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Esterification of glycerol with acetic acid over dodecamolybdophosphoric acid encaged in USY zeolite

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ABSTRACT

The esterification of glycerol with acetic acid was carried out over dodecamolybdophosphoric acid (PMo) encaged in the USY zeolite. The products of glycerol acetylation were monoacetin, diacetin and triacetin. A series of PMo encaged in the NaUSY zeolite with different PMo loading from 0.6 to 5.4 wt.% were prepared. It was observed that the catalytic activity increases with the amount of PMo immobilized in the NaUSY zeolite, being the PMo3_NaUSY (with 1.9 wt.%) the most active sample. However, at high loading of heteropolyacid encaged in the NaUSY zeolite, a decrease on the catalytic activity was observed, which can be explained, probably, due to the internal diffusion limitations.

Good values of selectivity to diacetin were obtained with all the catalyst.

Catalytic stability of the PMo3_NaUSY was evaluated by performing consecutives batch runs with the same catalyst sample. After the second batch, it was observed a stabilization of the catalytic activity.

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