

Special Issue Reprint

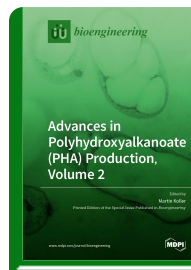
Advances in Polyhydroxyalkanoate (PHA) Production, Volume 2

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Nowadays, we are witnessing highly dynamic research activities related to the intriguing field of biodegradable materials with plastic-like properties. These activities are stimulated by the strengthened public awareness of prevailing ecological issues connected to growing piles of plastic waste and increasing greenhouse gas emissions; this goes hand-in-hand with the ongoing depletion of fossil feedstocks, which are traditionally used to produce full carbon backbone polymers. Polyhydroxyalkanoate (PHA) biopolyesters, a family of plastic-like materials with versatile material properties, are increasingly considered to be a future-oriented solution for diminishing these concerns. PHA production is based on renewable resources and occurs in a bio-mediated fashion through the action of living organisms. If accomplished in an optimized way, PHA production and the entire PHA lifecycle are embedded into nature's closed cycles of carbon. Sustainable and efficient PHA production requires understanding and improvement of all the individual process steps. Holistic improvement of PHA production, applicable on an industrially relevant scale, calls for, inter alia, consolidated knowledge about the enzymatic and genetic particularities of PHA-accumulating organisms, an in-depth understanding of the kinetics of the bioprocess, the selection of appropriate inexpensive fermentation feedstocks, tailoring of PHA composition at the level of its monomeric constituents, optimized biotechnological engineering, and novel strategies for PHA recovery from biomass characterized by low energy and chemical requirements. This Special Issue represents a comprehensive compilation of articles in which these individual aspects have been addressed by globally recognized experts.

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