

2nd International Congress and Expo on

Biofuels & Bioenergy

August 29-31, 2016 Sao Paulo, Brazil



Vanya Marcia Duarte Pasa

Universidade Federal de Minas Gerais, Brazil

Green technology for biodiesel: Production of methyl esters from macauba oil over egg shell and marble heterogeneous catalysts

This research explores the exceptional use of waste minerals like eggshell and marble as precursors of sustainable catalysts to be used for biodiesel production. Macauba was used as promising and innovative triglyceride source. This palm tree is native in South America and presents high oil productivity (6000 kg/ha/year). The waste minerals were previously calcinated and characterized by X-ray diffraction, energy dispersive spectroscopy, scanning electron microscopy and thermogravimetric analysis. Each catalyst was heated in methanol to improve its efficiency, after, the macauba oil was added. The reactions were performed at reflux temperature and the reactants were vigorously stirred (700 rpm). During reaction, samples were periodically taken every half hour for a kinetics study. After catalysts separation, all reaction products were cleaned with an ion-exchange resin and anhydrous sodium sulfate. The samples were analyzed by HPLC, NMR and GC. The raw materials and biodiesel were characterized by density, viscosity, water content and acid value. In addition, the oxidative stability, the maximum plugging point and the ester content of the biodiesels were analyzed. The conversions were high (70-94%) for 3 hours of reactions. Both residual solids seem to be robust and effective catalysts for macauba oil transesterification, although Ca leaching was observed. After clean final step, the macauba biodiesel are in compliance with most of the quality standards.

Biography

Prof. Vânia Márcia Duarte Pasa, PhD, senior researcher and professor at Federal University of Minas Gerais, is a specialist in the development of green technologies, especially biomaterials and biofuels. She is chemical engineer with PhD in Chemistry (UFMG-1995). She has been working at UFMG since 1996 and in the last 6 years she has developed researches about biodiesel production, new catalysis development, biokerosene, green diesel production and biomaterials derivate from recovered waste from fuels production chains. She has been the coordinator of LEC (Fuel Laboratory of UFMG – Federal University of Minas Gerais) since 2000. During this period, she has worked with Public Prosecution Service, ANP (Brazilian Agency of Petroleum, Natural Gas and Biofuels), Petrobras S/A, CEPAL-UNESCO, GTZ-SENER – Mexico government, ACESITA/ARCELOR, FIAT-CHRYSLER, RIMA S/A and Boeing Research and Technology.

vanya@ufmg.br

Notes: