

The Effects of Catalysts and Process Intensification in Biodiesel Production: A Review †

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Abstract: Biodiesel fuel has always been one of the promising replacements for petroleum-based diesel. The most commonly used method for biodiesel production is the transesterification reaction, which is catalyzed by homogeneous or heterogeneous catalysts. But there are some production challenges such as limitations of natural mass transfer of reactants, the feasibility of upscaling, and ease of downstream processing. In recent years there have been some emerging trends in biodiesel processing technologies that promise to enhance its production further. These trends include transitions from batch-type to continuous reactors for transesterification, edible to non-edible biodiesel feedstocks, homogeneous to heterogeneous catalytic transesterification, and base-type to acid catalyst-driven transesterification. This review critically analyses the processing methodologies for biodiesel production, particularly the effects of different catalysts and the intensification approaches used.

Keywords: bio-diesel; process intensification; homogenous catalyst; heterogenous catalyst; transesterification.

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Conflicts of Interest

The authors declare no conflict of interest.