

Abstract Submitted
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Orientalional Order and Hyperpolarizability of Nonlinear Chromophore Molecules Supported in Amphiphilic 4-Helix Bundle Peptides GRAZIA GONELLA, ANDREY TRONIN, MICHAEL J. THERIEN, HAILUNG DAI, J. KENT BLASIE, Department of Chemistry, University of Pennsylvania — The designed nonlinear optical chromophore, (Polypyridyl)Ruthenium-(Porphinato)Zinc(II) (Ru-PZn), incorporated in a monolayer of amphiphilic 4-helix bundle peptides which is used to provide control of the chromophore orientational order on a silica substrate, has been examined by optical Second Harmonic Generation (SHG). The single monolayer of the H6H20 AP0 [1] peptide covalently attached to an alkylated silica surface with thiol end groups can be used to host and support Ru-PZn cofactor. It has been found that the cofactor's hyperpolarizability tensor is dominated by its component along the conjugation axis as suggested by Karki et al. for similar systems [2]. The tilt angle of the principal symmetry axis of the chromophore molecule from the surface normal has been determined as well as the absolute magnitude of the molecular nonlinear polarizability through comparison with a quartz crystal.

1. Strzalka, J. et al., Nano Lett. (2006) in press
2. Karki, L. et al., J. Am. Chem. Soc. 120 (1998), 2606

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