



Book of Abstracts

ICASMI

**3rd International
Conference on
Applied Science
Mathematics
and Informatics**



**“Natural Sciences,
Mathematics and Informatics in
Industri Revolution (IR) 4.0 Toward
The Sustainable Development Goals
(SGDs)”**

2020

**Faculty of Mathematics and Natural Sciences
University of Lampung**

Introduction

The 3rd International Conference on Applied Science,
Mathematics, and Informatics (ICASMI)

Bandar Lampung, 3-4 September 2020

Faculty of Mathematics and Natural Sciences, University of Lampung (FMIPA, UNILA) is honored and proud to organize the 3rd International Conference on Applied Science, Mathematics, and Informatics (ICASMI). The theme of the conference is theme "Natural Sciences, Mathematics and Informatics in the Industrial Revolution (IR) 4.0 toward the Sustainable Development Goals (SDGs)."

ICASMI is a biennial event with the aims to bring together international and local scientists, researchers, academicians, also students for sharing their research, exchanging ideas, networking, opening collaboration research. Even in the covid19 pandemic, ICASMI is still held this year. This year, all conference will be held online.

The Keynote speakers are competent in their filed of study. They come from different countries, such as, Japan, Malaysia, Turkey and Indonesia. This conference will provide an opportunity for presenters to present their

current research and results, and also for participants to learn up-to-date topics and researches in their field of study.

Best wishes and we welcome you to the 3rd ICASMI held in Bandar Lampung, Indonesia.

Organized by

Faculty of Mathematics and Natural Sciences,
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NiO/ZSM-5 catalyzed transesterification of rubber seed oil with methanol

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ABSTRACT

In this study, NiO/ZSM-5 composites have been synthesized by the wet impregnation method. Impregnation was carried out by immersing 5 g of ZSM-5 in 100 mL of $\text{Ni}(\text{NO}_3)_2$ solution in which concentrations were varied, namely 0, 5, 10, 15, and 20%. The samples were stirred for 6 h then allowed to stand for 22 h, filtered and washed, and then dried in an oven at 80 °C, and finally calcined at 550 °C for 3 h. For simplicity, the products were referred to as NiO/ZSM-5-0, NiO/ZSM-5-5, NiO/ZSM-5-10, NiO/ZSM-5-15, and NiO/ZSM-5-20. Each composite was used as a heterogeneous catalyst in the transesterification reaction of rubber seed oil with methanol. The reaction was carried out with ratio of oil/methanol of 1:6; the amount of catalyst 10% (composite weight/oil volume) at 70°C for 3 h. The results showed that composites were found to indicate good catalytic activity to convert the fatty acids contained in the oil into their corresponding methyl esters. It was found that the highest percentage of conversion of the oil (98%) was achieved using NiO/ZSM-5-10 as a catalyst.

keyword : NiO/ZSM-5 composites, impregnation, transesterification, rubber seed oil