



## Recent Advances in Biomolecule and Bioprocess Engineering for Sustainable Environment

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Deadline for manuscript  
submissions:

**31 July 2024**

### Message from the Guest Editors

Climate change caused by anthropogenic greenhouse gas emissions is a global challenge that needs to be urgently addressed. White biotechnology as an alternative to the petrochemical industry, which is known to be a major source of greenhouse gas emissions, has recently received significant research attention. We are hopeful that rapid advances in the core technologies and bioprocesses of biorefinery and their application to industry will ensure a sustainable environment and future. The biotechnology associated with biorefineries has evolved considerably to meet the challenges of efficiently utilizing a diverse biomass. The main challenges lie in securing the economic feasibility of the bioprocess, and more specifically, in the (1) exploration, characterization, and development of strategies to utilize sustainable biomass; (2) strain development to enhance the production of bioproducts; and (3) the provision of molecular-level analyses to improve efficiency. Advanced biotechnology and tools such as metabolic engineering, protein engineering, enzyme engineering, bioprocess engineering, molecular analysis, and statistical optimization are expected to address these challenges.





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## Message from the Editor-in-Chief

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