

## BIOFUNCTIONAL HETEROGENOUS CATALYSTS FOR PRODUCTION OF NON-EDIBLE BASED BIODIESEL

### TECHNOLOGY DESCRIPTION

The technology is a biofunctional heterogenous catalytic system (EsterCat) to promote effective mass production of biodiesel from waste resources.

### TECHNOLOGY FEATURES

The system produces higher purity of biodiesel production through transesterification reaction derived from waste oil or non-edible oil obtained at low cost. Utilization of this catalyst provides a turnover of more than 90 % biodiesel at a milder reaction condition. Mild reaction condition requires less chemicals or conditions for operation. Reusability of the catalyst is longer compared to other types of catalysts already available in the market. This catalyst is able to operate in both continuous and batch reactions and requires a single step reaction for both pre and post treatment. A short and straight forward reaction step utilizing this catalyst will reduce the production costs. Low productions costs will increase profit margin for biodiesel production and leads to recycling of waste oil into profitable biodiesel.

### ADVANTAGES

- Low production costs and higher efficiency
- Recycled waste oil for higher profit margin of biodiesel production
- High turnover rate (>90 %) with the catalyst reusability life time of 10 x

### INDUSTRY OVERVIEW

#### Prospect: Biodiesel manufacturers

Malaysia recently launched a B5 biodiesel mandate for its southern region. Earlier, the program in central Malaysia had successfully consumed 113,000 tons (roughly 34 million gallons) of palm biodiesel per year. The implementation of the biodiesel program in the south will create an additional annual demand of 37,270 tons, displacing about 11 million more gallons of petroleum diesel per year. Since July 1, 415 fueling stations across south Malaysia have been selling biodiesel blends. Once the B5 program is implemented nationwide in July 2014, the total target palm biodiesel consumption will reach 500,000 tons (150 million gallons) per year. Among the manufacturers of biodiesel in Malaysia include: Temasek Agro and AM Biofuels Sdn. Bhd. Malaysia. The Government has issued 60 biodiesel manufacturing licences with total annual capacity of 6.50 million tonnes as at September 2013. 21 biodiesel plants have been commissioned since 2006 with total production capacity of 2.96 million tonnes per year. The Malaysian Biodiesel Association (MBA) represents 22 local and foreign biodiesel manufacturers, which have invested over RM2.2bil in the country since 2008. Malaysia exported about 175,000 tonnes of biodiesel in 2013.



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