

## 1. Title

“Pheun Din” : Innovative Synthesized Melanin from Soil as Textile Substitute to Create Garment for the Future

## 2. Introduction

Various crises that are happening around the world greatly impact our lives. It makes us stop and think about the effects of technology and development on the environment. Advancement in different industries leave behind long term destruction on the nature. Fashion industry is a multi-million dollars business. Every step of its production process creates waste and pollution. These chemicals contribute to greenhouse effect, air pollution and contaminates water. The industry urges us to consume more and more. Fast fashion is cheap and always changing. We run after it without thinking. This leads to the “easy wear, easy discard” consuming behavior and the discarded clothes eventually become “fashion waste.”

## 3. Principles / Concept

Soil can be found everywhere. The process involves synthesizing good bacteria to an innovative material such as a cellulose sheet. Synthesizing textile from “soil” is a clean technology leaving no pollution or contamination in the environment. Textile synthesized from soil is human and environmental friendly. It is biodegradable. The aim of the work is to support and promote the concept of “material innovation for balanced ecology system.”

## 4. Process / Methodology

4.1 Establishing the Circular fashion involves end-to-end design of supply chain, from pre-production until a product arrives at a consumer. Technology and innovation help to ensure holistic and efficiency. This is because that up until the end of the process, the fashion becomes "*fashion garbage*." In addition, people nowadays are looking for trendy and easy fashion resulting in "*fast fashion*." Outdated fashion is discarded creating huge amount of waste.

4.2 Innovative Synthesized Melanin from Soil as Textile Substitute to Create Garment for the Future” starts from synthesizing natural fiber from good bacteria from soil. The result is brown pigment similar to melanin which determines human skin colors. This is assessed by “*Fitzpatrick 1 Skin Prototype*”, an internationally accepted system which classified basic human skin colors.

4.3 In addition to the system, the research also uses “*Alber Henry Munsell's theory of colors*” which classified them by hues. Human skin colors are classified according to Fitzpatrick's theory, and hue of the substitute material are analyzed using standard values.

## **5. Materials / Techniques**

5.1 Soil

5.2 Symbiotic culture of bacteria and yeast (SCOBY)

5.3 Sweetener

5.4 Yeasts (single-celled microorganisms)

## **6. Results / Conclusion**

6.1 A textile product is created based on human needs and environment preservation. At the heart of a design is balanced and harmonious living, similar to a picture of a circle. Production process creates zero waste and the product itself is biodegradable.

6.2 When the cellulose sheet, together with pigment is tangibly revealed, it represents relationship between human and nature. An awareness which respects and gentle to the nature knowing that we are a part of and dependent on it. Such awareness enables the wearer to respect the nature and herself.

## **7. References**

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