

1. Record Nr.	UNINA9911004767303321
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Titolo	Smart Fibres, Fabrics and Clothing : Fundamentals and Applications
Pubbl/distr/stampa	Burlington, : Elsevier Science, 2001
ISBN	1-280-37248-6 9786610372485 1-59124-642-3
Descrizione fisica	1 online resource (335 p.)
Collana	Woodhead Publishing Series in Textiles
Disciplina	677
Soggetti	Smart materials Textile chemistry Textile fabrics Textile fibers Mechanical Engineering Engineering & Applied Sciences Industrial & Management Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Front Cover; Smart Fibres, Fabrics and Clothing; Copyright Page; Table of Contents; Foreword; Contributors; Acknowledgements; Chapter 1. Smart technology for textiles and clothing - introduction and overview; 1.1 Introduction; 1.2 Development of smart technology for textiles and clothing; 1.3 Outline of the book; Chapter 2. Electrically active polymer materials - application of non-ionic polymer gel and elastomers for artificial muscles; 2.1 Introduction; 2.2 Polymer materials as actuators or artificial muscle; 2.3 Peculiarity of polymer gel actuator; 2.4 Triggers for actuating polymer gels 2.5 Electro-active polymer gels as artificial muscles2.6 From electro-active polymer gel to electro-active elastomer with large deformation; 2.7 Conclusions; Acknowledgements; References; Chapter 3. Heat-storage and thermo-regulated textiles and clothing; 3.1 Development introduction; 3.2 Basics of heat-storage materials; 3.3 Manufacture of heat-storage and thermo-regulated textiles and clothing; 3.4

Properties of heat-storage and thermo-regulated textiles and clothing; 3.5 Application; 3.6 Development trends; References; Chapter 4. Thermally sensitive materials; 4.1 Introduction 4.2 Thermal storage and thermal insulating fibres 4.3 Thermal insulation through polymeric coatings; 4.4 Designing of fabric assemblies; References; Chapter 5. Cross-linked polyol fibrous substrates as multifunctional and multi-use intelligent materials; 5.1 Introduction; 5.2 Fibrous intelligent materials; 5.3 Experimental; 5.4 Results and discussion; 5.5 Conclusions; References; Chapter 6. Stimuli-responsive interpenetrating polymer network hydrogels composed of poly(vinyl alcohol) and poly(acrylic acid); 6.1 Introduction; 6.2 Experimental; 6.3 Results and discussion; 6.4 Conclusions References Chapter 7. Permeation control through stimuli-responsive polymer membrane prepared by plasma and radiation grafting techniques; 7.1 Introduction; 7.2 Experimental; 7.3 Results and discussion; 7.4 Conclusions; Acknowledgement; References; Chapter 8. Mechanical properties of fibre Bragg gratings; 8.1 Introduction; 8.2 Fabrication techniques; 8.3 Mechanisms of FBG sensor fabrication; 8.4 Mechanical properties; 8.5 Influence of the UV-irradiation on mechanical properties; 8.6 Polymeric fibre; 8.7 Conclusions; Acknowledgements; References Chapter 9. Optical responses of FBG sensors under deformations 9.1 Introduction; 9.2 Optical methodology for FBG sensors; 9.3 Optical responses under tension; 9.4 Optical responses under torsion; 9.5 Optical responses under lateral compression; 9.6 Optical responses under bending; 9.7 Conclusions; Acknowledgements; References; Chapter 10. Smart textile composites integrated with fibre optic sensors; 10.1 Introduction; 10.2 Optical fibres and fibre optic sensors; 10.3 Principal analysis of embedded fibre Bragg grating sensors; 10.4 Simultaneous measurements of strain and temperature 10.5 Measurement effectiveness

Sommario/riassunto

This important book provides a guide to the fundamentals and latest developments in smart technology for textiles and clothing. The contributors represent a distinguished international panel of experts and the book covers many aspects of cutting edge research and development. Smart fibres, fabrics and clothing starts with a review of the background to smart technology and goes on to cover a wide range of the material science and fibre science aspects of the technology including: Electrically active polymeric materials and the applications of nonionic polymer gel and elastomers for artif