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Biotechnology for Sustainable Materials

EDITORIAL

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Biotechnology for sustainable materials: innovating today for a greener tomorrow

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Biotechnology for Sustainable Materials, positioned at the forefront of environmentally conscious practices, is pivotal in realizing the objectives of Sustainable Development Goal 12 (Responsible Consumption and Production). Sustainable materials are essential components in the quest for environmentally responsible practices. These materials, derived from renewable sources or recycled content, aim to minimize adverse environmental impacts throughout their life cycle. They contribute to the circular economy by prioritizing reuse, recycling, and closed-loop systems. Sustainable materials are characterized by low carbon footprints, biodegradability, and the ability to be recycled without compromising integrity. Biotechnological innovations play a pivotal role in developing materials derived from renewable sources or repurposed waste, aligning with the principles of sustainability. Biotechnology facilitates the production of plant- and microbe-based biopolymers, bioplastics, and other biomaterials with enhanced environmental credentials. This critical intersection of sustainable materials and biotechnology not only addresses immediate environmental concerns but also shapes a circular economy, promoting efficient resource use and waste reduction.

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and a global network of researchers. The decision to launch a new journal *Biotechnology for Sustainable Materials* was a collaborative approach after an extensive discussion among scientists from diverse backgrounds and the publisher team. Comprising experts from various facets of biotechnology and sustainable materials, our team is committed to ensuring the journal's relevance and impact. Each editorial member has played an important role in shaping the multidimensional scope, ensuring that it encompasses the breadth and depth of the rapidly advancing field. The aim and scope of *Biotechnology for Sustainable Materials* were meticulously crafted to reflect the dynamic nature of biotechnology's role in sustainable material production. The editorial team and BMC collaborated closely to outline a vision that not only captures the current state of the field but also anticipates future trends and challenges. As stewards of scientific communication, we aspire to foster innovation that not only meets the needs of the present but also contributes to a sustainable and resilient future.

Biotechnology for sustainable materials nurtures and encourages discussion on rigorous fundamental research and innovative/cutting-edge biotechnological development. which are expected to be updated over time.

1. Role of biotechnology in the production and fabrication of materials.
2. Application of sustainable materials:
    - Biomedical applications
    - Packaging industry
    - Pharmaceuticals & cosmetics
    - Fashion and clothing
    - Construction
    - CO_2 capture & energy storage
3. Novel materials production, degradation, and composting.
4. Recycling and upcycling of sustainable materials.
5. Safety assessment and techno-economic analysis.
6. Policy issues, life cycle assessments, and debates.

We extend a warm invitation to researchers, scientists, academicians, clinicians, and industry experts to consider *Biotechnology for Sustainable Materials* as the premier platform for disseminating their cutting-edge work in the dynamic intersection of biotechnology and sustainable materials. The last decades have witnessed immense growth in sustainable material areas about applications of biomaterials in tissue engineering, drug delivery, energy storage, sustainable packaging, and environment-related applications [1–7]. This journal is committed to advancing the frontiers of knowledge in the area of sustainable material, providing an open-access, peer-reviewed space for impactful research. You are invited to contribute to catalyzing positive change and forging a path toward a more sustainable and responsible future. We encourage submissions that contribute to the development of sustainable solutions, from plant- and microbe-based biopolymers to innovative biomaterials for diverse applications. As a testament to our commitment to staying at the forefront of emerging trends, we also invite you to propose special issue topics that reflect current research trends in biotechnology for sustainable materials. We welcome your contributions to shape the discourse and drive innovation in this vital realm. Your work has the power to inspire positive change and contribute to the development of a more sustainable and resilient world.

Authors' contributions

SKB, SB, MEI, KK, TSM, VS, VA, JL, SM, AW, JD, TH, JVK, CL, ODT, FW, JZ, all the authors conceptualized the idea for editorial; wrote the original draft of the manuscript and approved the final draft.

Declarations

Competing interests

The authors declare no competing interests.

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