Side; four sons were born there in the next ten years. The family then moved to Brooklyn, where there was more space, and there the children continued their schooling.

In Brooklyn, they lived on the fourth floor of a walk-up tenement. Times were not good, but they were never conscious of being deprived. Their desires were fortunately entirely in keeping with their means. The boys did odd jobs and ran errands. The area was crowded, so they never lacked for playmates.

Even as a child, Martin was always interested in science: in the why's and what's and how's of everything around him. He collected chemicals from friends who owned chemical sets, and also in payment for running errands for the local pharmacist. His experiments leaned to the noisy, colorful, and (to his family's distress) to the odorous. The library was the most welcome oasis in their lives. The Arlington Branch library in particular, almost three miles from home, provided Martin with the science books that shaped his life. He walked this distance often with his friend Ezra Jack Keats, who later became a world class children's book author and illustrator.

Martin Pope received his undergraduate training at the City College of New York from 1935 to 1939, with a major in Chemistry and minors in Physics and Mathematics. The students and faculty were excellent, it was an eventful time, and it was a turbulent time. There were the intoxicating experiences of learning and the bleakness of prospects for employment and of peace. It was the depth of the Great Depression, the years of the Spanish Civil War, the growth of Hitlerism in Germany, Fascism in Italy, and militant imperialism in Japan. As was the case with many colleges and universities across the country, the campus did not take kindly to these threats to democracy. There were many demonstrations, and many out-door speeches. These were times that fashioned attitudes that would persist throughout life. His family, as did many, suffered considerable financial hardship. Nevertheless, his parents and brothers Harry and David sacrificed to make it possible for him to attend college. The college was free (no tuition charges at that time), and his daily budget was fifteen cents, ten cents for carfare, and five cents for a glass of milk at lunchtime; his mother packed a sandwich for him.

It was a happy occasion when the National Youth Administration (NYA) was set up to provide part-time jobs for needy students. The hourly rate of remuneration was quite generous for that period, fifty cents an hour, but unfortunately, one was only permitted to work thirty hours a month. Martin was pleased to be able to contribute this much to his family's income.

Dr. H.H. Goldsmith, his Physics professor, was impressed with his motivation and industry and invited Martin to assist him as his NYA assignment. Goldsmith later became the editor of the *Bulletin of Atomic Scientists*. He taught Martin how to write scientific reports, and also which spoon, fork and knife to use when the table setting was elaborate (when the group had a luncheon in an elegant restaurant).

In 1939 Dr. Goldsmith was carrying out research in nuclear physics at Columbia University. Quite often Martin had to assist him there, and Pope had the occasion to meet Schwinger, Fermi, Dunning and Hammermesh, who were working there at the time. Martin, recollecting those days, says, "Not that I understood very much of what was going on, but I appreciated the significance of the fission of uranium and I learned a considerable amount about the operation of cyclotrons and neutron sources."

After graduation, it was extremely difficult to find a job, particularly in New York. He finally landed one as a chemist in a small factory that was trying to use cheap molasses as the raw material for making caramel coloring. The chief problem was that the caramelized molasses looked like mud and had a repulsive taste. Martin applied the full extent of his knowledge at the time, which was to change the pH. The mess miraculously became a clear ruby-red, and the taste was transformed to one that was bland, even pleasant. His salary was raised to twenty-one dollars a week, but he left after a year to take a civil-service position in the Brooklyn Navy Yard in the Metallurgical Laboratory. There he carried out radiological examinations of huge castings, such as the turrets for the 16" guns that would be mounted on battleships.

When war was declared, Martin declined deferment, and in June of 1942, was inducted into the Armed Forces, where he served in the Air Force in the Pacific Theater. He became an officer, and probably gave the first literate lecture on the atomic bomb to the enlisted men in the Pacific Theater. He was discharged from the service in May, 1946, and was married that June to Lillie Bellin, who was then a teacher. He reports that this was undoubtedly the most brilliant decision he ever made. Lillie became his confidante, adviser, and cheering section. She cleared the way for him both to pursue science and to enjoy the regenerative experiences of life, such as children, art, music and the great outdoors. He also took a position as a Research Scientist in the Balco Research Laboratory in Newark, N.J. This was a small laboratory, supported by government contracts, doing pioneering work in the development of thin films for optical and electronic applications.

In 1947, he left Balco and started graduate training at the Polytechnic Institute of Brooklyn. His thesis dealt with the diffusion of neutral molecules in ion-exchange resins. In the next few years, his first child, Miriam, was born, and she brightened the otherwise trying period of taking preliminary examinations. At the time, the family was living on a research assistantship stipend of \$2400 per year. Finally, in December, 1950, he finished his thesis.

