

Biodiesel formation by new waste-free catalytic process

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INTRODUCTION

The study present a new way to produce 2nd generation biodiesel as Fatty Acid Methyl Ester (FAME) made from meat industry waste. 2nd generation biodiesel is produced from sustainable sources like agricultural residues or other waste products from biomass. Compared to 1st generation biodiesel it is much more environmentally friendly since it does not take up farmland that could otherwise have been used for growing edible crops such as grains. Industrial methods for FAME production uses inorganic bases that cannot be reused and generates huge amounts of unusable inorganic salts as byproduct.

METHOD

The concept of this production method is to reuse the catalyst by means of polarity changes. Instead of using an inorganic hydroxide based catalyst, an organic base has been used. An organic solvent can then be used to extract the catalyst. Solvent and catalyst can afterwards be separated by changing the polarity of the liquid. The process can then be reversed, changing the polarity back and the catalyst can be reused in the reaction.

RESULTS

The used organic base produces FAME just as efficient as when using inorganic bases like in conventional industrial processes. By using an organic solvent it is shown that the catalyst can be extracted and by polarity changes it can be separated for reuse. A number of organic solvents have been tested and identified for extraction.

CONCLUSION

The homogeneous catalyst can be reused by selective extraction in a number of steps, thus drastically reducing the need for new purchases for each production batch. Furthermore the salts generated by conventional procedures are avoided, thereby eliminating unusable byproducts.