Lessons from Nature for Designing Artificial Light-harvestor

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Abstract

The structure of photosynthetic light-harvestor is examined from classical electrodynamics point of view. We can explain from our model the reason of the modular design of nature, the crosssection of the light harvester must be elliptical instead of circular, the shape must be cylinder instead of a ball, the function of the notch at the ligh-harvestor, the non-heme iron at the reaction center, the chlorophylls must be dielectric instead of conductor, a mechanism to prevent damages from excess sunlight, which consists of the physical requirement we learnt from nature for designing artificial light-harvestor.

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