

1. Record Nr.	UNINA9910787233903321
Titolo	Switchable and responsive surfaces and materials for biomedical applications / / edited by Zheng Zhang
Pubbl/distr/stampa	Cambridge, England : , : Woodhead Publishing, , 2015 ©2015
ISBN	0-85709-717-2
Descrizione fisica	1 online resource (325 p.)
Collana	Woodhead Publishing Series in Biomaterials ; ; Number 92
Disciplina	620.192
Soggetti	Smart materials - Design and construction Smart structures - Industrial applications
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	FrontCover; Related titles; Switchable and Responsive Surfaces and Materials for Biomedical Applications; Copyright; Contents; List of contributors; Woodhead Publishing Series in Biomaterials; Introduction; Responsive materials; Responsive surface modification; Responsive surface-biological system interactions; Multidisciplinary research toward different biomedical applications; References; Part One -Switchable and responsive materials and surfaces; 1 - Thermo-responsive polymers: structure and design of smart materials; 1.1 Introduction; 1.2 Thermo-responsive polymers and their characteristics 1.3 Types of thermo-responsive polymers 1.4 Physical forms of switchable materials and their applications; 1.5 Summary; References; 2 - Environmentally responsive polyelectrolytes and zwitterionic polymers; 2.1 Introduction; 2.2 Monomer subunits and polymerization approaches; 2.3 General solution properties; 2.4 Stimuli-induced changes and their applications; 2.5 Future trends; 2.6 Sources of further information; References; 3 - Peptide-based switchable and responsive surfaces; 3.1 Introduction; 3.2 Preparation of peptide surfaces; 3.3 Responsive peptide surfaces 3.4 Peptides attached to responsive surfaces 3.5 Protein surfaces; 3.6 Physical properties and characterisation; 3.7 Emerging applications; 3.8 Future trends; References; 4 - Photonic sensitive switchable materials; 4.1 Introduction; 4.2 Photonic sensitive switchable materials; 4.3

Potential applications; 4.4 Conclusions and future trends; References; 5 - Responsive polymer brushes for biomedical applications; 5.1 Introduction; 5.2 Brush architecture; 5.3 Types of responsive polymer brushes; 5.4 Biomedical applications; 5.5 Summary and future trends; References

6 - Preparation and analysis of switchable copolymers for biomedical application6.1 Introduction; 6.2 Switchable copolymer coatings; 6.3 Advanced analytical techniques; 6.4 Future trends; 6.5 Sources of further information; References; Part Two -Biological interactions and biomedical applications of switchable surfaces; 7 - Interaction of switchable biomaterials surfaces with proteins; 7.1 Introduction; 7.2 Protein adsorption on surfaces; 7.3 Protein adsorption on thermo-responsive surfaces; 7.4 Protein adsorption on pH and/or ionic strength-responsive surfaces

7.5 Protein adsorption on other responsive surfaces7.6 Synergistic effect of surface chemistry and nanostructures on protein adsorption; 7.7 Aspects for future research; Acknowledgments; References; 8 - Interaction of responsive/switchable surfaces with cells; 8.1 Introduction; 8.2 Controlling stem cell behavior; 8.3 Interfacial properties; 8.4 Physical behavior; 8.5 Future trends; References; Further reading; 9 - Temperature-responsive polymers for cell culture and tissue engineering applications; 9.1 Introduction

9.2 Methods for preparing temperature-responsive cell culture surfaces (TRCSs) and their characteristics

Sommario/riassunto

Surface modification of biomaterials can ultimately determine whether a material is accepted or rejected from the human body, and a responsive surface can further make the material ""smart"" and ""intelligent"". Switchable and Responsive Surfaces and Materials for Biomedical Applications outlines synthetic and biological materials that are responsive under different stimuli, their surface design and modification techniques, and applicability in regenerative medicine/tissue engineering, drug delivery, medical devices, and biomedical diagnostics. Part one provides a detailed overview of swit
