Francisco Murilo Tavares De Luna, J Fundam Renewable Energy Appl, 5:6
http://dx.doi.org/10.4172/2090-4541.C1.005

OMICS International
conferenceseries.com

International Conference on
Green Energy & Expo
September 21-23, 2015 Orlando, USA

Studies on engine performance and emissions of high viscosity biodiesel oils

Francisco Murilo Tavares De Luna, Andre V Bueno, Felipe A F Gomes, Vanessa F Oliveira and **Celio L Cavalcante Jr**
Universidade Federal do Ceara, Brazil

Environmental benefits and significant economical impact on global oil requirements could be obtained through gradual worldwide replacement of mineral diesel by biodiesel. For this reason, studies on biodiesel performance and emissions from diesel engines have been receiving increasing interest. However, most of the current research effort has been concentrated on methyl esters with low viscosities usually obtained from refined vegetable oils such as soya, canola, palm, sunflower and linseed. The operational impacts of biodiesel produced from other alternative raw materials such as beef tallow or castor oil have not been thoroughly evaluated, probably due to their high viscosity values that impose important modifications to spray breakup, evaporation and combustion processes within the diesel engines. This study aims to contribute in further understanding the effects of using beef tallow or castor oil biodiesels in diesel engines combustion. Additionaly, the effects of the high viscosity of these biofuels were addressed in attempting to evaluate its importance on combustion and pollutant emissions. Thus steady state experiments were performed in a turbocharged DI diesel engine coupled to an automated test bed equipped with an alternate current dynamometer and pollutant emissions analysers. Blends with bio/mineral oil ratios between 5 and 20% volumes were evaluated. The engine tests where carried out in three load conditions corresponding to 33, 66 and 100% of the maximum value reported for the engine brake mean effective pressure (BMEP). Furthermore, a detailed study on the response in exhaust gas recirculation and injection timing was also performed for each biodiesel sample.

Biography

Francisco Murilo Tavares De Luna is a Graduate in Chemical Engineering from Universidade Federal do Ceara (2004) and he has completed his PhD in Chemical Engineering from Universidade Federal do Ceará (2012). His research interests focuses on industrial chemical processes and applications, particularly on the following subjects: Adsorption fundamentals, modeling of adsorption processes and assessment of bioproducts (biodiesel and biolubricants).

murilo@gpsa.ufc.br

Notes: