

OPTICAL PROPERTIES OF DYE EXTRACTED FROM HIBISCUS SADBARIFFA FLOWER

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ABSTRACT

Dyes have various technological applications. In this work, the optical properties of dye extracted from the flower of hibiscus sadbariffa were deposited on glass substrate using screen printing technique. The optical properties of the dye were studied using UV –VIS spectrophotometer. The results obtained revealed that the dye has low reflectance and transmittance in the wavelength range of 200 - 900 nm with high absorbance in the wavelength range of 200 - 800 nm. The dye has highest extinction constant in the ultraviolet and visible light regions of the electromagnetic spectrum. Its absorption coefficient is highest in the ultra violet region and reduces towards the infra-red region. The reflection coefficient of the dye is high in the ultra violet region and decreases in the infra-red region. The dye has high refractive index that fluctuates with peaks at a wavelength greater than 950nm. The extinction constant of the dye increases with wavelength from 200 - 600 nm its optical conductivity decreases exponentially with wavelength. The dye has an energy band gap greater than 1.5 eV. The results reveal that the dye of hibiscus sadbriffa flower can be used to fabricate solar cells, electronic and solar devices, for selective surfaces and for thermal control.

KEYWORDS: *Dye, Screen Printing, Optical Properties, Selective Surfaces and Solar Devices*