World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:9, No:03, 2015

Nanocrystalline Cellulose from Oil Palm Fiber

Authors : Ridzuan Ramli, Zianor Azrina Zianon Abdin, Mohammad Dalour Beg, Rosli M. Yunus

Abstract : Nanocrystalline cellulose (NCC) were produced by using the ultrasound assisted acid hydrolysis from oil palm empty fruit bunch (EFB) pulp with different hydrolysis time then were analyzed by using FESEM and TGA as in comparison with EFB fiber and EFB pulp. Based on the FESEM analysis, it was found that NCC has a rod like shaped under the acid hydrolysis with an assistant of ultrasound. According to thermal stability, the NCC obtained show remarkable sign of high thermal stability compared to EFB fiber and EFB pulp. However, as the hydrolysis time increase, the thermal stability of NCC was deceased. As in conclusion, the NCC can be prepared by using ultrasound assisted acid hydrolysis. The NCC obtained have good thermal stability and have a great potential as the reinforcement in composite materials.

Keywords : Nanocrystalline cellulose, ultrasound assisted acid hydrolysis, thermal stability, morphology, empty fruit bunch (EFB)
Conference Title : ICNMN 2015 : International Conference on Nanostructured Materials and Nanotechnology
Conference Location : Miami, United States
Conference Dates : March 09-10, 2015