

ABSTRAK

PENGARUH VARIASI SUHU LARUTAN ASAM SITRAT MENGUNAKAN METODE *LEACHING* TERHADAP KARAKTERISTIK SILIKA BATANG PADI

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Telah dilakukan penelitian pengaruh variasi suhu larutan asam sitrat menggunakan metode *leaching* terhadap karakteristik silika batang padi. Suhu kalsinasi yang digunakan yaitu 700°C. Metode yang dilakukan ialah preparasi batang padi, sintesis silika batang padi variasi suhu asam sitrat menggunakan metode *leaching*, dan pembakaran batang padi hasil *leaching* asam sitrat. Pengujian dilakukan untuk memperoleh silika murni. Tujuan dilakukan percobaan yaitu mengetahui sifat termal silika, komposisi unsur silika, fase terbentuk silika, gugus fungsi yang terbentuk pada silika, dan karakteristik morfologi pada silika. Hasil penelitian diperoleh lima analisis yaitu analisis TGA (*Thermo Gravimetric Analysis*) pada RSA (Rice Straw Ash) 30° C mengalami penyusutan sebesar 32,39% dan RSA 80° C mengalami penyusutan sebesar 30,44%. Analisis DTA (*Differential Thermal Analysis*) pada RSA 30° C dan RSA 80° C menunjukkan dua puncak eksotermik dan satu puncak endotermik. Analisis XRF (*X-Ray Fluorescence*) menunjukkan hasil silika tertinggi pada suhu 100° C yaitu sebesar 97,459 %. Analisis XRD (*X-Ray Diffraction*) menunjukkan struktur *amorf* dengan puncak tertinggi berturut-turut pada RSA 30° C, RSA 60° C, RSA 70° C, RSA 80° C, RSA 90° C, dan RSA 100° C sebesar 19,545°, 21,185°, 22,004°, 20,162°, 19,86°, serta 22,278°. Analisis FTIR (*Fourier Transform Infra-Red*) menunjukkan gugus fungsi yang terbentuk yaitu –OH, Si-O-Si dan Si-O. Analisis SEM (*Scanning Electron Microscopy*) menunjukkan bahwa semakin tinggi suhu *leaching* asam sitrat yang dilakukan maka ukuran butir semakin merata.

Kata Kunci: Batang Padi, Silika, *Leaching*.

ABSTRACT

THE EFFECT OF VARIATION TEMPERATURE CITRIC ACID SOLUTION USING *LEACHING* METHOD ON THE CHARACTERISTICS OF RICE STEM SILICA

by

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Research has been carried out on the effect of variations in temperature of citric acid solution using the leaching method on the silica characteristics of rice straws. Calcination temperature used is 700°C. The methods used were the preparation of rice straws, the synthesis of silica from rice straws with variations in temperature of citric acid using the leaching method, and burning of rice stems from citric acid leaching. Tests were carried out to obtain pure silica. The purpose of the experiment was to determine the thermal properties of silica, the elemental composition of silica, the phase formed by silica, functional groups formed in silica, and morphological characteristics of silica. The results obtained five analyzes, namely TGA analysis (Thermo Gravimetric Analysis) at RSA (Rice Straw Ash) 30°C experienced a shrinkage of 32.39% and RSA 80°C experienced a depreciation of 30.44%. DTA (Differential Thermal Analysis) analysis at RSA 30°C and RSA 80°C shows two exothermic peaks and one endothermic peak. XRF (X – Ray Fluorescence) analysis showed the highest silica yield at a temperature of 100°C, which was 97.459%. XRD (X-Ray Diffraction) analysis showed an amorphous structure with the highest peaks at RSA 30°C, RSA 60°C, RSA 70°C, RSA 80°C, RSA 90°C, and RSA 100°C of 19,545. °, 21,185 °, 22,004 °, 20,162 °, 19,86 °, and 22.278 °. FTIR (Fourier Transform Infra-Red) analysis shows that the functional groups formed are –OH, Si-O-Si and Si-O. SEM (Scanning Electron Microscopy) analysis shows that the higher the citric acid leaching temperature, the more evenly distributed the grain size.

Keywords: *Rice Straw, Silica, Leaching.*