3rd EDITION

E-EXTENDED

ABSTRACT

INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

COPYRIGHT

INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

19 June 2023

Faculty of Plantation and Agrotechnology UiTM Cawangan Melaka Kampus Jasin

Published 2023
Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA Cawangan Melaka Kampus Jasin
77300 Merlimau Melaka.

E-EXTENDED ABSTRACT of the INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS) (3rd EDITION)

Mode of access Internet

https://sites.google.com/view/ais2023/publication

Perpustakaan Negara Malaysia Cataloguing -in – Publication Data

ORGANIZING COMMITTEE

Program Advisor	:	Ts. ChM. Dr. Wan Zuraida Wan Mohd Zain
Program Director	:	Dr. Noer Hartini Dolhaji
Program Secretary	:	Nurul Izzatiafifi Ismail
Program Treasurer	:	Nur' Amira Hamid
Program Registration	:	Siti Aisha Na'illa Che Musa
Program Judging	:	Nur Atiqah Zaharullil
		Nur Wajihah Mohd Nawi
Program Webmaster	:	Ts. Dr. Siti Fairuz Nurr Sadikan
Program Certificate		Nurul Wahida Ramli
Program Human Contribution		Nur Nabila Huda Aziz
Program Protocol		Siti Nur Atikah Abu Samah
Program Publication		Dr. Mohd Zuli Jaafar
Program Logistic		Muhammad Nuruddin Mohd Nor
Program Technical		Khawarizmi Mohd Aziz

STUDENT COMMITTEE

Mohammad Ali Kamaruddin

Nurul Huda Nabilah Ramlee

Siti Nor Arifah Abd Halim

Nuraliah Aqilah Ayuni Mohamed

Mohamad Khairul Haziq Mohamad Fauzi

Nur Wajihah Mohd Nawawi

Mohammad Hafis Ayub

Aiman Haziq Arifin

Amyra Hazwani Ghazali

Mohamad Syamil Mohd Nor

Mohammad Najmuddin Suriani

Nur Syafiqah Aina Azmi

Muhammad Aidil Ikhwan Kamarudin

Nur Muhammad Ameiriqwan Ahmad Faiza

Muhammad Faiz Zulazmi

Mohd Azri Aiman Zulkifli

Diana Asykin Kamaruddin

Nor Elin Balqis Ismail

Nursyasya Razalil

Muhammad Ismadanial Rozi

Muhammad Amir Asyraf Azman

Mohamad Zairy Zailan

EDITORIAL BOARD

ABOUT FACULTY OF PLANTATION AND AGROTECHNOLOGY

The Faculty of Plantation and Agrotechnology was established in 2010 at Universiti Teknologi MARA (UiTM). The mission of the faculty is to play the vital role of producing well-trained professionals in all areas of plantation and agriculture-related industries at national and international levels.

Bachelor of Science (Hons) Plantation Technology and Management is a three-year program that strongly emphasizes the various aspects of Production Technology, Management, and Information Technology highly sought after by the agricultural and plantation sectors. Students in this program will be fully trained to serve as professionals in the plantation sector and related industries. They will have ample opportunities to fulfill important positions in the plantation industry such as plantation executives. This program provides a strong balance of technology and management courses essential for the plantation industry such as management of plantation crops, soil fertility, plantation management operation, plantation crop mechanization, and agricultural precision. As an integral part of the program, students will be required to undergo industrial attachment to gain managerial skills in the plantation industry.

The faculty is highly committed to disseminating, imparting, and fostering intellectual development and research to meet the changing needs of the plantation and agriculture sectors. With this regard, numerous undergraduate and postgraduate programs have been offered by the government's intention to produce professionals and entrepreneurs who are knowledgeable and highly skilled in the plantation, agriculture, and agrotechnology sectors.

PREFACE

International Agrotechnology Innovation Symposium (i-AIS) is a platform to be formed for students/lecturers/ staff to share creativity in applying the knowledge that is related to the world of Agrotechnology in the form of posters. This virtual poster competition takes place on the 1st of December 2022 and ends on the 8th of January 2023. This competition is an assessment of students in determining the level of understanding, creativity, and group work for the subject related to agrotechnology and being able to apply it to the field of Agrotechnology. The i-AIS 2022 program takes place from December 1, 2022, to January 8, 2023. The program was officiated by the Dean of the Faculty of Plantation and Agrotechnology, namely Prof. Madya Ts. Dr. Azma Yusuf. The program involves students from faculties of the Faculty of Plantation and Agrotechnology (FPA)and HEP participating in i-AIS 2022, namely, the Faculty of Education and Pre-Higher Education. This program involves the UiTM student and some of the non-UiTM students which come from the international university and the local university. Two categories are contested, namely UiTM and non-UiTM. To date, students from these programs have shown remarkable achievements in academic performance and participation in national as well as international competitions.

