

Book reviews

M. Jenkins (Ed.), *Materials in Sport Equipment*, Woodhead Publishing Ltd, Cambridge, UK, 2003 (xv + 407 pp., £135.00, ISBN 1-85573-599-7).

In the last century sport has become one of the main forms of entertainment of modern societies, being either practiced or followed by increasing numbers of people. This can be easily seen by considering the size of the population and market involved in sports such as football and tennis. The sport market has increased from £115 million in 1995 to £180 million in 1998 in the UK alone. Improvements in athlete's performances have mirrored such increases, with the ongoing breaking of world records. Taking the triple jump as an example, the world record has increased from 15.5 m in 1910 to 18.75 m in 2000. Such performance improvements have been achieved as a result of both development of the human element, such as the psychological and physiological coaching of athletes, and also the technological evolution of materials used in sports equipment.

Carbohydrate polymers play important parts in the fibres of many sport equipment materials—and there is no substitute in absolute reality for cellulose fibres. However, other carbohydrate polymer derivatives are being developed which have absorptive properties or antimicrobial activities or lubricating actions. Sport equipment is therefore just one of several areas ripe for the development of new functional carbohydrate polymer preparations.

Materials in Sport Equipment presents an overview of new technologies involved in the production of materials used in sports equipment manufacture, and begins with an introductory chapter from the volume editor that briefly reviews the issues related to performances, materials and designs in sport. The first part of the volume then focuses on the general uses of materials such as foam protectors, sports surfaces, running shoes and balls. Sport surfaces have a broad range of uses (e.g. in football, rugby, tennis and hockey), and are subject to a large range of studies such as the measurement of resilience and torsion in order to improve the practicability and performances of athletes. The second part of the volume focuses on particular sports, including golf, tennis, cycling, skiing, cricket, and paralympic sports, and provides detailed descriptions of the current materials, concerns and trends related to these sports. New technologies and trends involve engineering skills for the development of 'intelligent' equipment, such as the

development of tennis rackets that prevent tennis elbow, cricket bats that maximise post-impact ball velocity, and piezo-ceramics and electro-active polymers for use in skiing.

This volume is an excellent resource for all individuals interested in the development and application of advanced sports materials. The technologies and theories behind such equipment is clearly explained and illustrated. Selected chapters also contain a brief historical review of the particular sport in question, making this volume also of interest to the sport historian.

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E.J. Vandamme, S. De Baets, A. Steinbüchel, *Biopolymers*, Volume 6, WILEY-VCH Verlag GmbH, Weinheim, 2002 (636 pp., £150.00, ISBN 3-527-30227-1).

Biopolymers represent the most abundant organic compounds in the biosphere. They are important for life and exhibit fascinating properties, and are of increasing importance for various applications. Eight main classes of biopolymers are distinguished according to their chemical structure: (1) nucleic acids such as ribonucleic acids and deoxyribonucleic acids, (2) polyamides such as proteins and poly(amino acids), (3) polysaccharides such as cellulose, starch, and xanthan, (4) organic polyoxoesters such as poly(hydroxyalkanoic acids), poly(malic acid) and cutin, (5) polythioesters, (6) inorganic polyesters with polyphosphate, (7) polyisoprenoids or Gutta Percha and (8) polyphenols such as lignin or humic acids.

Furthermore, biopolymers occur in any organism and possess a wide range of different essential or beneficial functions for the organisms: conservation and expression of