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## Study of the Performance of Blended Mixtures of Henna and Black Plum Plants as a Co-Sensitizer in Dye-Sensitized Solar Cells (DSSCs)

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Solar energy is our most abundant source of renewable energy especially the use of photovoltaic material. Dye-Sensitized cells (DSSCs); a suitable photovoltaic material that has been under extensive research due to its low cost, simple preparation, low toxicity and ease of production. Hence, this research investigated the performance of two natural pigments extracted from two locally available plants [Lawsonia inermis (henna) and Vitex doniana (blackplum)] as a photovoltaic material using the modified Soxhlet technique. Three (3) blends of henna and black plum (100:0, 50:50 and 0:100) were prepared, the photo-electrochemical parameters; power conversion efficiency ( $\eta$ ), Fill Factor (FF), Short-Circuit Current ( $I_{sc}$ ), Open-Circuit Voltage ( $V_{oc}$ ) were evaluated. The produced absorption values were 4.564, 4.004, and 4.597 respectively. The values of photo-electrochemical parameters of the three (3) fabricated cells were: FF = 47,  $I_{sc}$  = 0.02 mA,  $V_{oc}$  = 0.0135V,  $\eta$  = 0.13%; FF = 51,  $I_{sc}$  = 0.07 mA,  $V_{oc}$  = 0.054V,  $\eta$  = 2.16%; FF = 59,  $I_{sc}$  = 0.05 mA,  $V_{oc}$  = 0.0225V,  $\eta$  = 0.67% respectively. From the above, it is concluded that results of the blended combination of henna and black plum leaves extracts in this ratios enhanced the conversion efficiency of the DSSCs.

**Apply to be considered for a student ; award (Yes / No)?**

Yes

**Level for award;(Hons, MSc, PhD, N/A)?**

N/A

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