

## International Congress and Expo on Biofuels & Bioenergy

August 25-27, 2015 Valencia, Spain

## Catalytic pyrolysis of olive mill wastewater sludge to produce biofuels

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Oive mill wastewater sludge (OMWS) is one of the major environmental pollutants in olive oil industry using traditional or 3-phase process. The major problem stems from the poor biodegradability of the OMWS because of its high phenolic compounds content. In most Mediterranean countries, olive mill wastewater are stored in ponds where the major part of water evaporates and the sludge dries up which is then later lanfilled for disposal. To resolve this serious environmental problem, we have developed a fluidized bed catalytic pyrolysis of OMWS to produce pyrolysis liquids that are very stable, low viscosity, neutral pH and very high higher heating value. The pyrolysis was conducted at 400-500°C in a red mud and HZSM-5 catalyst bed. The yields of the organic fraction ranged from 20 to 35 wt% which is much higher than what obtains for other lignocellulosic biomass feedstocks. The viscosity of the oil was 5-7 cP, the pH ranged from 6-7 and the highest HHV of the oil was 41 MJ/kg. The char yield ranged from 20 to 25 wt% while the gas yield ranged from 26-45 wt%. The major challenges with this feedstock were poor flow properties because of its sticky nature, and the strong smell from both old and freshly stored material.

## **Biography**

Dr. Kamel Halouani is Full Professor of Energy Engineering at the University of Sfax, Tunisia. Since 1997, he taught in the Tunisian Universities, courses on Thermodynamics, Fluid Mechanics, Transport Phenomena, Thermo-Mechanics of multiphase systems, Energy Conversion systems: Fuel cells and renewable Energies, Thermochemical and Electrochemical conversion processes, Fuel Processing Engineering. Dr Halouani is known internationally as an expert in thermochemical biomass conversion (pyrolysis, gasification hydrothermal liquefaction), Fuel Cells Modeling and heat and mass transfer in energy conversion and production systems. His expertise in these areas was recognized locally and internationally through his invitation as reviewer in several high impacted international journals in the field. He is also member of scientific committees of several National and International Conferences in Energy Engineering and Heat and Mass Transfer. Dr Halouani has organized, chaired and Co-chaired several National and International Congress, Conferences and Special Sessions on Renewable Energy Conversion, Hydrogen and Fuel Cell, Heat and Mass Transfer Engineering. He was also an invited Speaker at several national and international conferences. In 2009, Dr Halouani was selected by the US State Department as a Fulbright Visiting Scholar in Virginia Tech Polytechnic Institute and State University, Blacksburg, VA, USA. Dr Halouani was the Head of the Department of Technology Studies at IPEIS, University of Sfax (2002-2005 and 2008-2011). Dr Halouani has 2 patents, over 30 articles in High impact peer-reviewed international journals and over 60 papers in prestigious international conference proceedings.

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