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Special Issue Reprint

Biocatalytic Applications in Biotechnology

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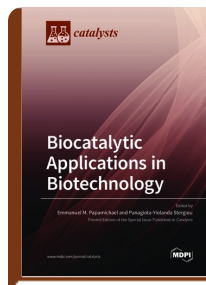
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At present, the increasing demand for novel biotechnological products is supported through the continuous development of biocatalytic applications. As a consequence, the progress of research regarding enzymatic catalysis in aqueous, non-aqueous, organic (polar or non-polar), and/or non-solvent media is decisive. Experimental design methods, which also may comprise *in silico* studies, the design of specific reactors and conditions, the reactions of significant chemical and/or biochemical processes that are relevant to industrial production, enzyme kinetic methods, the investigation of enzymatic mechanisms and the use of immobilized enzymes and/or microbial cells on various inert matrices, are all useful. A plethora of enzymes of several classes, which may potentially be used as biocatalysts in biotechnological applications, are available. Among these enzymes, the more common are oxidoreductases (laccase, catalase, glucose oxidase, etc.), hydrolases (amylases, lipases, proteases, amidases, cellulases, esterases, etc.), isomerases (epimerases, topoisomerases, mutases, etc.), and others. By means of the aforementioned biocatalysts and the utilization of specific biotechnological methods, important, cost-effective, sustainable, and environmentally friendly processes have been applied for the synthesis and/or the conversion of a huge number of market-required products.



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