Continuous Production of Biodiesel through Reactive Distillation using Eggshell Catalysts

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This experiment was designed to revolutionize the manner in which biodiesel is manufactured by condensing what is currently a multi-step technique into a batch system through the process of reactive distillation. The goal in doing this is to develop a method of producing biodiesel at a more cost efficient price than extracting, importing, and refining petroleum oils. Before the reaction can occur the system needs to be optimized in reference to decreasing the amount of byproduct produced and the molar ratio between the percent alcohol and percent biodiesel. A standard graph was made with known percent compositions and the %Brix was calculated using a refractometer. Upon conducting the experiment extractions were taken every 30 minutes and the byproduct was dried, weighed, and recorded for comparison as the product was filtered off and put in a refractometer comparing the %Brix. Using a conversion chart the refractive index from the %Brix was found. In comparing methanol to ethanol, ethanol was found to be more effective in eliminating byproduct and the optimal ratio of product to alcohol was found to be 60% to 40%.

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