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**EXPLORING THE POTENTIAL OF LOCAL NATURAL ORGANIC
DYE SENSITIZERS FOR PHOTOELECTROCHEMICAL CELLS IN
DYE SENSITIZED SOLAR CELLS (DSSC)**

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1.0 Synopsis

Sinopsis

Pewarna semula jadi ini telah diekstrak daripada 31 spesies tumbuhan tempatan Borneo yang telah dikumpulkan dari Sabah dan Sarawak, Malaysia . Kemungkinan penukaran foton to elektron telah dinilai berdasarkan keupayaan penyerapan pewarna semula jadi dalam rantau ultraviolet dan cahaya boleh nampak iaitu daripada panjang gelombang antara 200-900nm . Di samping itu, analisis FT - IR telah dijalankan untuk menentukan kewujudkan kumpulan berfungsi dalam ekstrak semula jadi. Tambahan pula , pH ekstrak pewarna semula jadi telah diukur dengan pH meter. Akhir sekali, Dye sensitif Sel Solar (DSSCs) telah dihasilkan dan kecekapan mereka diukur . Keputusan telah menunjukkan ekstrak semula jadi telah berjaya menukarkan cahaya matahari kepada tenaga elektrik. Kecekapan ekstrak dari tumbuh-tumbuhan tempatan dalam Dye sensitif Sel Solar (DSSCs) telah mencapai kecekapan daripada 0.004 % kepada 0.19 % . Keputusan ini menunjukkan bahawa pewarna semula jadi tempatan boleh digunakan sebagai pemeka dalam DSSCs. Bagaimanapun, penyelidikan lanjut perlu dilakukan untuk meningkatkan kecekapan .

Synopsis

Natural dyes were extracted from the 31 local borneon plant species that were collected from Sabah and Sarawak, Malaysia. The possibility of photon-electron conversion was then assessed based on their absorption ability in the ultraviolet and visible region of wavelength between 200-900nm. In addition, FT-IR analysis was carried out to determine if functional groups exists in their extracts. Furthermore, the pH of the natural dye extracts was measured by using pH meter. Finally, the Dye Sensitized Solar Cells (DSSCs) were assembled and their efficiency measured. It shows the successful conversion from visible sunlight to electricity by using the extracts from local plants as raw natural dye sensitizers in Dye Sensitized Solar Cells (DSSCs) with efficiency range from 0.004% to 0.19%. This result shows that local natural dyes can be used as sensitizer in DSSCs. However, further investigations are required to improve the efficiency.