1. Record Nr. UNINA9910598003903321

Titolo	Advances in Polyhydroxyalkanoate (PHA) Production / / Martin Koller, editor
Pubbl/distr/stampa	[Place of publication not identified] : , : MDPI AG - Multidisciplinary Digital Publishing Institute, , [2017] ©2017
Descrizione fisica	1 online resource (258 pages)
Disciplina	620.192323
Soggetti	Biodegradable plastics Poly-beta-hydroxyalkanoates
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	About the Special Issue Editor v -- Preface to "Advances in Polyhydroxyalkanoate (PHA) Production" vii Martin Koller -- Advances in Polyhydroxyalkanoate (PHA) Production -- Reprinted from: Bioengineering 2017, 4(4), 88; doi: 10.3390/bioengineering4040088 1 -- Constantina Kourmentza, Jersson Placido, Nikolaos Venetsaneas, Anna BurniolFigols, -- Cristiano Varrone, Hariklia N. Gavala and Maria A. M. Reis Recent Advances and Challenges towards Sustainable Polyhydroxyalkanoate (PHA) Production -- Reprinted from: Bioengineering 2017, 4(2), 55; doi: 10.3390/bioengineering4020055 8 -- Rodrigo Yoji Uwamori Takahashi, Nathalia Aparecida Santos Castilho, Marcus Adonai Castro da Silva, Maria Cecilia Miotto and Andre Oliveira de Souza Lima Prospecting for Marine Bacteria for Polyhydroxyalkanoate Production on LowCost Substrates -- Reprinted from: Bioengineering 2017, 4(3), 60; doi: 10.3390 /bioengineering4030060 51 Sourish Bhattacharya, Sonam Dubey, Priyanka Singh, Anupama Shrivastava and Sandhya Mishra -- Biodegradable Polymeric Substances Produced by a Marine Bacterium from a Surplus Stream of the Biodiesel Industry -- Reprinted from: Bioengineering 2016, 3(4), 34; doi: 10.3390/bioengineering3040034 64 Bhakti B. Salgaonkar and Judith M. Braganca -- Utilization of Sugarcane Bagasse by Halogeometricum borinquense Strain E3 for

