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Analysis SEM the Chemical and Physics Composition of Used Rice Husks as an Absorber Plate

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ABSTRACT

Rice husk is a removal waste from its grain that can be used as an absorber in the distillation process using solar energy (sunlight) to convert seawater into clean water. This process will be supported by carrying out necessary study on the material properties to be used as the absorbent which is made of rice husk briquettes. The chemical composition of rice husk obtained after the process comparing to before the process of distillation using SEM. The study using SEM, there is an increase before and after the process distillation. For 100% Normalized Sum matrix is 2.37% (before the process) and 2.82% (after the process). It means that there is an increase percentage of about 0.45%.

Keywords: Distillation, Briquettes Absorber, Rice Husk, Clean Water

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1. INTRODUCTION

Rice husk is a removal waste from its grain that can be used as an absorber in the distillation process using solar energy (sunlight) to convert seawater into clean water.This process will be supported by carrying out necessary study on the material properties to be used as the absorbent which is made of rice husk briquettes.Rice husk resulting from the milling process by 20% of the production of rice, while the number of rice husk ash 18% of the amount of chaff.

A. Research Objectives

The purpose of the study is to look at the chemical composition and Physics rice husks that have been burned and made into briquettes. Absorber plate is made of compacted and assess such effects on the distillation process is done with the help of sunlight to make sea water into fresh water.

Rice husk is a waste of grain that can be used as absorber in the distillation process with the help of sunlight to convert seawater into fresh water.

B. Theorical Backgraound

Absorption process is used for separating a gas component from a gas mixture using a liquid as absorbent/absorbent. Absorbent used is determined by the solubility of gas in certain liquid substances. The example of the absorption process is the separation of oxygen from gas mixtures by using water as absorbent.

Amorphous silica produced from rice husk ash is suspected as an important source to produce pure silicon, silicon carbid, silicon and flour nitrid [6]. Burning rice husk using conventional methods such as fluidized bed combustors produce CO emissions between 200 - 2000 mg / Nm^3 and NOx emissions between 200-300 mg / Nm^3 [1] . Rice husk combustion method developed by Cogen-AIT could reduce potential CO2 emissions by 14 762

tons, 74 tons of CH4 and NO2 of 0.16 tons per year from the burning of rice husk of 34 919 tons per year [7].

2. METHODOLOGY

A. The Distilation Process

Cover glass is made in the form of a greenhouse roof with a slope of 30. To facilitate the flow of water in the glass during an evaporating sea water.

This study is expected to rice husk briquettes can accelerate the process of evaporation of sea water with a layer of very thin. Above sea level in rice husk briquettes inside this research tool is 15 mm to 25 mm is considered constant. The purpose of this study "Examining the Chemical Composition of rice husk briquettes, whether it can be used as an absorber in the distillation process to convert seawater into clean water with the help of sunlight.

3. RESULT AND DISCUSSION

The microanalysis Report chemical composition of rice husk briquette before and after the distillation proses using SEM (Scanning Electron Microscope) is summarize in Table 1.

Results using SEM showed that Si content is quite large followed by O_2 in the rice husk, and Calcium and Aluminum.

Results obtained by using XRF showed that rice husk contains Cl sizeable and than Silica. SEM showed that rice husk contains silica which is quite large and then oxygen. XRF tool showed that the composition of sea compound after undergoing the distillation process is used as an absorbent impaired Si=30. 48m/m% (prior to the refining process) is converted into Si=22: 27m/m%. (After the distillation process).

The chemical composition of rice husk is used as an absorber after the distillation processecreased as a result of the evaporation of sea water into fresh water. The results

