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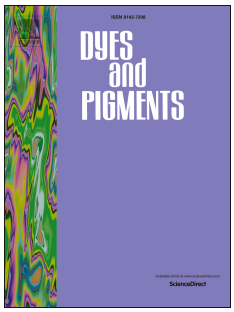

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Porphyrin Dimers with a Bridging Chiral Amide-bonded Benzo-moiety: Influence of Positional Isomerism on the Molecular Chirality

Xu Liang,*[,a,c] Mingfeng Qin,[a] Lin Zhou,[a] Tingting Liu,[a] Minzhi Li,[a] John Mack,*[,b] Nobuhle Ndebele,[b] Tebello Nyokong[b] and Weihua Zhu*[,a]

a. School of Chemistry and Chemical Engineering, Jiangsu University, Zhenjiang 212013, P. R. China

b. Centre for Nanotechnology Innovation, Department of Chemistry, Rhodes University, Grahamstown 6140, South Africa

c. State Key Laboratory of Coordination Chemistry, Nanjing University, Nanjing 210000, P. R. China

Corresponding to: E-mail: liangxu@ujs.edu.cn (Prof. Dr. X. Liang), Tel: +86-511-8879-1928; sayman@ujs.edu.cn (Prof. Dr. W. H. Zhu), Tel: +86-511-8879-1928; E-mail: j.mack@ru.ac.za (Dr. J. Mack)

Abstract

The facile synthesis and characterization of four porphyrin dimers which introduced stereomeric centers with chiral amide-bonded *para*- and *meta*-disubstituted benzo-moiety is reported. Trends in the electronic structures and optical and redox properties are analyzed through a comparison with theoretical calculations to explore the effect of positional isomerism of the bridging benzene rings.

Key Words: Porphyrin Dimer; Molecular Chirality; Electronic Structure; TD-DFT Calculation

Chirality has been the subject of ongoing research interest in the pharmaceutical, food, and synthetic chemicals industries[1-4]. The study of chiral porphyrins forms a growing multidisciplinary field because of its importance in various natural processes, such as photosynthesis, biomolecular redox catalysts, vitamin B_{12}, oxygen transport agents, and chiral molecule recognition[5-9]. Chiral synthetic porphyrinoids provide possibilities for forming new smart material technologies due to their novel molecular structures. The first examples were reported by the Inoue research group