Biosynthesis of Poly(3hydroxybutyrateco3hydroxyvalerate) -- Reprinted from: Bioengineering 2017, 4(2), 50; doi: 10.3390 /bioengineering4020050 75 -- Dan Kucera, Pavla Benesova, Peter Ladicky, Miloslav Pekar, Petr Sedlacek and Stanislav Obruca Production of Polyhydroxyalkanoates Using Hydrolyzates of Spruce Sawdust: Comparison of Hydrolyzates Detoxification by Application of Overliming, Active Carbon, and Lignite Reprinted from: Bioengineering 2017, 4(2), 53; doi: 10.3390/bioengineering4020053 93 -- Ayaka Hokamura, Yuko Yunoue, Saki Goto and Hiromi Matsusaki -- Biosynthesis of Polyhydroxyalkanoate from Steamed Soybean Wastewater by a Recombinant -- Strain of Pseudomonas sp. 613 -- Reprinted from: Bioengineering 2017, 4(3), 68; doi: 10.3390 /bioengineering4030068 102 -- Brian Johnston, Guozhan Jiang, David Hill, Grazyna Adamus, Iwona Kwiecien, Magdalena Zieba, Wanda Sikorska, Matthew Green, Marek Kowalczuk and Iza Radecka -- The Molecular Level Characterization of Biodegradable Polymers Originated from Polyethylene -- Using NonOxygenated Polyethylene Wax as a Carbon Source for Polyhydroxyalkanoate Production -- Reprinted from: Bioengineering 2017, 4(3), 73; doi: 10.3390 /bioengineering4030073 112 -- Stephanie Karmann, Sven Panke and Manfred Zinn -- The Bistable Behaviour of Pseudomonas putida KT2440 during PHA Depolymerization under Carbon Limitation -- Reprinted from: Bioengineering 2017, 4(2), 58; doi: 10.3390 /bioengineering4020058 126 -- Liliana MontanoHerrera, Bronwyn Laycock, Alan Werker and Steven Pratt -- The Evolution of Polymer Composition during PHA Accumulation: The Significance of Reducing Equivalents -- Reprinted from: Bioengineering 2017, 4(1), 20; doi: 10.3390/bioengineering4010020. 138 -- Eduarda Morgana da Silva Montenegro, Gabriela Scholante Delabary, Marcus Adonai Castro da Silva, Fernando Dini Andreote and Andre Oliveira de Souza Lima -- Molecular Diagnostic for Prospecting PolyhydroxyalkanoateProducing Bacteria -- Reprinted from: Bioengineering 2017, 4(2), 52; doi: 10.3390/bioengineering4020052 155 -- Clemens Troschl, Katharina Meixner and Bernhard Drosg -- Cyanobacterial PHA Production-Review of Recent Advances and a Summary of Three Years'-- Working Experience Running a Pilot Plant -- Reprinted from: Bioengineering 2017, 4(2), 26; doi: 10.3390/bioengineering4020026 165-- Timo Pittmann and Heidrun Steinmetz -- Polyhydroxyalkanoate Production on Waste Water Treatment Plants: Process Scheme, Operating Conditions and Potential Analysis for German and European Municipal Waste -- Water Treatment Plants -- Reprinted from: Bioengineering 2017, 4(2), 54; doi: 10.3390/bioengineering4020054 184 -- Miguel Miranda De Sousa Dias, Martin Koller, Dario Puppi, Andrea Morelli, -- Federica Chiellini and Gerhart Braunegg -- FedBatch Synthesis of Poly (3Hydroxybutyrate) and Poly(3Hydroxybutyrateco4Hydroxybutyrate) from Sucrose and 4Hydroxybutyrate Precursors by Burkholderia sacchari Strain DSM 17165 -- Reprinted from: Bioengineering 2017, 4 (2), 36; doi: 10.3390/bioengineering4020036 208 -- Dario Puppi, Andrea Morelli and Federica Chiellini -- Additive Manufacturing of Poly (3hydroxybutyrateco3hydroxyhexanoate)/poly(caprolactone) -- Blend Scaffolds for Tissue Engineering -- Reprinted from: Bioengineering 2017, 4(2), 49; doi: 10.3390/bioengineering4020049 227.

Sommario/riassunto

Currently, we are witnessing highly dynamic research efforts related to the exciting field of novel biodegradable plastic-like materials. These activities originate from a growing public awareness of prevailing ecological problems associated to, e.g., rising piles of plastic waste, increasing greenhouse gas emissions, and ongoing depletion of such

fossil resources usually used for the synthesis of "full carbon backbone" plastics. Polyhydroxyalkanoate (PHA) biopolyesters, a family of versatile plastic-like materials produced by living microbes, are a future-oriented alternative to traditional plastics. If accomplished in an optimized way, production and the entire lifecycle of PHA are embedded into nature´s closed carbon cycle, which is underlined by PHA´s main benefits of being "biobased", "biosynthesized", "biocompatible", and "biodegradable". Sustainable and economically feasible PHA synthesis, especially on an industrially relevant scale, requires all production steps to be understood and improved. Among other aspects, this calls for new powerful production strains to be screened; knowledge about the proteome and genome of PHA accumulating organisms to be consolidated; the kinetics of the bioprocesses to be thoroughly understood; abundantly available inexpensive raw materials to be tested; the monomer composition of PHA to be adapted; (bio)chemical engineering to be optimized; and novel PHA recovery strategies to be developed in order to reduce energy and chemical inventory. The present book provides a comprehensive compilation of articles addressing all these different aspects; the individual chapters were composed by globally recognized front running experts from special niches of PHA research. We are convinced that this book will be of major benefit to the growing scientific community active in biopolymer research.