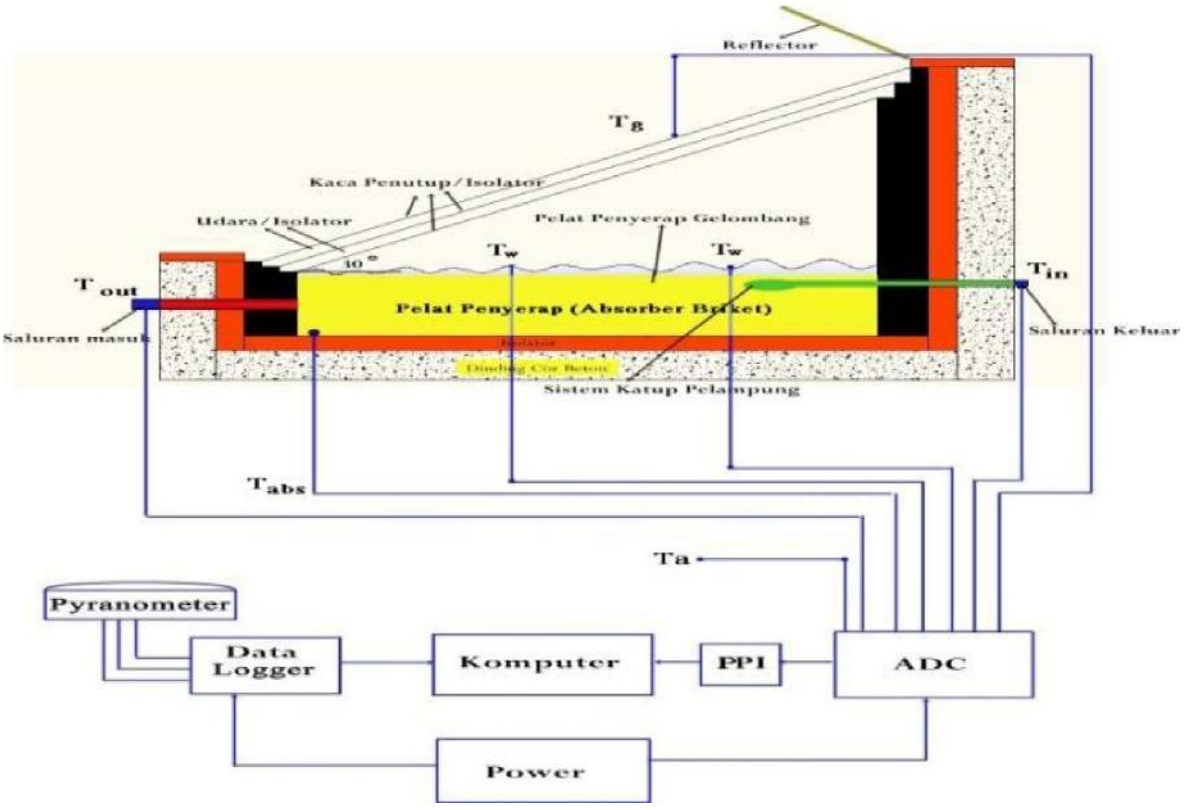

Figure 1. The distillation process rice husk

Tabel 1. The Composition Briquette Rice Husk before and After Undergoing the Process of Distillation.

No. Element	Before			After			Remarks	
	Wt%	At%	Intensity	Wt%	At%	Intensity	Wt&At	Intensity
1. CK	13.58	22.72	2,66	10.18	17.47	0,92	Down	Down
2. NK	2.13	3.05	1,06	2.34	3.44	0,58	Up	Down
3. OK	27.16	34.13	4,84	30.41	39.18	4,35	Up	Down
4. FeL	3.41	1.23	2,03	6.83	2.52	1,72	Up	Down
5. NaK	0.43	0.37	0,61	0.19	0.17	0,46	Down	Down
6. MgK	0.40	0.33	0,46	0.74	0.63	0,35	Up	Down
7. AlK	10.66	7.94	0,97	13.82	10.56	2,52	Up	Up
8. SiK	42.23	30.23	8,03	35.49	26.04	5,37	Down	Down

showed that the production of sea water can be converted into fresh water by looking at the values of pH, salinity, sulfate (SO4), carbonate (CO3), Calcium (Ca), magnesium (Mg), chloride (Cl), Sodium and Potassium turned into a composition clean water that is fit for use by humans.

Figure 2 and Figure 3 show the analysis process of the rice husk using the SEM. This suggests that rice husk can be used as an absorbent in distillation process seawater into clean water. Figure 4 shows the graph value Si ≥ 42.23 as absorbent before undergoing the distillation process and Figure 5 shows the graph value Si ≥ 35.49 as absorbent after undergoing the distillation process.

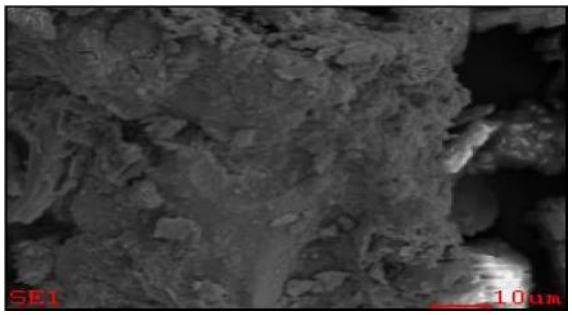

Figure 2. Show the composition of rice husk briquettes graph using an SEM before the distilation process.

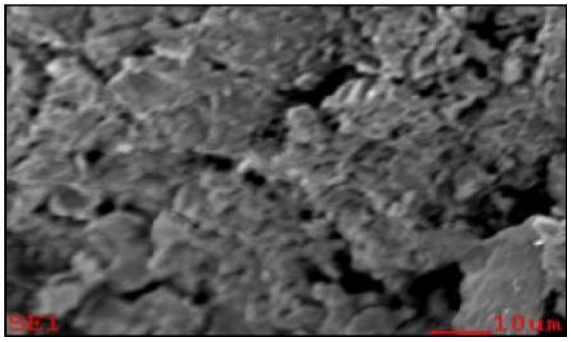

Figure 3. Show the composition of rice husk briquettes graph using an SEM after the distilation process.

