# Editorial
# Polymer Fibres 2002: The Manchester Conference Centre, Manchester, UK, 10–12 July 2002

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Natural polymers fibres such as hair, wool and silk have been exploited since antiquity. The development of synthetic polymers in the 20th 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 fifteen papers selected specially from a number presented at the Second International Conference 'Polymer Fibres 2002' held in Manchester in July 2002. At the conference there was a total of 41 oral presentations and 35 poster papers and delegates came from 25 different countries. In addition, a keynote lecture entitled "Nanoscience and Nanotechnology—The Chemistry of the 21st Century" was given by the Nobel laureate, Professor Sir Harry Kroto FRS of Sussex University, UK. He presented an inspiring lecture upon the potential of nanotechnology to develop new materials that may shape the world of the future. The main themes of the meeting were:

- High Performance Fibres
- Mechanical Properties
- Processing
- Fire Retardancy of Fibres
- Natural Fibres
- Fibre Assemblies
- Nanotechology
- Fibre Surfaces

The fifteen papers in this issue are a representative selection of the research presentations under all of these themes. The first paper by Davies and co-workers is concerned with use of the technique of microfocus X-ray diffractron using synchrotron radiation to compare the deformation of single high-performance fibres in both skin and core regions. This is followed by a paper by Marcellan and co-workers who have undertaken a detailed study of the deformation of polyamide fibres using a range of techniques including Raman spectroscopy. The next four papers are concerned with the exciting new field nanotechnology. The application of the fibre processing technique of electrospinning applied to natural protein fibres is described in the paper by Xie and Hsieh. Sandler and co-workers describe the preparation and properties of PEEK fibres reinforced with carbon nanofibres. The production of nanocomposite fibres for antibacterial applications is described by Yeo and co-workers. The paper by Brünig and co-workers gives an account of the preparation of ultra-fine PEEK fibres. The next three papers describe research upon the structure and properties of thermoplastic fibres. Haward revisits his long-standing interests upon adiabatic fracture whereas Risnes and co-workers show how advanced microscopy techniques can be used to characterise polypropylene fibres. Stakne and co-workers then described their research upon the characterisation of modified polypropylene fibres. Surface modification is used widely upon polymer fibres and the next two papers by Carr and co-workers give a detailed account of the application of advanced surface characterisation techniques to fibres and fibrous assemblies. The final two papers are concerned with the modification and characterisation of textile fabrics. Lee and co-workers look into the effect of nano-sized silver particles upon antibacterial activity and Reutenauer and Thielmann show how inverse gas chromatography can be used to characterise cotton fabrics.

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 third in Manchester on 14–16 July 2004 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.

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