

1. Record Nr.	UNINA9910973958803321
Titolo	Biodegradable materials : production, properties and applications // Brandon M. Johnson and Zachary E. Berkel, editors
Pubbl/distr/stampa	Hauppauge, N.Y., : Nova Science Publishers, c2011
ISBN	1-62100-165-2
Edizione	[1st ed.]
Descrizione fisica	1 online resource (251 p.)
Collana	Materials science and technologies
Altri autori (Persone)	JohnsonBrandon M BerkelZachary E
Disciplina	620.1/1223
Soggetti	Materials - Biodegradation Biodegradable products
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	Intro -- BIODEGRADABLE MATERIALS: PRODUCTION, PROPERTIES AND APPLICATIONS -- BIODEGRADABLE MATERIALS: PRODUCTION, PROPERTIES AND APPLICATIONS -- CONTENTS -- PREFACE -- Chapter 1 TOWARDS PEDIATRIC URINARY BLADDER TISSUE ENGINEERING -- NORMAL BLADDER ANATOMY AND PHYSIOLOGY -- ETIOLOGY OF THE NEUROGENIC BLADDER -- CURRENT TREATMENT MODALITIES FOR THE NEUROGENIC BLADDER ARE INADEQUATE -- ADVANCES IN TISSUE ENGINEERING FOR BLADDER REGENERATION -- ALTERNATE CELL SOURCES FOR BLADDER TISSUE ENGINEERING -- BONE MARROW MICROENVIRONMENT -- MSC MULTIPOTENTIALITY AND GROWTH CHARACTERISTICS -- THE USE OF MSCS AS A TOOL FOR REGENERATIVE MEDICINE -- BONE MARROW CELLS AND BLADDER REGENERATION -- ENDOTHELIAL PROGENITOR CELLS FOR VASCULAR GROWTH -- NEURAL PROGENITOR/STEM CELLS -- EMBRYONIC STEM CELLS -- INDUCED PLURIPOTENT STEM CELLS -- SCAFFOLD MATERIAL SELECTION: BIOLOGICS VS. SYNTHETICS/POLYMERICS -- CONTROLLED DELIVERY OF GROWTH FACTORS FROM SCAFFOLDS ENHANCES TISSUE REGENERATION -- THE USE OF NANOTECHNOLOGY WITH SELF-ASSEMBLING MATRICES PROVIDES AN ALTERNATIVE METHOD OF GROWTH FACTOR DELIVERY -- SELF-ASEMBLING NANOMOLECULES -- PA MOLECULES FOR TETHERED GROWTH FACTOR DELIVERY -- DIFFERENTIATION OF NEURAL PROGENITOR CELLS WITH IKVAV

