August A Gallo et al., Ind Chem 2016, 2:2(Suppl)
http://dx.doi.org/10.4172/2469-9764.C1.002

Biodiesel from alligator fat using supercritical methanol via a laboratory scale flow reactor

August A Gallo and **Thomas Junk**
University of Louisiana at Lafayette, USA

Our previous work demonstrated that supercritical methanol offers key advantages over the traditional, base catalyzed method to convert waste fats into biodiesel. This work established that supercritical transesterification occurs within minutes in the absence of catalysts. The use of supercritical methanol in the transesterification reaction offers several advantages including fast reaction times, catalyst free reactions, and minimal pre-processing of the fat. Recently, a laboratory scale supercritical flow reactor was assembled from off-the-shelf components and its suitability tested for the transesterification of alligator fat to biodiesel. Initial data indicate an exponential increase in product yields between 240°C and 420°C at reaction times of 5 and 30 minutes, respectively, with an approx. ten-fold higher yield for the latter reaction time. The product mixtures are clean and consist of the fatty acid methyl esters (FAME) of mostly C16- C18 carboxylic acids. This suggests that very high temperatures (≥ 420 °C) are needed and suited for the rapid conversion of alligator fat to biodiesel using supercritical methanol.

Biography

August A Gallo earned his PhD in Organic Chemistry from Vanderbilt University (Nashville, TN) and was a Postdoctoral scholar at the University of California, San Franciso Medical Center in the Department of Pharmacuetical Chemistry. Presently, he is a Professor of chemistry at The University of Louisiana, Lafayette, where he has been since being promoted through the academic ranks since 1981. He has published more than 30 papers in reputed international journals, he has been awarded nearly $400,000 in grants, and he has been serving as a Reviewer for *Universal Journal of Chemistry and Chemosphere*.

aag1004@louisiana.edu

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