This competition is an open door for the students and lecturers to exhibit creative minds stemming from curiosity. Several e-content projects have been evaluated by esteemed judges and that has led to the birth of this E-Poster Book. Ideas and novelties are celebrated, and participants are applauded for displaying ingenious minds in their ideas.

It is hoped that such an effort continues to breed so that there is always an outlet for these creative minds to grow.

Thank you.

Dean
On behalf of the Organizing Committee
Conference Chair
Universiti Teknologi MARA
Faculty of Plantation and Agrotechnology
http://fpa.uitm.edu.my

TABLE OF CONTENTS

EXTRACTION OF SILICON CARBIDE PARTICLES FROM RICE HUSK

M. Kalaimani[1], Dr.T.Shaafi[1], Dr.A.Velumani[1]

[1]*Department Agro Energy Engineering, Saveetha School of Engineering, Chennai, India*

Corresponding author e-mail: mkalaikvn@gmailcom

ABSTRACT - Two techniques were employed to extract SiC from rice husk. First method is carbonization process of rice husks in a vacuum at temperatures between 300ºC - 700°C. Second method is carbonized rice husk was preformed carbothermal process in 90min at a temperature range of 1100ºC to 1600°C. SiC formations are occurred at 1600 °C and above. Yield of SiC formation as a function of the pyrolysis temperature of the carbonized rice husk.

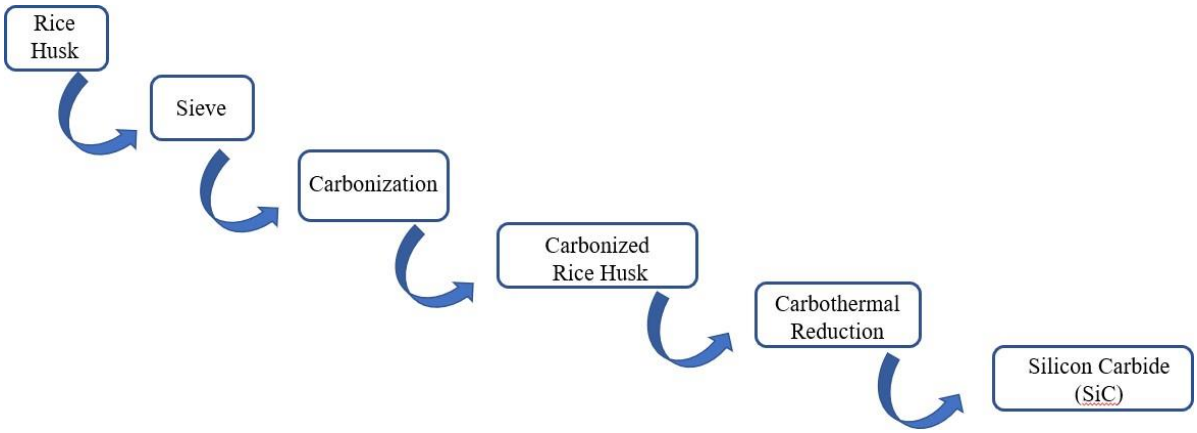
Keywords: Silicon carbide, Rice husk.

INTRODUCTION

Rice husk contains cellulose as its main constituent, an organic material that generates carbon and also has high silica content (13% to 29% by weight). The ash is mainly composed of silica (87% to 97% by weight), Silicon carbide it has various industrial applications, due to its high hardness, thermal and electrical conductivity, superior corrosion resistance, and resilience to thermal stress. The majority of the rice husk generated during milling is utilized as fuel in the paddy processing boilers, which utilize direct combustion and/or gasification to produce electricity.

METHODS AND MATERIALS

PROCESS FLOW CHART



RICE HUSK

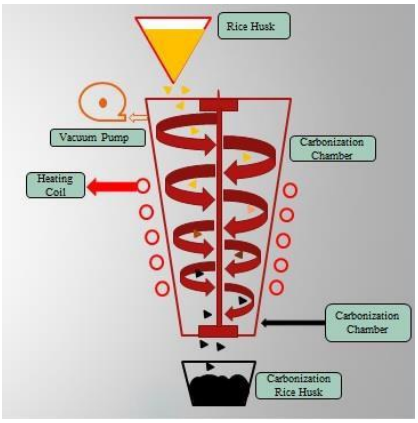
Rice husk affects the soil and the area where it is dumped. Now a day's disposal of rice husk is a major challenge, alternatively for business usages in many industrial applications.

