

Enzyme Biocatalysts: Design and Application

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Abstract

As sustainable and efficient alternatives, enzymes have been extensively applied as biocatalysts to produce valuable chemicals, fuels, and related added-value products in industrial processes. However, the flexible nature of natural enzymes makes them difficult to be used in the harsh conditions in which industrial processes usually take place, causing poor stability and low activity. To increase stability and activity, methods including novel chemical modifications of enzymes, enzyme immobilization, chemo/enzyme hybrid catalysts, and medium engineering of biocatalysts have been used to generate industrial biocatalysts with exceptionally improved stability and activity. In recent years, the immense advancement in this field has been made a reality through the fast development of different omics technologies, synthetic biology, biochemistry, chemo/enzyme hybrid catalysts, and other computational tools. With this Research Topic, we aim to present a comprehensive view of the recent advances in the design and application of industrial biocatalysts. We hope to bring together different disciplines such as materials science, chemical engineering, media engineering, and modeling. The intersection of these disciplines is beneficial for developing potent and robust technologies to improve biocatalysts towards valuable chemicals, fuels, and related added-value products.

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Biography

Cary William Jones graduated in Chemistry in 2015 from the University of Singapore. He completed his master's degree in Organic Chemistry at the Complutense University of Madrid (UCM). He has worked in some

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