UNIVERSITI TEKNOLOGI MARA
Cawangan Terengganu
Kampus Bukit Besi

TITLE:

PHOTODEGRADATION EXTRACTION OF ALPINIA GALANGAL WITH MAGNESIUM OXIDE FOR SOLAR ENERGY APPLICATION

SUPERVISOR:

PUAN NORAINI BINTI RAZALI

SCHOOL OF CHEMICAL ENGINEERING

COLLEGE OF ENGINEERING

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ABSTRACT

After decades of study and development, a few solar energy applications, such as photovoltaic and photothermal, emerged that helped people, particularly in the area of power. This was due to the research on solar energy utilization. The major goal of this study was to evaluate the possibility of selective metal oxide and organic dye for solar energy applications in the preliminary stages. The process occur was photocatalytic degradation, which was investigated by using the organic dye that was extracted from an Alpinia galangal plant using the part of leaves, under the UV light within 2,4,6 days in the presence of metal oxides magnesium oxide (MgO), which act as photocatalysts to speed up the rate of degradation and to examine the potential of the organic dye before and after being exposed to sunlight. As the result the colour of the organic dye will change from green to orange colour and its conductivity will increase as the temperature of the organic dye under sunlight increase to prove that the degradation its occur and potentially. In conclusion, this process was one of the preliminary stages for knowing the ability of the organic dye on using for the next stage for generating electricity by absorbing light from the sunlight that are suitable for generate low current electricity.

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INTRODUCTION

Energy that derived from the natural process that are regenerated at an equal rate or higher rate compared to the rate that they are consumed are well known as renewable energy. Renewable energies are derived from the various form either directly or indirectly from the sun or from the heat generated deep within the earth. there are a lot of sources that can constantly being replenished as an example source that coming from the solar, wind, geothermal, hydropower, biogas, biomass, and any other natural sources. out of all the energy resources on this planet, the most abundant energy coming from the solar energy that had the most potential energy for the large-scale development and utilization in this century. in the 1960s, the research on the solar energy utilization is begin and after decades of researching and developing the technologies, there are few technologies application appeared such as photovoltaic and photothermal that helped human especially in terms of electricity. Due to the energy crisis that always happen to the worldwide nation, we need to find solution on helping the worldwide nation on generating electricity by focusing on the green technology.

Dyes are widely used for various of products especially its famous on textiles, paints, printing inks and many others industries. The organic dye are used as photosensitizer for generating electricity due to the high solubility in aqueous solution and possible to change their properties by others materials, this organic dye can be used as an electrode (Yahia et al., 2013) The organic dye are usually used in the Dye Sensitized Solar Cell(DSSC) as one of the photovoltaic performance because of the environmental friendly, non-toxicity and have excellent solubility in water and in addition, the dyes was very good absorption in visible spectrum. On the other hand, the natural dyes can be found in many parts of the plants such as from the flower, leaves, fruits which resemble organic dye that can be extracted by a simple procedure of extraction. Most of the plants, show various of colours and pigments especially on the leaves part because usually its contain high chlorophyll and suitable to be electrode for the DSSC.