

ELECTRICAL CHARACTERIZATION OF CHLOROPHYLL
WITH POLYMEROLE THIN FILM AS SOLAR
CELL

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ELECTRICAL CONDUCTIVITY OF CHLOROPHYLL WITH
POLYPYRROLE THIN FILM AS SOLAR CELL

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telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik & Instrumentasi), Fakulti Sains dan Teknologi, UMT.

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DECLARATION

I hereby declare that this thesis entitle Electrical Conductivity of Chlorophyll with Polypyrrole Thin Film as Solar Cell is the result of my own research except as cited in the references.

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ELECTRICAL CONDUCTIVITY OF CHLOROPHYLL WITH POLYPYRROLE THIN FILM AS SOLAR CELL

ABSTRACT

This study was focused on the electrical conductivity for the combination of polypyrrole and chlorophyll thin films on indium tin oxide (ITO) substrate in the bulk heterojunction solar cell. The combination of polypyrrole and chlorophyll thin films with ratio 1:1, 1:5, 1:10, 5:1 and 10:1 was deposited on the ITO substrate by using the Langmuir Blodgett with different layers. The current and voltage of the thin films were measured by using four point probes under dark and different light intensity which 10, 30, 50, 80 and 100 Wm^{-2} . The result of this work showed the combination of polypyrrole and chlorophyll thin film in different ratio successful layered on the ITO substrate with different layers. The electrical conductivity under dark was measured by using four point probes. Four point probes with pyrometer and data logger was used to measure the electrical conductivity under different intensity of light. The electrical conductivity under dark was increased with the increasing number of layers combination of polypyrrole and chlorophyll. The electrical conductivity under different light intensity was increased with increasing the light intensity. The electrical conductivity under different intensity of light was increase with increasing the combination polypyrrole and chlorophyll with different ratios. As a conclusion, the 1:10 layers of polypyrrole and chlorophyll thin film thin films are suitable combination to increase the electrical conductivity which is 0.2 Sm^{-1} at ratio 15 layers.

KEKONDUKSIAN ELEKTRIK BAGI FILEM NIPIS KLOOROFIL DENGAN POLIPYRROLE SEBAGAI SEL SOLAR

ABSTRAK

Kajian ini adalah memfokuskan kepada kekonduksian elektrik bagi campuran filem nipis polipyrrole dan klorofil di atas indium tin oxide (ITO) substrak di dalam sel solar simpang bulk hetero. Campuran filem nipis polipyrrole dan klorofil dengan nisbah 1:1, 1:5, 1:10, 5:1 and 10:1 telah dimendapkan k atas substrak ITO dengan menggunakan Langmuir Blodgett bagi lapisan yang berbeza-beza. Arus dan voltan filem nipis diukur dengan menggunakan penduga empat titik di dalam gelap dan keamatan cahaya yang berbeza-beza iaitu 10, 30, 50, 80 and 100 Wm^{-2} . Keputusan bagi kajian ini menunjukkan campuran filem nipis polipyrrole dan klorofil di dalam nisbah yang berbeza telah berjaya dilapiskan di atas permukaan substrak ITO. Kekonduksian elektrik di dalam gelap telah diukur di dalam gelap dengan menggunakan penduga empat titik. Penduga empat titik dengan pyronometer dan data logger digunakan untuk mengukur kekonduksian elektrik di bawah keamatan cahaya yang berbeza-beza. Kekonduksian elektrik di dalam gelap adalah meningkat dengan peningkatan lapisan filem nipis campuran polipyrrole dan klorofil. Kekonduksian elektrik di bawah keamatan cahaya yang berbeza-beza meningkat dengan peningkatan keamatan cahaya. Kekonduksian elektrik di bawah keamatan cahaya yang berbeza juga meningkat dengan peningkatan nisbah campuran polipyrrole dan klorofil. Kesimpulannya filem nipis campuran polipyrrole dan klorofil pada 1:10 lapisan adalah campuran yang sesuai untuk meningkatkan kekonduksian elektik iaitu 0.2 Sm^{-1} pada 15 layers .