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## HETEROGENEOUS TRANSESTERIFICATION OF CAMELINA SATIVA CATALYSED BY POTASSIUM IMPREGNATED MG/AL MIXED OXIDES TO PREPARE BIODIESEL

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Mixed oxides obtained from Hydrotalcites provides useful properties in the transesterification reaction [1]. The basic hydrotalcites are composed of Aluminium and Magnesium in cationic layer and different anions mostly $CO_3^{2-}$ or $HCO_3^{2-}$ in interlayer space. Impregnation of Potassium on Hydrotalcite surface could improve catalytic properties, which can cause higher yield of biodiesel from transesterification. As a source of fatty acids Camelina Sativa oil was used. This originally undesirable plant can bloom three times in a year, and it is not demanding in the amount of water, minerals or soil quality.

Mixed oxides were obtained from Hydrotalcites prepared by co-precipitation [2]. Calcinated samples were treated by wet impregnation with solutions of KF, CH3COOK, KNO3 to improve catalytic activity of mixed oxides. To compare catalyst and their activity, basic properties were measured (XRD, FTIR, TPDA, TPD-$CO_2$, ICP, SEM). Transesterification was running at temperature of 140 °C with 3 wt.% of catalyst and molar ratio of Me/Oil 30:1 for 7 hours. The content of FAME in the final product was measured by GC analysis [1].

Prepared catalysts were tried in transesterification for FAME production. Basic Mixed oxides without impregnation achieved content higher than 90 wt.% of FAME after 7 hours of reaction. In compared with that, impregnated samples achieved significantly higher number of basic sites and high specific surface area, but content of FAME after 7 hours of reaction was lower than 80 wt.%. The results showed that impregnation of Potassium improved properties of mixed oxides but not catalytic activity.

[1] Malisova M. et. al, „Transesterification of Camelina sativa Oil Catalyzed by Mg/Al Mixed Oxides with Added Divalent Metals," *ACS Omega, 5, s. 32040−32050, 55, 49*, ***2020***
[2] Malisova M. et. al, „Influence of hydrotalcite preparation conditions on its physico-chemical properties," *Acta Chemica Slovaca ,* zv. 12, %1. vyd.1, pp. 119-126, **2019**