ANILINE-ASSISTED SYNTHESIS TOWARDS A RENEWALE RICE HUSK SILICA-DERIVED Ni-PHYLLOSILICATE

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This Final Year Project Report entitled **"Aniline-Assisted Synthesis Towards A Renewable Rice Husk Silica-Derived Ni-Phyllosilicate"** was submitted by Dayang Nurul Asyiqin Binti Abang Junaidi in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

ANILINE-ASSISTED SYNTHESIS TOWARDS A RENEWABLE RICE HUSK SILICA-DERIVED Ni-PHYLLOSILICATE

In this research, Ni-phyllosilicate (Ni/SiO_2) can be prepared by extracting the silica from rice husk ash (RHA). Ni-phyllosilicate become unstable where it agglomerates due to the high surface energy on the surface of the particles and the loss of the surface silanol group during thermal treatment. Therefore, this issue can be prevented by adding aniline to the Ni-phyllosilicate in order to speed up the synthesis of Ni-phyllosilicate. The characteristics of the Ni-phyllosilicate were determined by using Scanning Electron Microscope and Energy Dispersive X-ray (SEM-EDX), Fourier-Transform Infrared Spectroscopy (FTIR), and X-ray Diffraction (XRD) analyses. The morphology of AN@Ni-PS showed that the particles were less agglomerate and a few pores can be seen on the particles compared to the Ni-PS. FTIR spectrum showed the intensity of SiO_2 in AN@Ni-PS become increased compared to Ni-PS and there is a presence of Ni-O stretching vibration at 665.01 cm^{-1} in Ni-PS and AN@Ni-PS. In addition, the Ni content (wt%) of Ni-PS and AN@Ni-PS were 0.50 wt% and 1.15 wt%, respectively. This shows that the aniline can affect the nickel content in Ni-phyllosilicate. The crystalline structure of Ni-PS and AN@Ni-PS has been confirmed by the XRD pattern of diffraction peaks at $2\Theta = 28^o$, 33^o, 36^o, 38^o, 47^o, and 56^o. Overall, aniline has been shown to be beneficial in increasing the development of phyllosilicate, which has allowed for the properties of Ni-phyllosilicate to be effectively proven.

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