4. CONCLUSION

The results showed that rice husk briquettes can be used as an absorber plate in the distillation process to convert sea water into clean water. Although the composition of seawater can be converted into clean water but do not qualify to be directly in the drink because the pH value does not qualify for at drink.

The results of the graph show that the value of silica decreased which is a compound converting seawater into clean water.

Table 2. Chemical Composition OF Water Producedfrom the distillation process

No.	Parameters	Result	Unit	Quality requirement	Remarks
1.	pH.	5.5	-	6.5 - 8.5	No Good
2.	Colors.	Normal	-	Normal	Good
3.	Suspension solids	24	mg/L	50	Good
4.	Dissolved solids	140	mg/L	500	Good
5.	Total solids	164	mg/L	1000	Good
6.	Sulfate as BaSO4.	108	mg/L	250	Good
7.	NaCl.	13	mg/L	411	Good
8.	Sodium.	5	mg/L	200	Good
9.	Chloride.	8	mg/L	250	Good
10.	Organic substances	19	mg/L	10	No Good

The chemical composition of rice husk obtained after distillation process has been increased in view of the results of XRF, Sum Conc's before normalization 100%: 16.3% and after process distillation 19.9%. It means an increase of 3.6%. Parallel to the study using SEM (Scanning Electron Microscope), there is an increase value before and after the distillation process for 100% normalized sum matrix of 2.37% (before) and 2.82% (after). It means that there is an increase percentage of about 0.45%.

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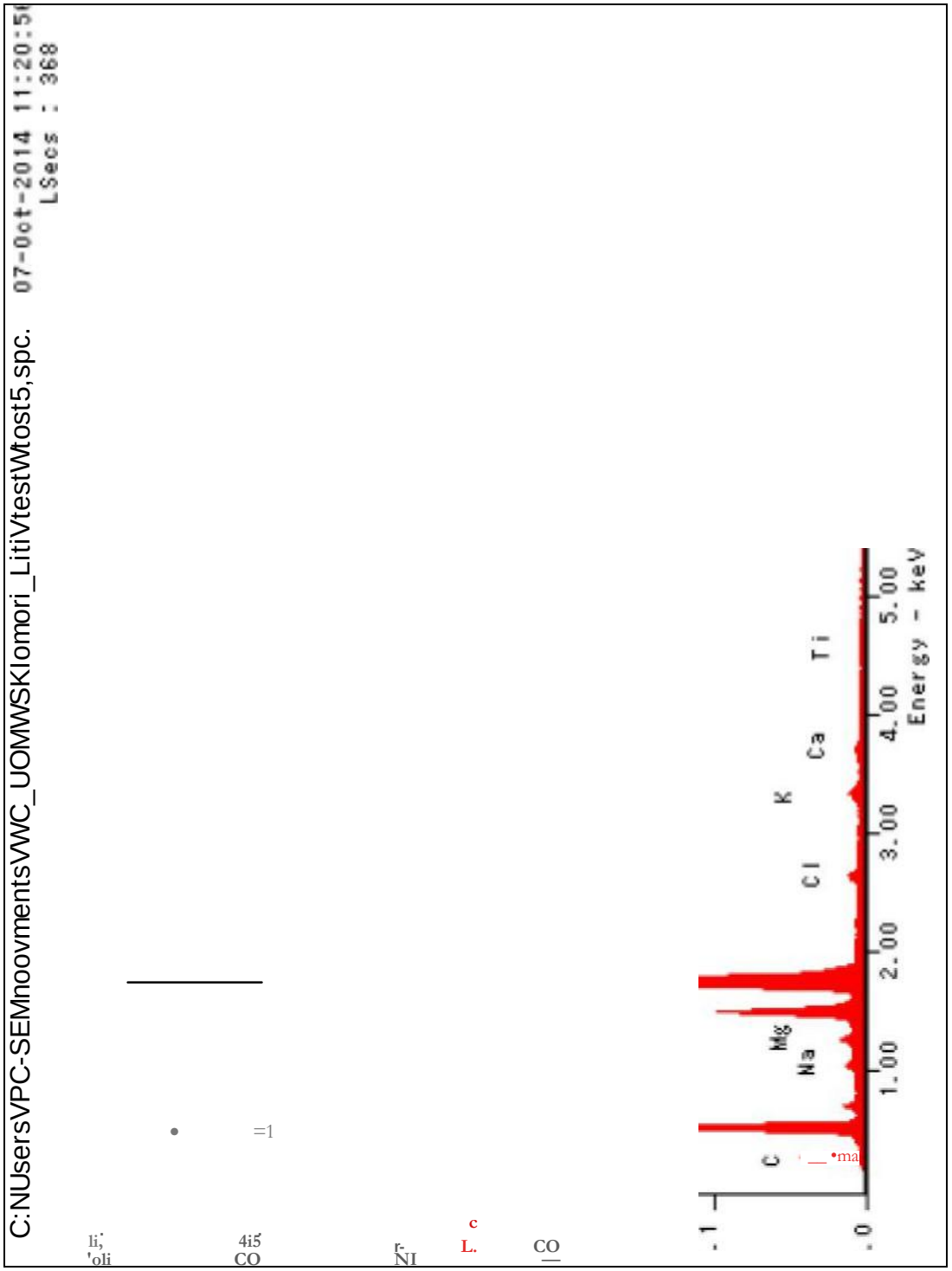

