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Ionic liquids as a potential solvent for lipase - catalysed reactions: A review (Review)

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Abstract

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Ionic liquids (ILs) - as environmentally friendly "green" solvents- have been progressively used in various reactions as reagents, solvents and co-solvents including lipase-catalysed reactions. In fact, lipase-catalysed reactions in ILs are considered as a "green"-reaction and are more advantageous than chemical methods owing to the easy recovery of the product and the mild conditions of the reactions. The use of lipase in ILs provides many technological advantages compared to conventionally used solvents, such as selectivity enhancement, enzyme stability improvement, higher conversion rate, and better recyclability and recovery system. Nevertheless, in some cases, especially in hydrophilic ILs, lipase exhibits activity reduction when compared with organic solvents. Currently, various attempts have been made to enhance the performance of lipases in ILs. The main objective of this review is to demonstrate recent developments in the technology of using ILs as reaction media for lipase. It is expected that this review might be an inspiration in ILs assisted lipase-catalysed reactions to produce value-added materials including biofuels as well as biodiesel. © 2017 Elsevier B.V.

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Author keywords

Biodiesel | Ionic liquid | Lipase | Recycle | Stability | Transesterification

Indexed keywords

Engineering controlled terms: Biodiesel | Catalysis | Convergence of numerical methods | Ionic liquids | Liquids | Recycling | Solvents | Transesterification

Compendex keywords: Chemical method | Conversion rates | Enzyme stability | Ionic liquid (ils) | Reaction media | Recovery systems | Recyclability | Selectivity enhancement

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