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SUPRAMOLECULAR CHIROGENESIS AND CHIRALITY SENSING

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Supramolecular chirogenesis is a smart combination of supramolecular chemistry and chiral science taking place in non-covalently linked multicomponent assemblies. It plays a profound role in many natural and various artificial systems making it of paramount importance not only for fundamental science but also for different practical applications including catalysis, pharmaceuticals, functional materials, nonlinear optics, etc. Therefore, the process of chirality sensing is of prime interest of modern research endeavors. Porphyrinoids are of particular interest to investigate this phenomenon owing to their unique spectral, physico-chemical, and synthetic properties. Recently, it was shown that bis-porphyrins exhibited considerable optical

activity upon interaction with chiral guests. Thus, monodentate ligands resulted in formation of the stable supramolecular chiral complexes and induction of the noticeable exciton couplet circular dichroism signals in the absorption region of porphyrin. The sign of circular dichroism signal correlates well with the absolute configuration of chiral compounds making it possible to apply the corresponding bis-porphyrins as effective and universal chirality sensors for different types of organic molecules. Further development towards functional chiral materials and chiral recognition systems will be discussed.

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