



## Synthesis of Bio-fuel Additives From Glycerol Over Poly (Vinyl Alcohol) With Sulfonic Acid Groups

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Condensation of glycerol with acetone was carried out over poly(vinyl alcohol) with sulfonic acid groups at 70°C. The main product of glycerol acetalization is solketal. Catalysts with different amounts of sulfonic acid groups were prepared. It was observed that the catalytic activity increases with the crosslinking degree, due to the increases of the amount of sulfonic acid groups on poly(vinyl alcohol). Further, the influence of various reaction parameters, such as catalyst loading, molar ratio glycerol to acetone, and temperature, on the acetalization of glycerol over PVA40 was studied. It was found that at 70°C, with 0.2 g of catalyst loading and with a molar ratio of glycerol to acetone 1:6, a glycerol conversion of about 94% after 3 h can be obtained. The PVA40 catalyst was recycled and reused with negligible loss in the activity, after the fifth use.

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