He returned to a good position at the Balco Research Laboratory where he remained until 1956. During that period his second daughter Deborah was born, and she too brought much joy. At Balco, he became Assistant Technical Director. His work dealt with the development of zero-temperature coefficient resistive metal

films produced by the pyrolysis of metalloorganic compounds of noble metals. He had several patents, and probably was the first to use a laser to adjust the precise value of metal film resistors.

Having had his fill of the technological aspects of science, Martin left Balco in 1956 to return to more basic scientific studies. Accepting a rather large reduction in income, he accepted a research position at New York University in the Radiation and Solid State Physics Laboratory which was then under the direction of Professor Hartmut Kallmann of the Physics Department. He carried on an active and fruitful collaboration with Professor Kallmann for many years, until Kallmann's retirement in the early seventies.

The laboratory's prime research was concerned with the study of charge and energy transport in insulators. During these early years in the laboratory, Martin had the good fortune of developing close and lasting friendships with Marvin Silver, now at the U. of North Carolina, and the late Peter Mark of the RCA Research Laboratory, while they were finishing their doctoral studies with Kallmann at New York University.

With a preference for working with materials whose composition and structure could be easily reproduced, most of Martin's research focused on charge and energy transport in organic crystals, and on single anthracene crystals in particular. He has played a major role in an international community that has sought a better understanding of such seemingly diverse processes as photosynthesis, electrophotography, photosensitization, and conductivity.

In 1960 Martin was appointed to the position of Research Associate Professor in the Physics Department and in 1965 became Associate Professor of Chemistry, and full Professor of Chemistry in 1969. At the end of 1982 he became the Director of the Laboratory. During these years, as well as currently, the Radiation and Solid State Laboratory has been supported by major grants from the Department of Energy and all of its antecedent agencies.

Martin Pope's major extracurricular activity through the years, as is well known by his friends and colleagues, is amateur mineralogy, which guides his outdoor ventures as he searches for specimens; needless to say, his favorites are crystals. In addition, he directs the Ezra Jack Keats Foundation, set up by his childhood friend to encourage creativity in the arts. Within the last few years, both he and Lillie have contributed much time and effort to ensure the financial, artistic and critical success of The New Theater of Brooklyn, which was founded by their daughter Deborah who is the artistic director of this highly successful Brooklyn-based theater company.

Although officially retired and holding the position of Professor Emeritus of Chemistry, Martin is still actively researching the photophysical and electrochemical properties of his much loved model system, anthracene. He still carries on active collaboration with other colleagues both within his University and at other institutions, and the stream of visitors to the Radiation and Solid State Laboratory from this country and abroad continued unabated. Martin is still supervising a small but highly active group of experimentalists at The Radiation and Solid State Laboratory, and provides guidance to the postdoctoral students who make their journey through the Laboratory.

This short account of Martin Pope's life would not be complete without mention of some of his unusual qualities as a human being. Many of us have had unforgettable experiences witnessing the birth of new ideas or of reaching solutions to difficult scientific problems in Martin's office; on such occasions, the level of excitement reached peak levels of intensity and the radiant glow on Martin's face infected even the dourest of graduate students and colleagues with great enthusiasm. Martin's intuitive insight into nature lies at the root of his many original scientific contributions. His unusually perceptive pictorial views of mechanisms and characteristics and properties of organic solids were often ahead of their time, but served as inspiration to many colleagues and graduate students, who later proved either experimentally or theoretically the validity of his ideas. Martin never shrank from long-range investments of time and effort into difficult, but daring and important experiments; somehow, most of them paid off handsomely. Another unusual aspect of Martin's character is his deep and caring interest in the personal welfare of his friends and colleagues; some of us have benefited numerous times from the wise counsel and advice hatched in the Pope household in the hour of need. Martin's compassion extends to all underprivileged segments of our society and poor and oppressed people throughout the world. Frequently, scientific discussions digress into the realm of the human condition, and into analyses of the political situations both here and abroad; these discussions continue in the fine tradition established during countless lunch-time debates with Professor Kallmann and other colleagues during the earlier years of existence of the Radiation and Solid State Laboratory. We look forward to many more years of active scientific collaboration with Martin Pope, and to many more spirited discussions on the usual wide range of topics in science, politics, and the arts.

Nicholas E. Geacintov
Charles E. Swenberg