

environment friendly etc., — is also highly recommended for up-to-date reading.

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New Fibres. By T. Hongu and G. O. Phillips, Ellis Horwood Ltd, Chichester, 1990. xii + 221 pp. ISBN 0-13-613266-9.

For more than 4000 years, man has made use of natural fibres, but it is only in the last century that he has begun to develop synthetic fibres. This book sets out to give an overview of developments in the synthetic 'new' fibre field since Count Chardonnet invented the first artificial silk.

By the 1950s, artificial fibres for example, polyester and nylon were being produced that exactly copied natural fibres, thus providing an alternative to them. During the mid-1980s a new development occurred, the fibres being produced were not only an alternative to a natural fibre, but they were specific improvements, designed for specific tasks, these synthetic fibres led to the development of the so called 'super fibres' (a fibre with a modulus greater than 55 GPa and a tenacity of 2.5 GPa).

Super fibres far outperform their natural counterparts, and it is these fibres that the book deals with in the greatest detail. The book describes the search for and development of fibres with greater and greater strength. These include Aramid (aromatic polyamide) fibre, which is the subject of a great race between rival companies and nations. This is described in detail as an example of the big business represented by new fibre development. Other fibres covered in this section include Polyacetal fibre and Strong Vinyon RM.

Another major field of development is the search for fibres with a fineness and texture that appeal to human touch, for use in clothing. The strength of the fibre for clothing is irrelevant if the item is uncomfortable or irritating to wear. The book discusses these new developments, along with developments which can actually improve clothing for the user. It shows fibres that are ceramic-blended, and have heat insulating properties. There are fibres that are perfumed, that change colour in light or temperature and even fibres which store solar energy. It leaves one with the impression that there are more exciting developments on the way.

Fibres are being produced which are actually biomimetic. That is, they mimic the structure of a naturally occurring system. Uses for this range from synthetic furs and leathers, which are undetectable from the real thing, to deodorant fibres which are enzyme-like in their action. The biomimetic field has massive potential.

Biopolymers are polymers which mimic or derive from natural organisms, these are discussed in great detail with examples such as enzyme mimicking and the production of cellulose by bacterial means, producing incredibly fine and pure fibres. The book discusses these new developments and proposes many new uses of fibres in varied fields.

The book is a very good source of information on the state of the fibre field today, and of its possibilities for the future. It is well written and extremely readable, and would be a useful addition to the library of a person working in the fibre field, although because it covers such a wide number of topics it will only be useful to a fibre scientist who feels he requires an overview of the whole topic. General scientists who wish to find out about the fibre field will find the book invaluable, as will students of fibre science.

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Bitterness in Food and Beverages. Edited by Russel L. Rouseff, Elsevier Science Publishers, Amsterdam, 1990. xviii + 356 pp. ISBN 0-444-88175-1. Price: US\$133.25.

Bitterness is a subject which has not received the attention it deserves by scientists involved with food and beverages although it is present in many of our most important foods; fruits (apples, grapes, citrus), vegetables (soya beans, carrots, hops), protein products (milk, cheese, fish), etc.

Bitterness is considered to be one of the so-called four basic tastes, together with sweetness, salty and sour. A large variety of compounds can taste bitter; amino acids, amines, esters, carbohydrate derivatives, and so on, which makes research in this area a fascinating challenge.

This last volume of the series *Development in Food Science* represents a successful attempt at producing a readable and comprehensive text. It contains some fundamental concepts of bitterness and