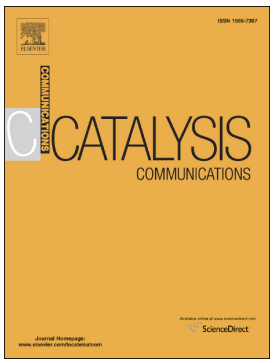

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Synthesis and characterization of magnetic LiFe5O8-LiFeO2 as a solid basic catalyst for biodiesel production

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Abstract

This study is focused on the transesterification of the soybean oil into biodiesel using magnetic based solid catalysts ($LiFe_5O_8$-$LiFeO_2$). The catalyst was prepared through a simple solid-state reaction that involved mixing and grinding iron oxide (Fe_2O_3) and Li_2CO_3. The results demonstrated that the catalyst was ferromagnetic. Under the optimal reaction conditions, the highest FAME conversion in the transesterification of soybean oil can reach 96.5% by using $LiFe_5O_8$-$LiFeO_2$ catalyst. The $LiFe_5O_8$-$LiFeO_2$ demonstrates excellent catalytic activities and it could be recovered by magnetic separation. The $LiFe_5O_8$-$LiFeO_2$ can be easily recovered and reused without significant deactivation.

Keywords: Magnetic catalyst, $LiFe_5O_8$-$LiFeO_2$, solid-state reaction, soybean oil, transesterification, biodiesel

1. Introduction