PRESENTING NANOFIBERS -- SUMMARY -- REFERENCES -- Chapter 2
CHITOSAN FROM AQUATIC AND TERRESTRIAL ORGANISMS AND
MICROORGANISMS: PRODUCTION, PROPERTIES AND APPLICATIONS --
ABSTRACT -- INTRODUCTION -- RAW MATERIALS FOR PRODUCTION OF
CHITIN AND CHITOSAN -- PRODUCTION OF CHITIN AND CHITOSAN
FROM AQUATIC CRUSTACEANS, INSECTS, MUSHROOMS AND FUNGI --
PRODUCTION OF LOW-MOLECULAR-WEIGHT CHITOSAN AND CHITO-
OLIGOSACCHARIDES -- PHYSICO-CHEMICAL PROPERTIES OF
CHITOSANS FROM VARIOUS SOURCES -- INDUSTRIAL-SCALE
PRODUCTION OF CHITIN AND CHITOSAN -- A-Z APPLICATIONS OF
CHITOSANS -- NOMENCLATURE OF CHITIN AND CHITOSAN --
CONCLUSION.
ACKNOWLEDGMENTS -- REFERENCES -- Chapter 3 DEGRADATION
PARAMETERS AND MECHANICAL PROPERTIES EVOLUTION -- RANGE OF
PROPERTIES FOR DIFFERENT APPLICATIONS -- INFLUENCE OF
PRODUCTION PROCESS ON DEGRADATION -- EROSION PROCESS AND
DEGRADATION -- Diffusion -- Hydrolysis -- Surface and Bulk Erosion
-- Phenomenon of Hollow Formation -- DAMAGE EVOLUTION OF
BIODEGRADABLE POLYMERS -- Hydrolytic Damage -- Creep and
Fatigue Damage -- REFERENCES -- Chapter 4 POLY LACTIC ACID: AN
ENVIRONMENTALLY FRIENDLY BIODEGRADABLE POLYMER -- ABSTRACT
-- INTRODUCTION -- LACTIC ACID AND ITS PRODUCTION -- PLA
SYNTHESIS -- PROPERTIES OF PLA -- APPLICATIONS OF PLA -- PLA
DEGRADATION -- FUTURE PROSPECTS -- ACKNOWLEDGMENT --
REFERENCES -- Chapter 5 BIODEGRADABLE MATERIALS: A GREENER
TECHNOLOGY FOR WATER PURIFICATION -- ABSTRACT -- 1.
INTRODUCTION -- 2. BIODEGRADATION -- 3. BIODEGRADABLE
MATERIALS APPLIED FOR WATER TREATMENT -- 3a) Lignocellulosics --
3b) Compost and Peat for Water Treatment -- 3c) Activated Sludge for
Water Treatment -- 3d) Biodegradable Polymers for Water Treatment --
3e) Biodegradable Polymer Composites for Water Treatment --
CONCLUDING REMARKS -- REFERENCES -- Chapter 6 FUNCTIONAL
PROPERTIES OF BIOPOLYMERS FOR DRUG DELIVERY APPLICATIONS --
ABSTRACT -- INTRODUCTION -- CLASSIFICATION OF BIOPOLYMERS --
POLYSACCHARIDES -- Chitin -- CHITOSAN -- Functional Properties of
Chitosan in Drug Delivery -- Swelling of Chitosan -- Bioadhesive
Properties of Chitosan -- CELLULOSE -- Cellulose Modification --
Microcrystalline Cellulose -- Other Modifications -- Cellulose Esters --
Hemicellulose -- KONJAC GLUCOMANNAN -- GUAR GUM -- LOCUST
BEAN GUM -- STARCH -- Modified Starch -- Acid-Modified Corn Starch
-- Oxidized Corn Starch -- Dextrins -- PECTIN -- INULIN --
ALGINATES -- CARRAGEENANS -- ROSIN -- ACACIA GUM (GUM
ARABIC) -- PSYLLIUM.
POLYSACCHARIDES FROM MICROORGANISMS -- GELLAN GUM --
XANTHAN GUM -- PEPTIDES /PROTEINS -- POLYNUCLEOTIDES --
GELATIN -- MUCIN -- APPLICATION OF BIOPOLYMERS IN DRUG
DELIVERY -- Drug Delivery Systems -- Biopolymers in Immediate
Release Dosage Forms -- Biopolymers in Modified Release Dosage
Forms -- Modified Delivery System -- Delayed Release -- Sustained
Release -- Site Specific Targeting -- Receptor Targeting --
Biopolymer-Based Drug Carriers Systems -- Peptide Carriers -- SOME
PHYSICO-CHEMICAL AND FUNCTIONAL PROPERTIES OF BIOPOLYMERS --
Particle Properties -- Swelling -- Bioadhesion -- Polymer Crystallinity
-- ASSESSMENT OF POLYMER CRYSTALLINITY -- DSC Thermal Analysis
-- X-Ray Diffraction -- Fourier-Transform Infrared (FT-IR) -- Raman
Spectroscopy -- Future Perspectives -- CONCLUSION -- REFERENCES
-- Chapter 7 BIODEGRADABLE HYDROGELS AS DRUG DELIVERY
SYSTEMS FOR TISSUE ENGINEERING APPLICATIONS* -- ABSTRACT --

INTRODUCTION -- HYDROGELS -- MICROSPHERE TECHNOLOGY --
 COMBINATIONS OF MICROSPHERES AND HYDROGELS -- CLINICAL
 APPLICATIONS -- CONCLUSIONS -- REFERENCES -- Chapter 8
 POLYHYDROXYALKANOATES: A NEW GENERATION OF
 BIOTECHNOLOGICALLY PRODUCED BIODEGRADABLE POLYMERS* --
 ABSTRACT -- INTRODUCTION -- HISTORY -- OCCURRENCE AND
 BIOSYNTHESIS OF POLYHYDROXYALKANOATES -- PHYSICAL PROPERTIES
 OF PHAS -- PHA SYNTHASES -- PHA Synthases in the Cell -- Structural
 Features of PHA Synthases -- Genetic Organisation of the PHA
 Biosynthetic Genes -- The Mechanism of Action of PHA Synthases --
 PHA Synthases in Bacillus -- PHA PRODUCTION FROM
 MICROORGANISMS -- Effect of Carbon Sources on PHA Production --
 Large-Scale Production of PHAs -- DETECTION, ISOLATION AND
 CHARACTERISATION OF PHAS -- Traditional Methods -- GC and MS --
 NMR -- HPLC -- BIODEGRADATION -- Biodegradation in the
 Environment -- Biodegradation in Living Systems -- APPLICATIONS --
 Medical Applications.
 Industrial Applications -- Agricultural Applications -- Nanocomposites
 -- Chiral Hydroxyalkanoates -- PHA Blends and Composites -- OTHER
 POSSIBLE ROUTES OF PRODUCTION OF PHAS -- Cyanobacteria -- PHA
 Production in Transgenic Plants -- Other Areas -- INDUSTRIALLY
 AVAILABLE PHAS AND THEIR APPLICATIONS -- Nodax™ -- DegraPol --
 BIOPOL® -- ECONOMICS AND LEGAL ASPECTS -- CONCLUSION --
 ACKNOWLEDGMENT -- REFERENCES -- INDEX -- Blank Page.

Sommario/riassunto

Presents topical research in the study of biodegradable materials,
 including biodegradable materials used to develop an ecofriendly
 technology for water purification; chitosan from aquatic and terrestrial
 organisms and microorganisms; polylactic acid as a biodegradable
 plastic; biodegradable product design; and, biodegradable hydrogels.
