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COVER LETTER

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[*July 27th, 2023*]

Dear,
I/We wish to submit an original research article entitled "[***Hardness and Microstructure of FDM 3D Printed Parts Using Self-Made PLA-Brass Filaments***]" for consideration by SINERGI.

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. We promise not to withdraw this article after it has been processed by the Editorial Team. If there is a withdrawal, we are willing to pay a penalty of USD 150 (IDR 2000K) to the SINERGI Editorial Team.

In this paper, I/we report on / show that:

Field	:	Mechanical Engineering
Topic	:	FDM 3D Printing using metal content filament (Manufacturing Processes)
Brief Background	:	Some metal content filament was introduced in FDM 3D printing technology, one of which is PLA-brass. Following succeed in producing this filament we have analyzed on its dimensional accuracy and its strength using pull out test. Results showed that it needs to improve cooling system of the extruder. Improvement has been made and the new extruded filaments need to be observed on their mechanical properties.
Research Problem	:	Hardness is an essential mechanical property, especially for metal content 3D printed component.
Overview of Method	:	The filament was manufactured using the improved self-made single extruder. Taguchi design L4 (2^3) followed by S/N Ratio and ANOVA was employed to find out the optimum combination which result in the optimum hardness. Hardness test using Shore-D. Compliment with observations on microstructure of the filament and printed parts to study the pores, grains, and bonds.
Significant finding	:	The maximum hardness of 55.46 HD can be obtained when using combination of nozzle temperature at 230°C,

		layer height of 0.2 mm, and print speed of 40 mm/s. This hardness includes in “hard” level and may be used for functional component at the level.

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

Sincerely,

[*Mahros Darsin*]

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AUTHORSHIP STATEMENT

I/We wish to submit an original research article entitled "[***Hardness and Microstructure of FDM 3D Printed Parts Using Self-Made PLA-Brass Filaments***]" for consideration by SINERGI.

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

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Please submit 3 (three) potential reviewers (*that have not listed in SINERGI*) to speed up the review process that competent for the topic and has a good reputation in that area.

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