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Extraction and Absorption Study of Natural Plant Dyes for DSSC

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Abstract: The absorption spectrum of sensitizer plays an important role in the conversion efficiency of DSSC. It is noted that a minimum gap of 0.2eV from the HOMO level of TiO₂ is necessary to provide the electron injection from the dye to TiO₂ layer conduction band. One of the basic requirements is the dye absorption on the nonporous TiO₂ layer which is indicated by UV absorption spectrum. In the present work dyes extracted from beetroot, pomegranate using water and yellow bell flower (Thanga arali) using hot water and the wavelength of light absorption is found out with UV-Vis spectrophotometer. The absorption peak was found to be 516 to 528 nm, for beetroot dye with pH ranges from 7.43 to 8.28 and 322nm for pomegranate with pH 6.99 and for yellow bell flower the peak position was found to be at 308 and 205nm. From the absorption spectrum the band gap of the dye and the extinction coefficient is also calculated.

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