Supplementary Information

Panoramic insights into semi-artificial photosynthesis: origin, development, and future perspective

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Table S1 Summarization of previously reported reviews or prospects about SAPSs

Year	Authors	Focus	Journal	References
2013	Fuyu Wen and Can Li	Semiconductors as light harvesters and biomimetic complexes as molecular cocatalysts for photosynthesis	Acc. Chem. Res.	1
2015	Sai Kishore Ravi and Swee Ching Tan	Immobilizing the photosynthetic biomolecules in photovoltaic devices for photocurrent generation	Energy Environ. Sci.	2
2018	Sahng Ha Lee, Da Som Choi, Su Keun Kuk, and Chan Beum Park	Photoinduced electrons transfer on the interface of nanomaterials and redox enzymes	Angew. Chem. Int. Ed.	3
2018	Elshan Musazade, Roman Voloshin, and Suleyman I. Allakhverdiev, etc.	Light-to-current conversion by biohybrid solar cells	J. Photochem. Photobiol. C: Photochem. Rev.	4
2018	Nikolay Kornienko, Kelsey K. Sakimoto, Peidong Yang and Erwin Reisner	Summarizing different semi-artificial photosynthetic systems for S2C	Nat. Nanotechnol.	**5**
2018	Kelsey K. Sakimoto, Nikolay Kornienko and Peidong Yang	Physical biology of the materials−microorganism interface	J. Am. Chem. Soc.	6
2020	Dandan Zheng, Ying Zhang, Xiaohong Liu, Jiangyun Wang	Combination of photosensitizer and enzymes for S2C.	Photosynth. Res.	**7**
2020	Xiaoqiang Huang,	Merging biocatalysis with chemocatalysis for photo-	Curr Opin Chem Biol	8

	Mingfeng Cao and Huimin Zhao	/electricity-driven biotransformations		
2020	Xin Fang, Shafeer Kalathil and Erwin Reisner	semi-artificial photosynthesis of enzyme-material and cell-material for S2C	Chem. Soc. Rev.	9
2020	Prakash C. Sahoo, Deepak Pant Manoj and S.S.V. Ramakumar	Material-microbe biohybrid for solar-driven CO2 bio-electrosynthesis	Trends Biotechnol.	10
2020	Stefano Cestellos-Blanco, Hao Zhang, Ji Min Kim, Yue-xiao Shen and Peidong Yang	Material-microbe biohybrid for solar-driven chemical conversion	**Nat. Catal.**	11
2020	Zhu Chen1, Junping Zhou1, Yifen Wang1,2 and Yi Wang1	Tuning microbial metabolisms by nano-based artificial mediators to enhance production of biochemicals instead of synthetic biological method.	Curr. Opin. Biotechnol.	12
2021	Peidong Yang	Introduction evolution of photosynthetic materials	Nano Lett.	13
2021	Bin Xu, Zhe Li, Yujia Jiang, Minjiao Chen, Boryann Chen, Fengxue Xin, Weiliang Dong, Min Jiang	Bi-directional electron transfer between abiotic/biotic interfaces in electron-assisted biosynthesis system	Biotechnol. Adv.	14
2021	Kiran Kuruvinashetti, Nikolay Kornienko	Summarized the techniques for detecting photo/electro-synthetic materials-microorganism interface	iScience	15

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