Figure 4. The results graph before the distillation process.

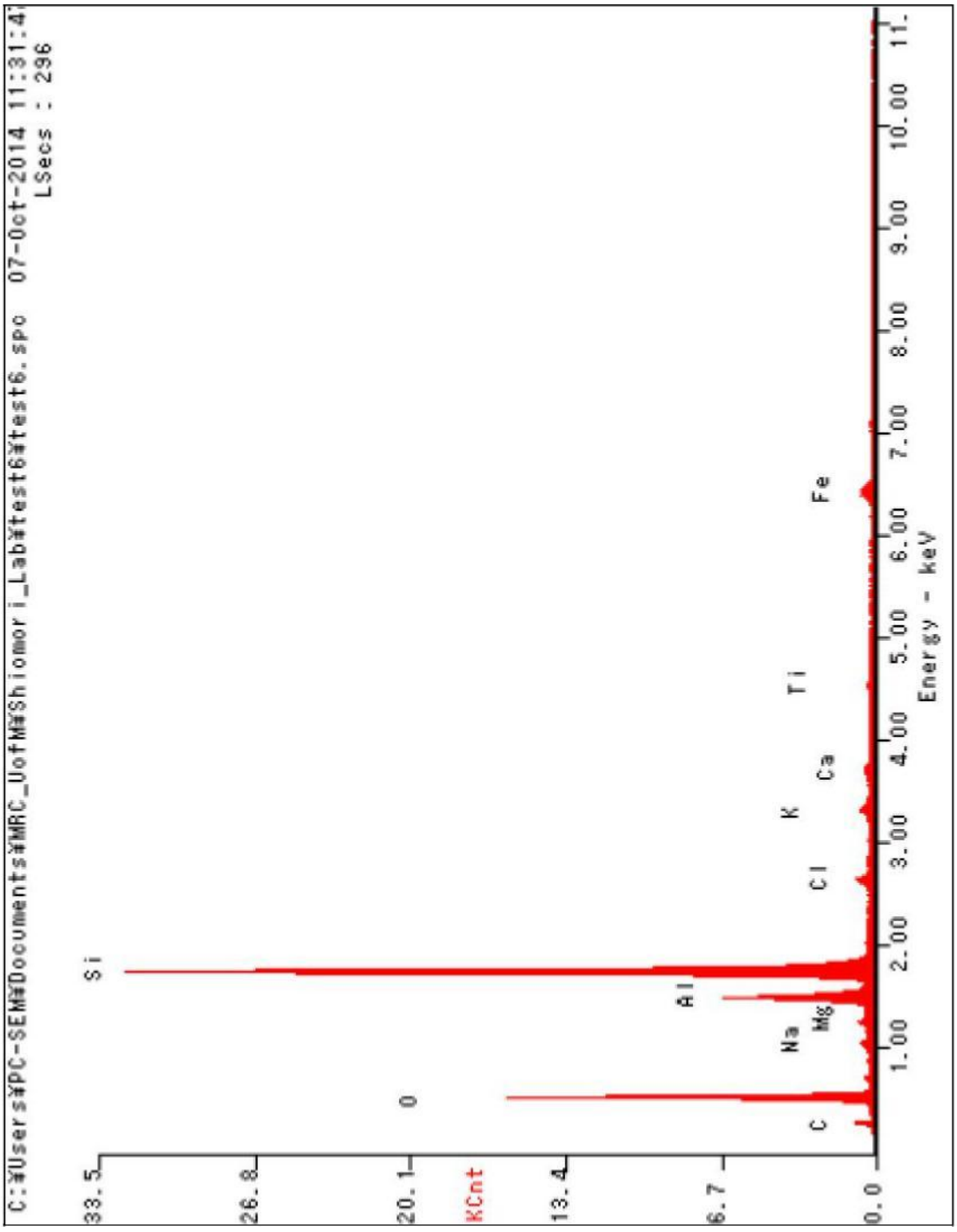

Figure 5. The results graph after the distillation process.