Indian Journal of Fibre & Textile Research
Vol. 41, June 2016, pp. 226-227

Book Review

Handbook of Technical Textiles, Vol. 2: Technical Textile Processes, edited by A Richard Horrocks and Subhas C Anand, 2nd edn (The Textile Institute and Woodhead Publishing), 2016, pp. 452, Price $ 250.00.[ISBN: 97-1-78242-465-9 (print); 978-1-78242-488-8 (online)]

The book entitled "Handbook of Technical Textiles, Volume 2: Technical Textile Processes", is a collection of thirteen chapters written on different topics in the area of technical textiles. The topics include textile-reinforced composites, waterproof breathable fabrics, textiles in filtration, geotextiles in civil engineering, textiles for healthcare and medical applications, technical textiles for ballistic protection, technical textiles for knife and slash resistance, technical fibres for heat and flame protection, technical textiles for personal and thermal protection, technical textiles for survival, technical textiles in transport (land, sea, and air), energy harvesting and storage textiles, and rope, cord, twine, and webbing. In total, eighteen authors contributed to this book.

The first chapter refers to textile-reinforced composite materials. It gives overview and mechanical behavior of composites prepared from textile reinforcements, viz. woven, braided, knitted, and stitched fabrics. It does, however, not discuss on composites prepared from random nonwoven textile reinforcements. Though such composites demonstrate very limited high performance applications, they are continuously being used in applications demanding a high resin content layer without high mechanical stability. One such example refers to the outer skin of boat hulls. The processing, property, and applications of such materials are reviewed in detail in another publication [Li Y, Sreekala, S and Jacob M, in *Natural Fibre Reinforced Polymer Composites from Macro to Nano-scale*, edited by S Thomas and L A Pothan (Old City Publishing, Inc., Philadelphia), 2008, 202].

Chapter 2 provides detailed technical information on waterproof breathable fabrics. This chapter deliberates about the manufacturing, performance, and applications of different types of breathable fabrics. At the end of this chapter, a comparison among several breathable fabrics is given. Though this chapter is quite comprehensive, it, however, skips a discussion on the material-process-structure-property-performance relationship in waterproof breathable fabrics. This relationship, if known, often helps to select an appropriate fabric for a given application.

Chapter 3 deals with textiles for filtration application. It gives a general introduction to solid-gas filtration (dust collection) and solid-liquid filtration. It discusses on raw materials, polymers, fibres, fabrics, and finishing processes employed to manufacture fibrous filter media. It further gives a brief discussion on nanofibres for filtration, filter test procedure, and filter market developments. It does not discuss on electret fibrous filter media. Air filters of this kind are widely used as respirators in personal protective equipments, dust collectors in air conditioners, exhaust filters in vacuum cleaners, etc. An interesting review on this topic is available in literature [Thakur R, Das D and Das A, *Electret air filters, Separation & Purification Reviews*, 42 (2), 2013, 87].

Chapter 4 is titled as geotextiles in civil engineering. It reports on functions, fibre selection, manufacturing, properties, design and durability of geotextiles. It, however, does not discuss on the structure-property relationship in geotextiles that ultimately decides their performance in different applications. The publication by Lawrence reports recent information in this regard [Lawrence C A in *High Performance Textiles and Their Applications*, by C A Lawrence (Woodhead Publishing Ltd., UK), 2014, 256].

Chapter 5 deliberates on textiles for healthcare and medical applications. It discusses on the fibres used to prepare healthcare and medical products. Also, it discusses on implantable and non-implantable materials as well as healthcare and hygiene products.

Chapter 6 reports on technical textiles for ballistic protection. It mainly discusses on ballistic fibres and ballistic fabrics and their test methods. But, the selection of materials and the design of fabrics for

ballistic protection are found to be missing. These aspects of ballistic protection were taken into account in a review by Bajaj and Sriram [Bajaj P & Sriram, Ballistic Protective Clothing: An Overview, *Indian Journal of Fibre and Textile Research*, 22 (1997) 274]. The next chapter deals with technical textiles used for knife and slash resistance. It discusses on the materials, test methods, recent developments and future outlook of cut/slash resistance materials.

Chapter 8 deals with technical fibres for heat and flame protection. It first discusses on the principles of heat and flame projection before deliberating on the key technical fibres used for heat and flame protection.

The next chapter is directed towards technical textiles for personal and thermal protection. It briefly reviews the developments made in this area before discussing on the development of performance standards and test methods.

Chapter 10 deals with technical textiles for survival. Here, both short-term and long-tern survivals are discussed. Further, care and cleansing of survival, protective textiles are also described in this chapter.

Chapter 11 deliberates on technical textiles in transport (land, sea, and air). At first, it discusses on tyres, hoses and beltings, seat belts, airbags. It then dwells into land transport, marine transport, and aviation.

The next chapter discusses energy harvesting and storage textiles. At first, the role of textile materials for energy harvesting and storage is discussed. Then, the development techniques for energy harvesting piezoelectric textiles and energy storage textiles are described.

The last chapter – Chapter 13 – discusses on rope, cord, twine, and webbing for a myriad of applications including but not limiting to retail, marine, industrial, military, and sport.

All chapters are quite comprehensive, and hence a balance view of the area is given. This book explores many important application areas of technical textiles. It makes useful contribution to the existing body of knowledge in the areas namely buidtech, geotech, hometech, indutech, medtech, mobiltech, packtech, protech, and sporttech. But, a very limited number of applications are included in the areas of agrotech and oekotech. As this volume primarily focuses on the applications of technical textiles, its title would have been more appropriately written as 'Technical Textile Applications', instead of 'Technical Textile Processes'. Nevertheless, it continues to be a rich and varied resource in the area of technical textiles. This is a reference book which is likely to help students, researchers, and teachers in the area of technical textiles.

Dr Dipayan Das
Textile Technology Department
Indian Institute of Technology
New Delhi 110 016, India