

Abstract Submitted
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Incorporation of Designed Extended Chromophores into Amphiphilic 4-helix Bundle Peptides for Biomolecular Materials TING XU, University of Pennsylvania, JIAYU WANG, JOE STRZALKA, University of Pennsylvania, THOMAS RUSSELL, University of Massachusetts, Amherst, MICHAEL THERIEN, J. KENT BLASIE, University of Pennsylvania, UNIVERSITY OF PENNSYLVANIA COLLABORATION, UNIVERSITY OF MASSACHUSETTS, AMHERST COLLABORATION — De novo designed peptides, together with synthetic non-biological cofactors, could lead to peptide-based systems with novel properties not exhibited by biological systems. Extended chromophores can be designed and tailored, with appropriate donors, acceptors and constituents, to exhibit selected nonlinear optical responses and light-induced electron transport and/or proton translocation over large distances. Designed extended chromophores can be incorporated into the amphiphilic 4-helix bundle peptides via bis-histidyl ligation. Amphiphilic 4-helix bundle peptide monolayer, both the apo- and holo-form, can be oriented vectorially at the air/water interface. Nanoporous thin films made from diblock copolymers are ideal templates to assemble the artificial proteins with laterally hexagonal order. We will also discuss the efforts on re-designing the artificial proteins and incorporate them into block copolymer based nanoporous templates.

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