UTC Project Information	
Project Title	Production of Renewable Diesel Fuel from Biologically Based Feedstocks
University	University of Idaho
Principal Investigator	Jon Van Gerpen
PI Contact Information	E-mail: jonvg@uidaho.edu; Phone: (208) 885-7891
Funding Source(s) and Amounts Provided (by each agency or organization)	
Total Project Cost	$59999.00
Agency ID or Contract Number	DTRT12-G-UTC10
Start and End Dates	03/01/2012~07/31/2014
Brief Description of Research Project	Current petroleum-based transportation fuels are becoming increasingly expensive as petroleum is extracted from deeper waters, depleted fields, and politically unstable countries. In addition, these fossil fuels are identified as a significant source of carbon dioxide (CO2) which is responsible for global climate change. Alternative fuels produced from renewable biological sources are attractive options for displacing some of the petroleum-based fuels. The objective of the project is to develop a model process to produce hydrocarbon fuels from triglyceride feedstocks such as vegetable oils and animal fats. These hydrocarbons are miscible with conventional gasoline and diesel fuel. They are different from conventional biodiesel because they are not monoalkylesters, so they do not have the chemical composition required to comply with the ASTM specification for biodiesel. However, they still qualify for existing existing government incentive programs that are intended to reduce petroleum imports. In fact, the combination of federal excise credits and sale of Renewable Identification Numbers (RINs) has provided a total federal subsidy of $2.70/gallon for advanced biofuels. The renewable diesel fuel produced by this process will qualify as an advanced biofuel. The fuel has advantages over conventional biodiesel in that insoluble reaction products are not produced, the cold flow properties are better, and because oxygen has been removed, the energy density is higher. A secondary objective is to determine whether the production technology for these compounds, which has mainly been focused on large petroleum refining facilities, can be implemented on a smaller scale. If this can be done, existing biodiesel production facilities could retrofit their plants with this technology. The fuel is expected to be easier to integrate into the existing fuel infrastructure than biodiesel. Although the primary focus of this project is on fuels that can be added to the diesel fuel stream to displace petroleum, the technology is applicable to production of bio-based jet fuel and gasoline. The project will be developing a pilot facility at the University of Idaho (UI) that can be used to further develop the technology and evaluate competing processes. Specifically, the project will be optimizing the process conditions for the decarboxylation and catalytic

	cracking that will occur inside of the reactor and evaluating new approaches such as using methyl esters (biodiesel) as the feed for the reactor and using a diluents flow to control reaction temperature. The project will also be educating a graduate student to enter the field of renewable fuels.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • Reports • Project website	Production Of Renewable Diesel Fuel From Biologically Based Feedstocks http://depts.washington.edu/pactrans/wp-content/uploads/2012/12/PacTrans-15-739436-Van-Gerpen-Jon-Small-Project.pdf