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Editorial

Polymer 1960–2009

It is a pleasure and honour to be invited to contribute to the celebrations for the fiftieth anniversary of Polymer.

In 1959 I was working in the Fibres Division of ICI at Harrogate when the Research Director, Dr. Rowland Hill, asked me to see him. He was very proud to tell me that he had accepted the Editorship of a new Journal for Polymer Science and Technology to be British based. This Journal would hopefully rival the American based Journal of Polymer Science of which the founder and Chief Editor was the internationally known Herman Mark. For UK polymer scientists at that time the most appropriate journal was the Transactions of the Faraday Society but this was not always easily accessed by other polymer scientists, especially in the USA and Japan, so that our researches were often not cited by our peers. I was therefore very pleased to accept Dr. Hill's invitation (couched as almost an instruction) to immediately submit a paper for publication in the first issue of Polymer in 1960. In 1960 Polymer Science was predominantly chemistry led with the emphasis on the synthesis and properties of what we now term commodity polymers. Innovative synthetic chemistry and physical chemistry were being undertaken in universities and in several major chemistry based companies, including ICI and Courtaulds which provided Rowland Hill (ICI Fibres) and C.H. Bamford (Courtaulds Research, Maidenhead) two of the four editors of Polymer. The other editors were Cecil Bawn, Professor of Physical and Inorganic Chemistry at Liverpool University, and Geoffrey Gee, Professor of Physical Chemistry at Manchester University, who had formerly been the Director of the British Rubber Producers' Research Association at Welwyn Garden City. Professor Gee provided the link with the only aspect of the physics of polymers which had been given a sound theoretical basis at that time, the physics of rubber elasticity, beautifully described by Leslie Treloar in his classic 1949 text book.

The contents of Polymer in the first volume naturally reflected all these factors. Papers on polymerisation were concerned with standard polymers, the polymerisation of methylmethacrylate, acrylonitrile, isobutene, styrene, etc. There were papers on the physical chemistry of polymers, molecular structure and morphology. Although there were only a few papers on mechanical properties, these included two seminal papers from Peter Vincent of ICI Plastics Division, on necking and cold drawing and on tough–brittle transitions. There were also classic papers by Leslie Treloar, then working at the British Rayon Research Association, calculating the theoretical elastic moduli of polymer crystals including Terylene and cellulose. The predominance of UK based authors was extremely high and several of these were based in UK industrial firms.

It is of interest to review the progress of Polymer over the next fifty years and I have attempted to summarise this by indicating how Polymer has developed over each ten year period.

From 1960 to 1970 there was not much change in either the form or content of Polymer, although the Editorial Board had been extended to include Dr. E.M. Bradbury, Head of the Biophysics Section at Portsmouth Polytechnic and Professor R.J.W. Reynolds who had moved from ICI to be Director of the Institute of Polymer Technology at Loughborough University and essentially replaced Rowland Hill who had sadly passed away very soon after his retirement from ICI in 1965. Polymer contained much the same mix of polymers being discussed, again concentrating on the commodity polymers of polystyrene, polyethylene, nylon, polyethylene terephthalate and PVC. The primary emphasis was still on physical chemistry and chemical physics, with a few papers on mechanical properties. This reflected the commercial situation at the time which was consolidation and expansion of activities with very little novelty, although the 1970 volume does contain a key paper from Ed Kramer in the US on reptation in polymer blends. Polymer was gradually becoming recognised internationally, with a small but significant number of papers from the US and even a few from Japan.

By 1980 change was well under way. A new publisher, Chris Rawlins, recruited a much larger group of editors including six from the USA and set up an International Advisory Board including members from Europe and Japan. Although the content of the papers remained similar, with the main thrusts being on physical chemistry and relationships between structure and properties, including mechanical properties, many papers were now submitted from authors outside the UK. For example, in the December issue of the1980 volume, out of 28 papers only 6 were from UK based authors and this would be the subsequent situation for the Journal.

By 1990, the editors had been merged with the Editorial Board which consisted of about fifty members, about half of whom were US based. There was now a much more widely based authorship of papers and Polymer had become an international journal, with papers from Japan, Europe and the USA and rather fewer from the UK. The content was remarkably similar to previous years, although papers on mechanical properties were more in evidence but not novel electroactive or optical properties. Papers on polymer synthesis were well represented but still on conventional polymers such as polyethylene terephthalate, polyethylene, polycarbonate with some papers on block copolymers.

By December 1999, the editorial arrangements had been restructured. There was now a small Executive Editorial Board and a very broadly based Advisory Board. The principal editors' responsibilities were clearly designated in terms of scientific areas

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and geographical regions; Europe, North America and Asia. Polymer had become more established as an international journal and, although the flavour of the scientific content had not changed dramatically, a broader range of subjects was evident, with some more sophisticated synthetic chemistry and correspondingly greater coverage of emerging areas of polymer science and technology.

By 2008 these emerging changes in the journal had been consolidated and major transformation had taken place. The present Editorial Board is very evenly balanced in terms of membership from editors based in Europe, North America and Asia, the last of these now including China as well as Japan. There is a correspondingly expanded Editorial Advisory Board. Very importantly, the balance of the contents has also changed with a much greater emphasis on innovative chemistry, principally for functional materials including novel optical and electrical properties. Major new themes have emerged such as nanotechnology and novel processing such as electrospinning. Although there are still papers dealing with new aspects of commodity polymers, especially polypropylene and polyesters, the change from a predominant interest in mechanical properties to more sophisticated applications often involves innovative chemistry. Emphasis on environmental issues leads to studies of biodegradable polymers which are also now represented.

It is good to be able to conclude this review on a personal note. I have seen Polymer develop in an amazing way over nearly fifty years and it has been able to respond very positively to the changes in the subject with regard to both content and international growth, especially including Asia as well as Europe and North America.

This would not have been achieved without the tireless dedication of the Managing Editors and it is a particular pleasure to recognize Rumen Duhlev's recent contributions to the development of Polymer. The present success of the journal in terms of the steadily increasing citation index and the very wide coverage of the subject augurs very well indeed for the future and fully justifies the celebrations to be held at Mainz in June 2009.

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