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Chlorophyll's Dependency Towards Electrical Characteristics of Banana Midrib-Based Dye-Sensitized Solar Cell for Waste Management Solution

Alyaa Fauzi, Rahayu Rahmad Shaiful Abdul Karim, Faiz Arith *and* ***Syahiman Mohd Shah****
College of Engineering, Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia.
**Corresponding author*: asyahiman@ump.edu.my

Abstract

The application of Banana Midrib waste chlorophyll as an alternative natural dye in Dye Sensitized Solar Cell (DSSC) could be advantageous. The natural colors utilized in this study were derived from the chlorophyll of the banana midrib. TiO_2, chlorophyll and KI serve as a working electrode, photosensitizer, and electrolyte in the DSSC respectively. Chlorophyll, which can be extracted from majority of greenly plants, is one of the important substances in absorbing the light for energy harvesting. Since the concentration level of chlorophyll defers for each type, age or part of the plants, numerous studies related to these scopes have been actively performed. In this study, banana midrib that are mostly common waste will be benefited to extract different concentration levels of chlorophyll for the fabrication of DSSCs' purpose. The relationship between the chlorophyll's concentration level and the output of electrical properties will be further analyzed.

Keywords: Dye-sensitized solar cell; Chlorophyll; Banana midrib.