Abstract Submitted
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Assembly artificial proteins and conjugated porphyrins for biomolecular materials[1] TING XU, University of Pennsylvania, JOE STRZALKA, SHIXIN YE, SOPHIA WU, JIAYU WANG, University of Massachusetts, Amherst, THOMAS P. RUSSELL, MICHAEL THERIEN, University of Pennsylvania, J. KENT BLASIE, University of Pennsylvania — It is non-trivia to incorporate both the electron donor and acceptor in a controlled manner into amphiphilic 4-helix bundle peptides. Extended pi-electronsystems have been designed and tailored, with appropriate donors, acceptors and constituents, exhibit selected light-induced electron transport and/or proton translocation over large distances. We studied the binding between a series of conjugated porphyrins and the designed amphiphilic 4-helix bundles peptides at selected locations. Incorporation of the conjugated porphyrins into the 4-helix bundle did not interfere the protein secondary structure or the 4-helix bundle formation. The amphiphilic protein/cofactor complexes have good thermal stability.The artificial protein Langmuir monolayers, both the apo- and holo-form, can be oriented vectorially at the air/water interface upon compression. GID show a glass-like inter-bundle positional ordering in the monolayer plane. We will discuss the efforts on re-designing the artificial proteins to incorporate them into these nanoporous templates made from diblock copolymers .

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