

Spectroscopic characterization of biomimetic light harvesting complexes

P05-01

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Photosynthesis is the main process by which living beings can take energy from sunlight transforming it into chemical energy. Light harvesting complexes are formed by proteins with chlorophyll molecules inside [1], which capture the light and transfer the excitation to a reaction center with near-perfect quantum efficiency. This fact makes them candidates for development of new renewable energy technologies. Two-dimensional electron spectroscopy techniques have demonstrated in recent years that this high efficiency is due to a quantum coherence energy transfer [2]. Here, we propose the development of simple biomimetic light harvesting complexes assembling chlorophyll molecules as models for spectroscopic studies of this quantum phenomenon, that help us to understand the complexity of the photosynthetic process and its use in the development of new technologies.

[1] Liu, Z., Yan, H., Wang, K., *et al.* (2004). *Nature*, 428(6980), 287-292.

[2] Panitchayangkoon, G., Hayes, D., Fransted, K. A., *et al.* (2010). *Proceedings of the National Academy of Sciences*, 107(29), 12766-12770.