Development of Efficient Catalyzers From Waste Shells for the Production of High Purity Biodiesel From the Household Cooking Waste Oil

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Cooking/frying oil is an everyday kitchen waste that creates critical ecological, municipal, and environmental issues. The enormous advancements in technology led to numerous innovations in various fields. Key advancements are shown in the application of smart solutions to mitigate serious pollution problems such as: (1) reduction of harmful gas emissions and (2) appropriate disposal of many hazardous industrial and household wastes. In this study, several waste seashells samples were collected and characterized and then processed to be utilized as heterogeneous catalysts for producing high purity biodiesel from the kitchen waste frying oil. In this project, different catalysts were developed from three types of seashells and then used to produce biodiesel from used corn oil. The purity of obtained biodiesel was up to 100%. These results provide an opportunity for process optimization in utilizing local waste shells to develop efficient heterogenous catalysts for biodiesel production.

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