SIEVE

By using the sieve the dust, small rice husk particles and foreign materials were removed.

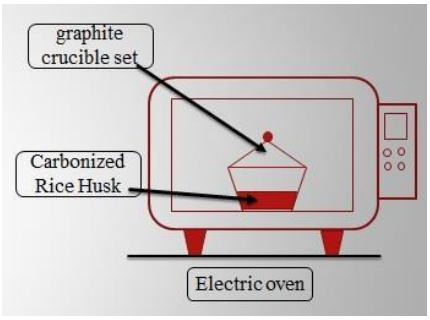
CARBONIZATION PROCESS

It is the process to activate the carbon presents in the rice husk. The rice husk was fed from top of the vacuum chamber. The process was done in the steel chamber and wounded by heating coil and the temperatures maintained at 300ºC to 700ºC. The carbon particles were noticed after the heat treatment for the duration of 40 min.



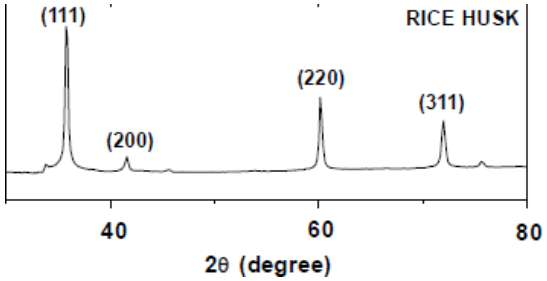
CARBOTHERMAL PROCESS

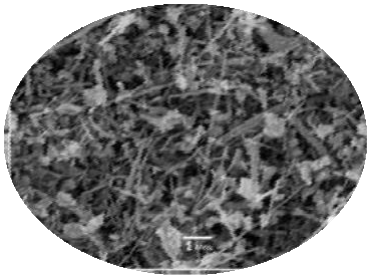
The collected carbonized rice husk was kept inside the graphite small crucible. The graphite small crucible was kept inside the larger crucible and then coved with graphite powder. Now the entire crucible was allowed for heating 90min duration maintained the temperature range of 1600˚C Then, the residual carbon was removed when the temperature was maintained at 700ºC for 24 Hr. This process was called as carbothermal.



RESULT

The pyrolysis of rice husk: crystallization of amorphous silica, crystallization of amorphous carbon, and the reduction of SiO_2 to form SiC particles and whiskers It was observed that about 29.9% to 43.5% of the initial mass was converted into a final product of SiC. The XRD patterns of pyrolyzed rice husk intensities of SiC peaks were found to be higher in treated rice husk.





XRD Patterns SEM Image

DISCUSSION

The silica content was considered as of the remaining mass after oxidation, It may be observed that as the carbonization temperature increased. The rice husk carbonized at 400 °C containing approximately carbon and silica was used for silicon carbide synthesis

CONCLUSION

There could also be a reduction in the cost of the raw material since the rice husk is in most cases considered as waste and due to the intimate contact between silica and carbon, The rice husk has a high surface area which can lead to the formation of SiC at lower temperatures The SiC phase was identified by X- ray diffraction analysis; therefore, it was possible to obtain the SiC from rice husk.

REFERENCES

[1] Shatumbu T. Alweendo, Kavishea and Joseph O. Synthesis, Optimization and Characterization of Silicon Carbide (SiC) from Rice Husk, Procedia Manufacturing 35 (2019) 962–967.

[2] Kei Shibata n, Takeshi Yamaguchi, Tribological behavior of RH ceramics made from rice husk sliding against stainless steel, alumina, silicon carbide, and silicon nitride, Tribology International 73 (2014) 187–194

[3] Yi Ling Chiew, Kuan Yew Cheong, A review on the synthesis of SiC from plant-based biomasses, Materials Science and Engineering B 176 (2011) 951– 964

E-EXTENDED ABSTRACT of the INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS) (3rd EDITION)

e ISBN 978-629 -97220-5-2

9 786299 722052

FAKULTI PERLADANGAN DAN AGROTEKNOLOGI UiTM JASIN

(online)

UNIVERSITI TEKNOLOGI MARA

Fakulti Perladangan dan Agroteknologi

INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM

ais2023.fpa@gmail.com