# Wake Forest University

Office of Technology Asset Management

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Featured Technology

# Novel Biodiesel Catalyst

Inventors: Lachgar, Wright

**BACKGROUND:**

Biodiesel is an alternative fuel that is produced from vegetable oils or animal fat. Soybean oil is generally used as a raw material for biodiesel, but its high cost makes the production of a cost-efficient biodiesel very challenging. Cheaper sources of vegetable oils and animal fats, such as waste vegetable oils (WVOs) and brown grease (trap grease), have become the newest raw materials, but their use has been plagued by the presence of high amounts of free fatty acids (FFAs) which significantly impair biodiesel production.

**TECHNOLOGY DESCRIPTION:**

Researchers in the Department of Chemistry at Wake Forest University have developed an inexpensive and robust catalyst to convert FFAs to biodiesel resulting in a higher grade fuel. Using the catalyst, the Inventors were able to convert FFAs to biodiesel with yield ranges between 80% and 98% conversion in 1 to 4 hours with multiple catalytic turnovers observed at a relatively low temperature (~ 60 deg. C.). The catalyst can currently be produced for $0.11 a gram in the laboratory, although the per gram cost will be significantly reduced in a commercial setting.

In addition to its effective use in biodiesel production, this catalyst can also be used for the conversion of fatty acids to their ester derivatives and the conversion of any organic acid to its ester.

**MATERIALS:**

Samples of the novel catalyst are available under appropriate confidentiality provisions.

**MISSION**

To maximize the value of Wake Forest University's intellectual assets through the creation of novel and effective models for commercializing technology.

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