LAST REPORT

SEDULUR TEAM

The Team

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as Leader Team's

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Circular Innovation Overview

PROBLEM

- Plastic waste is still a major problem in the world, especially in Indonesia. Until now, many ways and efforts has been made to overcome this problem.
- In addition, the utilization of organic waste such as coconut shells in Indonesia has not been widely carried out properly. Even though this waste has good economic potential

SOLUTION

- Synthesis of Graphene Oxide-Chitosan from Coconut Shell Waste as a Biodegradable Bioplastic.

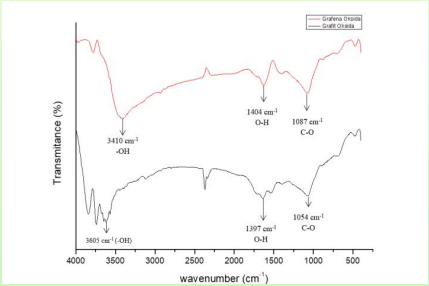
CURRENT PROGRESS

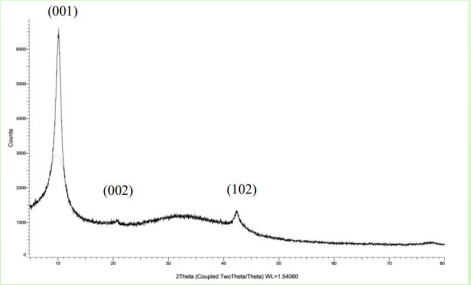
- Synthesis stage and characterization of plastic in laboratory.

Impact and Results

OUR RESEARCH

After doing the synthesis and characterization for the graphene oxide. This are the data our team have :



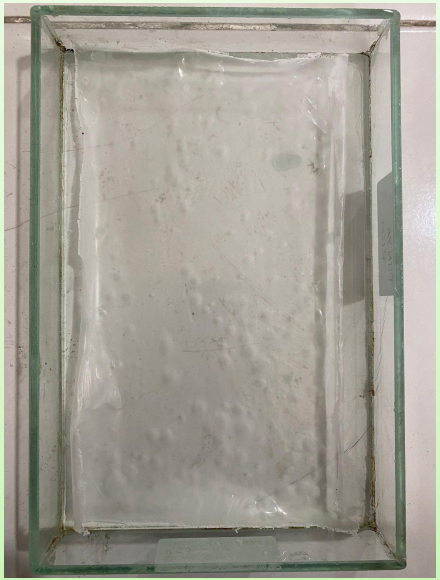


On the left side (FTIR) and right side (XRD), it indicates the successful of using the newest synthesis method, after a period of drying the plastic material, this is the result :

* The bullet points above are suggestions on what you can include on this slide, you do not need to respond to all bullet points, and you can add other information if it is relevant

Impact and Results

OUR RESEARCH



Size : 21 cm x 14 cm

This plastic can be used to cover small sized food

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Impact and Results

OUR RESEARCH

Graphene Oxide Mass (g)	Mass Reduce/8 Days (%)
0,25	26%
0,125	37%
0,375	60%

Biodegradability test shows a promising results, according to (Wypich, 2003) and also (Avell, 2009), the hydrophilic properties of GO that improves the hydrophilic properties making the bioplastic more easily degraded, water can break down the structure of the material and help the activation of biology (microbial) during the biodegradation process.

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Project Goals

SHORT TERM GOALS

Get good plastic formula from research and produce in small scale

LONG TERM GOALS

- Producing on a large scale and can further develop the business
- Applying the concept of Circular Economy to encourage
- Environmentally friendly economic growth and reduce the environmental burden from pollution.
- Supporting the achievement of the Sustainable Development Goals

Lessons Learnt

LEARNING AS A TEAM

Patience and accuracy were greatly tested in the synthesis of graphene oxide-chitosan from coconut shell waste as a biodegradable plastic project. One of the difficult challenge at first was the synthesis of GO which takes a very long time, but we manage to bypass that, the next thing was drying the material to make plastic, we had many trials and errors because they break quite easily thanks to the water content it has. Other things to note is also the amount of GO we get is not much so we work with what we got. Other things to note is that the price to buy some of the laboratory material which was quite expansives as well as the fee to use the laboratory.

- Two of us comes from the health department and economic department, them trying laboratory work was new challenge to them, as for three that comes from science department, understanding circular economy opens up a new perspective for the community.
- Reading a lot of scientific paper and discussing with our professor help us a lot doing this research.

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Stories

ABOUT OUR EXPERIENCE

Our team experienced an incredible journey through the Circular Campus Program, where we not only gained in-depth knowledge of the circular economy, but also valuable opportunities to collaborate with experts and other participants. We develop innovative solutions in the form of environmentally friendly food plastics, which are based on holistic thinking about environmental impact and sustainability. With the support of micro grants from this program, our project can go further. This grant gives us access to the latest technology and high-quality materials, strengthening our belief that our innovation has the potential to change the consumption paradigm. Through our efforts to educate the public, we are seeing increased awareness and changes in consumer behavior towards more sustainable products. We are grateful for the support, guidance, and opportunities provided by the Circular Campus Program and these micro-grants. We are committed to continuing to innovate, educate and contribute to a more sustainable society. With hard work and collaboration, we are optimistic that we can create a greener and more sustainable future for future generations.

Micro Grant

MICRO GRANT IS...

- Micro grant opens up the opportunity for our team to do this research to make a environmentally friendly plastic while also utilizing the coconut shell waste in Indonesia.
- Our research shows promising results, but even then there are still a lot of area that needed improvement for the future development such as the durability and more biodegradability test as well as the pure graphene oxide.
- Having different background of people working as a team gives new POV from each of us on how to address and tackle the circular economy.
- There are a lot of different opinion regarding this plastic, we have done some survey to the community especially to people that have small shop as business, many still thinks that using regular plastic is cheaper and efficient, this gives us more information that the use of technology is still not widely distributed.

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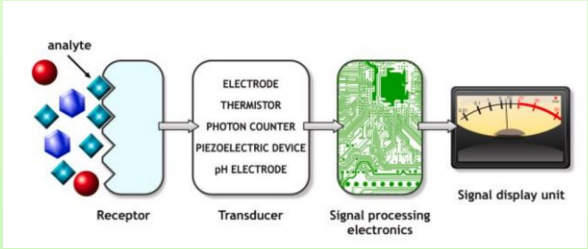
Next Steps

“BIOSENSOR”

- Just like on the final presentation, we were hoping that we could develop what is called a biosensor, however our professor advice us we need to get master degree first in order to understand and continue this research.



- We are currently finish for this project and if we have the opportunity we would like to continue this in the future.
- The five us are open for any opportunity to do a join research.

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THANK YOU

SEDULUR TEAM

CIRCULAR CITIES ASIA