

# 3<sup>rd</sup> International Conference and Exhibition on Materials Science & Engineering

October 06-08, 2014 Hilton San Antonio Airport, USA

## Extraction and acetylation of starch using cost effective reagents for industrial applications

Azeh Yakubu, Abubakar Rufai Mohammed, Umar Musa Tanko and Peter Ajakaye Egwaikhide  
Ibrahim Badamasi Babangida University, Nigeria

Cassava and potato were isolated using a non-conventional method and reagents. The isolated starch had comparable properties with pharmaceutical, food grade and laboratory starch reagent (EPR) starch as indicated by the proximate analysis composition. The isolated starch was chemically modified using commercial vinegar via acetylation and the success of the modification was evidenced by the changes observed on the functional properties such as, solubility, swelleability and film formability. The solubility of acetylated starch prepared varied with increasing acetylation time at constant temperature. FT-IR analysis was used to further prove the success of the modification reaction with vinegar and the following important peaks were seen; 2926-3022 (C-H stretch of aliphatic (-CH<sub>2</sub>) of acetyl group), 1381-1402 (C-CH<sub>3</sub>) deformation in acetyl), 1030-1068 (C-O) stretching vibration in acetyl) and 1739, for carbonyl (C=O) all provided good evidence of the success of starch acetylation with vinegar. Ash, carbohydrate, energy value, crude protein, phosphorus (P), potassium (K), sodium (Na), and calcium (Ca) of isolated Cassava starch were higher than that obtained from isolated potato starch. But moisture and fat contents of isolated potato starch were higher than cassava starch. Although, the crude fiber for both starches isolated was significantly similar. We successfully prepared starch acetates with low water swelleability and solubility. These properties make them good candidates for application in food such as stickening agents, thickeners and stabilizers in ice-creams, yoghurts e. t. c. This research work had successfully shown the usefulness of the method adopted for starch extraction and commercial vinegar as a potential reagent for acetylation of starch.

### Biography

Azeh Yakubu had his BSc Chemistry in 2000 at the University of Abuja. He obtained an MSc Degree in Chemistry with specialization in Organic Chemistry in 2011 at the University of Ilorin, Ilorin, Nigeria. He is presently a PhD candidate conducting researches on cellulose and nanocellulose modification, cellulose blends, composite and cellulose films/membrane, wood and lignocellulosic resources in the same university. He is currently teaching Organic Chemistry and conducting Researches on modification of lignocellulosic biomass using commercial vinegar at the Ibrahim Badamasi Babangida University, Lapai, Nigeria. He has published two books and more than 9 papers in reputed journals.

[yakubuazeh@gmail.com](mailto:yakubuazeh@gmail.com)

## Analysis of the influence of geometric characteristics of the saw and the gasket of saw gin on the life of saw at different distances between the saw

Azizov Shuhrat Mamatovich  
Namangan Engineering-Economical Institute, Pakistan

In our work, we consider the geometric characteristics of the saw and gasket of saw gin as well as define acceptable normal load for saw gin at different distances between the saw. To determine the deformation saws which is under a compressive force it is necessary to determine force of normal stress  $\sigma_x$  that creates cross sectional saws in which stress is uniformly distributed. Stability and strength of saws are characterized. If the normal stress is not evenly distributed in the cross section of the saws there is a complex deformation (torsion, bending, and other complex deformations). In such cases, the strength and stability of saws are determined not only by its size but also on other complex geometrical characteristics with cross-section of saws and gasket. We conducted research about saw and gasket at different distances between the saw. Using these indicators, we can simulate the best option of working parts of gin and increase the life of saws twice

### Biography

Azizov Shuhrat Mamatovich has completed his Eng. Dipl. at the age of 25 years from Namangan Engineering-Economical Institute. He is the head of International Relations Department and PhD researcher at the Namangan Institute of Engineering and Technology. He has published 9 papers in reputed journals and has 2 patents.

[azizovshuhrat@gmail.com](mailto:azizovshuhrat@gmail.com)