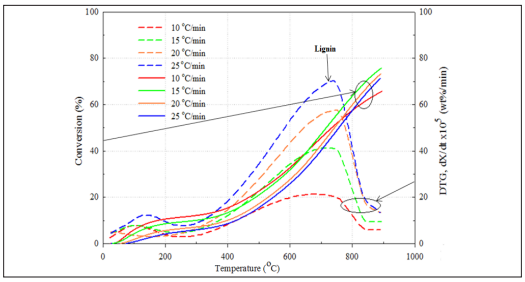
Nour S AbdelRahman et.al., J Fundam Renewable Energy Appl 2018, Volume 8
DOI: 10.4172/2090-4541-C1-054

Date palm lignin successful extraction and characterization

Nour S AbdelRahman and Ali H Al-Marzouqi
United Arab Emirates University, UAE

United Arab Emirates and the surrounding Gulf nations are home to millions of date palm trees and in particular the *Phoenix dactylifera* species. Date palm residues represent a major quantity of biomass as lignocellulosic materials. This biomass is mostly made up of carbohydrates containing cellulose and hemicellulose, attached with lignin. Most of the waste from palm trees is currently turned into compost or burned to generate heat despite their high lignocellulosic content that can be processed into more valuable products such as fuel generation; bio-based chemical production and all these through controlled thermochemical techniques would cause less environmental impact. Klason lignin method was studied for successful isolation of lignin from lignocellulosic palm biomass to produce lignosulphonate high value chemical from lignin. Lignin is a polyphenolic polymer with a distinctive structure different from the other macro constituents of wood. Klason lignin preparation of palm rachis, leaflet, fibers and mixture of the three were thermo-chemically characterized. Characterization included; ethanol-benzene extractive free determination, thermogravimetric determination, scanning electron microscopy for morphological studies and Fourier transform infrared spectroscopy measurements to determine the extent of lignin isolation in lignocellulose biomass comprising of hemicellulose, cellulose and lignin. Klason lignin method is hypothetical and does not suggest the mechanism for structural rearrangements and bond cleavage. However Klason method is a simple and fast method capable of giving similar results during recovering lignin from palm biomass. Therefore results showed that Klason method is successful in isolating lignin date palm biomass and that this lignin can be available for production of lignosulphonate.



Recent Publications

1. Duku M H, Gu S, Ben Hagan E A (2011) comprehensive review of biomass resources and biofuels potential in Ghana. *Renew Sustain Energy Rev;* 15: 404–15.
2. Beringer T, Lucht W, Schaphoff S (2011) Bioenergy production potential of global biomass plantations under environmental and agricultural constraints. *GC Bioenergy;* 3: 299–312.
3. Cherubini F (2010) The biorefinery concept: using biomass instead of oil for producing energy and chemicals. *Energy Convers Manag;* 51: 1412–21.
4. López M, Huerta Pujol O, Martínez Farré F X, Soliva M (2010) Approaching compost stability from klason lignin modified method: Chemical stability degree for OM and N quality assessment. *Resources, Conservation & Recycling;* 55(2): 171-181.
5. White J E, Catallo W J, Legendre B L (2011) Biomass pyrolysis kinetics: A comparative critical review with relevant agricultural residue case studies. *J. Anal. Appl. Pyrolysis;* 91(1): 1-33.

Biography

Nour S AbdelRahman is a Chemical Engineering Master student at UAEU and holds Bachelor's degree from the same institution. She is also a Research Assistant at Emirates Center for Energy and Environment, UAE.

200935193@uaeu.ac.ae