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

ENEV098T

Environmental Engineering

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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.

1. In this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):

human participants | potentially hazardous biological agents

vertebrate animals | microorganisms | rDNA | tissue

2. I/we worked or used equipment in a regulated research institution or industrial setting (Form 1C):	✘ YES	NO
3. This project is a continuation of previous research (Form 7):	YES	✘ NO
4. My display board includes non-published photographs/visual depictions of humans (other than myself):	YES	✘ NO
5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only:	✘ YES	NO
6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.	✘ YES	NO

The stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.

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