**COVER LETTER**

Maisari Utami 20 April 2021

Department of Chemistry

Universitas Islam Indonesia, 55584, Indonesia

Dear Editor of Indonesian Journal of Chemistry,

We wish to submit an original research article entitled “Synthesis of SO4/ZrO2 solid acid and Na2O/ZrO2 Solid Base Catalysts using Hydrothermal Method for Biodiesel Production from Low Grade Crude Palm Oil” for consideration by Indonesian Journal of Chemistry.

We confirm that the written manuscript is original, and no part of it has been published before, nor is any part of it currently under consideration for publication elsewhere.

The catalyst is commonly synthesized using the sol-gel method. The weakness of the sol-gel method is the difficulties of preparation process on pH control, composition and temperature that affect the synthesized material. Synthesis in hydrothermal conditions offers significant advantages such as easily controlling particle size and morphology by optimizing synthesis parameters and conditions. Therefore, our research focuses on the synthesis of catalyst using hydrothermal method to increase the dispersion of SO4 or Na in ZrO2, so the acidity or basicity of the catalyst will increase. This research aims to obtain SO4/ZrO2 solid acid and Na2O/ZrO2 solid base catalyst by hydrothermal method for conversion of Low Grade Crude Palm Oil (LGCPO) to biodiesel.

Our research provides a novel method in the modification of ZrO2, resulting SO4/ZrO2 and Na2O/ZrO2 as highly active and selective solid acid catalyst for esterification and transesterification reaction of LGCPO into biodiesel under the optimized condition. Our results will be of great interest to the readers of Indonesian Journal of Chemistry, especially those involved in the fields of solid acid catalyst, supported catalyst, acid and base-catalyzed reaction, nanocatalysis, nanomaterials, green and sustainable chemistry.

Please find below a list of potential reviewers for this work.

We have no conflicts of interest to disclose.

Please address all correspondence concerning this manuscript to us at maisariutami@uii.ac.id or karnawijaya@ugm.ac.id

Your consideration is very much appreciated. We are looking forward to your favorable reply.

Sincerely,

Maisari Utami

**List of Potential Reviewers**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | **Name** | **:** | Assoc. Prof. Dr. Oki Muraza |
|  | Affiliation | : | Research Technology and Innovation PT Pertamina |
|  | Address | : | Jakarta 10110, Indonesia |
|  | E-mail | : | omuraza@kfupm.edu.sa |
|  | Reviewing Interest / Expertise | : | [Fuels](https://scholar.google.com/citations?view_op=search_authors&hl=en&mauthors=label:fuels), [Catalytic Cracking](https://scholar.google.com/citations?view_op=search_authors&hl=en&mauthors=label:catalytic_cracking), [Heterogeneous Catalysis](https://scholar.google.com/citations?view_op=search_authors&hl=en&mauthors=label:heterogeneous_catalysis), [Microporous and Mesoporous Materials](https://scholar.google.com/citations?view_op=search_authors&hl=en&mauthors=label:microporous_and_mesoporous_materials), [Reaction Engineering](https://scholar.google.com/citations?view_op=search_authors&hl=en&mauthors=label:reaction_engineering) |

|  |  |  |  |
| --- | --- | --- | --- |
| 2. | **Name** | **:** | Prof. Ruey-an Doong |
|  | Affiliation | : | Institute of Analytical and Environmental Sciences, [National Tsing Hua University](https://www.researchgate.net/institution/National-Tsing-Hua-University) |
|  | Address | : | Hsinchu 30013, Taiwan |
|  | E-mail | : | radoong@mx.nthu.edu.tw  |
|  | Reviewing Interest / Expertise | : | [Environmental Nanotechnology](https://scholar.google.com/citations?view_op=search_authors&hl=zh-TW&mauthors=label:environmental_nanotechnology), [Environmental Chemistry](https://scholar.google.com/citations?view_op=search_authors&hl=zh-TW&mauthors=label:environmental_chemistry), [Energy Materials](https://scholar.google.com/citations?view_op=search_authors&hl=zh-TW&mauthors=label:energy_materials) |

|  |  |  |  |
| --- | --- | --- | --- |
| 3. | **Name** | **:** | Prof. Dr. Istadi |
|  | Affiliation | : | [Chemical Engineering](https://scholar.google.co.id/citations?view_op=search_authors&hl=en&mauthors=label:chemical_engineering), Universitas Diponegoro |
|  | Address | : | Semarang 1269, Indonesia |
|  | E-mail | : | istadi@che.undip.ac.id  |
|  | Reviewing Interest / Expertise | : | [Chemical Engineering](https://scholar.google.co.id/citations?view_op=search_authors&hl=en&mauthors=label:chemical_engineering) |

|  |  |  |  |
| --- | --- | --- | --- |
| 4. | **Name** | **:** | Dr. Kiki Adi Kurnia |
|  | Affiliation | : | Department of Marine, [Universitas Airlangga](https://scholar.google.co.id/citations?view_op=view_org&hl=id&org=11662266414146332889) |
|  | Address | : | Surabaya 60115, Indonesia |
|  | E-mail | : | kiki.adi@fpk.unair.ac.id  |
|  | Reviewing Interest / Expertise | : | Green Chemistry |