

Charge Carrier and Optical Properties of porphyrin supported onto multi-walled carbon nanotubes

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Abstract: In this work, we outline the processes of energy transfer and photoinduced electrons that can take place within a composite made of a porphyrin molecule and carbon nanotubes MWNTCs. In this study we discussed the structural, vibrational, and optical properties of porphyrins in the presence of MWNTC, using various spectroscopic analysis techniques such as electronic microscopy, Raman scattering, UV-Vis absorption and Photoluminescence, as well as a numerical simulation by means of SCAPS software that examined photovoltaic properties of the heterojunction ITO/MWNTC and ITO/MWNTC - porphyrin molecule. The obtained results suggest that the use of carbon nanotubes to make MWNTC- porphyrin molecule composite films could provide a good separation of photogenerated charges and enhance their transport leading to efficient composite material that could be used for applications in optoelectronic devices especially in organic photovoltaic devices.

Keywords: Properties of porphyrins and MWNTC, Energy, photovoltaic devices

References

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