

2024 Poster Competition

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Enhance the Esterification Reaction Rate in Producing Biodiesel by Microwave and Fe Powder

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In the biodiesel production process, esterification is an essential step, but it typically consumes a considerable amount of time before meeting the criteria for proceeding to the next phase, the transesterification reaction. Based on the previous work in our laboratory, we have demonstrated a stirring cavity utilizing a 2.45GHz microwave, which enhanced esterification reaction employing a molar ratio of 1.15 of glycerol to oleic acid to approximately 1.3 times faster than the conventional method, which typically takes over 6 hours. In this study, we demonstrate an improved esterification reaction introducing iron powder as a catalyst. As a result of these enhancements, we achieved a significant improvement, which was about 13 times faster than the conventional method.

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