ELSEVIER

Book reviews

Van Langenhove L. (Ed.), Smart textiles for medicine and healthcare. Materials, systems and applications, Woodhead Publishing Limited and CRC Press LLC, Cambridge, 2007 (xiii + 312 pp., £135.00, ISBN 1-84569-027-3)

The world of textiles is very wide and miscellaneous. Their functions as clothes and different materials for everyday use are undeniably an inseparable part of human civilisation. For the last two decades the application of textiles has been directed towards smart materials, which can be used in such areas as sport, medicine, military, aerospace and also fashion. For instance, smart textiles broadly developed in the sport area can play a role as an outdoor-garment with smart membranes, which let in the moisture only in one direction, keep the wearer warm and protect them against the wind. Medical smart textiles are special materials, which can support the monitoring of organ condition, e.g. heart tones. Moreover, smart textiles may be applied as wound dressings, which not only protect the injured space, but also provide the appropriate environment that accelerates the healing process.

'*Smart textiles for medicine and healthcare. Materials, systems and applications*' is a volume where different domains of smart materials for healthcare are explained and discussed. Various trends in smart or intelligent textiles are applied according to the medical use. For instance, electronic textiles or e-textiles present the union of the electronics industry and textiles which is the generation of wearable computing (Chapter 1). Smart wound care materials such as low-adhering dressings, hydrocolloid dressings, hydrogels, polysaccharide fibres or vapour permeable adhesive film dressings are a few examples of intelligent wound dressings (Chapter 2). Administering drugs to the wearer by releasing them into the skin from textiles is an alternative route for dosing remedies when the oral way is not permitted. Cyclodextrins, ion-exchange fibres and drug-containing fibres (microencapsulated) are slow drug-release systems within textiles (Chapter 3). The properties of shape memory materials in medical textiles are explained by physical effects and temperature relationships. Shape memory textiles are being used as e.g. stents, wound closure materials or surgical protective garments (Chapter 4). The use of electronics and different sensors within textiles enables monitoring of the condition of organisms e.g. textile-suit with integrated sensors monitors the heart and respiration rate (Chapters 5 and 6). Some body parameters such as skin-pH and temperature may be changed when exposed to sunlight or water. That may affect the

dyes which are included within textiles that can undergo changes when they are reduced or oxidised. This could be visible as a change of colour (Chapter 7).

Other classifications of smart dressings for healthcare can be made in terms of different types of patients. Intelligent garments for pre-hospital emergency care or smart textiles that support rehabilitation are examples that involve fibres and yarns. They must have a proper structure and may be engineered and placed in relation to zones on the body, preferably to suite the demands of individual figure types, postures and sizes (Chapters 8, 9 and 12). Textile systems, which are the wearable platforms able to monitor the vital signs of mother and foetus play a significant role during pregnancy (Chapter 10). Additionally, separate attention might be directed towards smart textiles for monitoring children in hospital (Chapter 11), for examining patients with heart conditions (Chapter 14) and those which are wearable assistants for mobile health monitoring (Chapter 13).

This book is an up-dated summary of information about various smart textiles that might be used to improve the health condition of patients. It contains not only the theoretical background for their mechanisms and structures but also shows practical applications and examples. Therefore it is a collection of rich knowledge about current smart textiles. It is particularly useful for students and lecturers interested in smart textiles for healthcare and medicine.

Katarzyna Bunko
John F. Kennedy [*]
Chembiotech Laboratories,
University of Birmingham Research Park,
97 Vincent Drive, Edgbaston,
Birmingham B15 2SQ, UK

Available online 27 April 2007

G. Guiochon, A. Felinger, D.G. Shirazi and A.M. Katti, Fundamentals of Preparative and Nonlinear Chromatography, 2nd ed., Academic Press, Amsterdam, The Netherlands, 2006 (xiv + 975 pp., £155.00, ISBN: 0-12-370537-1)

Since the first edition of this book was written, 10 years ago, there has been many advances in the use of chroma-