

Editorial

Polymer Fibres 2000

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Natural polymers fibres such as hair and wool have been exploited since antiquity. The development of synthetic polymers in the last century was driven partly by the need for man-made fibres. Because of this, polymer fibres have been the focus of intensive research for a many years and, by some people, the field is now perceived as being mature. This, however, is far from the case and in recent years there have been unparalleled developments in the preparation of new polymer-based fibres, new techniques of fibre characterisation and novel applications of polymer fibres. Moreover, polymer fibres are finding increasing use in high-performance composites where their high levels of stiffness and strength combined with low density give rise to materials with outstanding mechanical properties.

This special section of the *Journal of Materials Science* contains nine papers selected specially from a number presented at the International Conference 'Polymer Fibres 2000' held in Manchester in July 2000. At the conference there was a total of 4 keynote lectures and 28 oral presentations, along with 15 poster papers. Moreover, the delegates came from 15 different countries. The main themes of the meeting were:

- New applications
- New techniques
- New developments
- Future developments and trends

The nine papers in this issue are a representative selection of research under all of these themes. Applications of new polymer fibres in areas as diverse as ballistic protection and electrical conduction are highlighted. Techniques of x-ray scattering using synchrotron radiation to follow both fibre deformation and structure development during processing are also covered. New techniques of fibre processing such as reactive extrusion are presented along with methods such as neural modelling and factorial design to monitor and control fibre processing. The final two papers are concerned with the mechanical properties of fibres. One deals with the fundamentals of deformation of polyamide yarns and the other with natural cellulose polymer fibres that have potentially extremely good properties once the detrimental effects of defects can be eliminated. In the latter case it is demonstrated that the technique of Raman spectroscopy gives a unique insight into the fundamentals of molecular deformation of natural polymer fibres. Although it has not been possible to include all of the papers presented at the meeting it is hoped that a flavour of the exciting research developments in the field Polymer Fibres will be conveyed.

In view of the success of the Conference it is intended to hold a follow-up one in Manchester on 10–12 July 2002 and again publish a selected number of papers in a special section of the *Journal of Materials Science*. Further details may be obtained from me at the above address.