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Review

Evaluation on feedstock, technologies, catalyst and reactor for sustainable biodiesel production: A review

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ABSTRACT

The ever-detrimental condition of the environment due to the fossil fuel utilization has catalyzed the development of biodiesel. Biodiesel is produced mainly via transesterification and the entire process comprises of several major components; the feedstock, the catalyst, the reaction, and the product separation or purification. There are various factors affecting the amount and quality of biodiesel produced, such as the type and amount of feedstock and catalyst, alcohol-to-feedstock ratio, and reaction temperature and time. The performance of biodiesel reactors in providing energy and time efficient biodiesel production is also among the subject of recent studies. To produce biodiesel commercially and efficiently, it is important to recognize the novel technologies that are promising for biodiesel production. With this in mind, this article presents a review of the recent advancement and classification of the feedstock, the catalyst for biodiesel production, and the biodiesel production reactor. Furthermore, this article also highlights the development and application of oil extraction techniques, biochar as a biodiesel catalyst, and the magnetic biodiesel catalyst. The biodiesel production reactor and parameters optimization are also discussed in this article in order to provide a better context on the chemical reaction.

Contents

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