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Photostability Assay on Light-Harvesting Complex as a Material of Biophotovoltaic

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Abstract

Purple photosynthetic light-harvesting (LH2) is attractive complex module for hybrid nanostructures. Bacteriochlorophyll *a* in LH2 absorb at 320-400 nm, 585 nm and at near-infrared region (B800, B850 bands), while carotenoids absorb at 400-550 nm. Prior for application, LH2 has to be extracted from its native membrane and placed in suitable matrix. This study reports photostability assay of LH2 from *Rhodopseudomonas palustris* under continuous illumination in its native membrane and in solubilized condition in different detergent buffers. Continual degradation has been observed by the decrease of intensity at λ_{max}, yet can be slowed-down and restrained by addition of glycerol or polyvinyl-alcohol.

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Keywords: light-harvesting complex; photostability; detergent buffer; glycerol; PVA

Nomenclature

LH2	light-harvesting 2
nm	nanometer
B800	absorption at 800 nm
B850	absorption at 850 nm
λ_{max}	wavelength at which maximum absorption is observed
PVA	polyvinyl alcohol
TW	terraWatt
DSSC	dye-sensitized solar cell

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