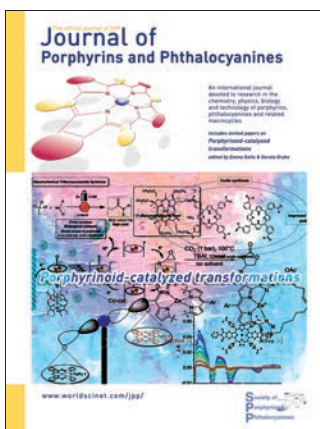


About the Cover



The cover is a montage of the first six articles' graphical abstracts submitted as invited papers on the topic of *porphyrinoid-catalyzed transformations* edited by Emma Gallo and Dorota Gryko.

Other manuscripts in this issue were submitted and edited through the regular JPP channels.

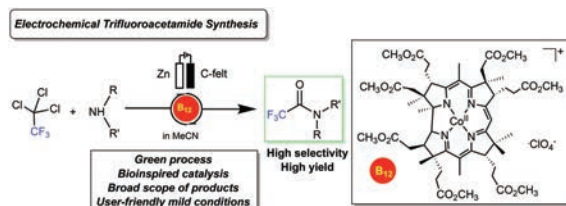
Articles - Porphyrinoid-Catalyzed Transformations

pp. 419–426

Electrochemical approach to trifluoroacetamide synthesis from 1,1,1-trichloro-2,2,2-trifluoroethane (CFC-113a) catalyzed by B₁₂ complex

Mohammad Moniruzzaman, Yoshio Yano, Toshikazu Ono, Yoshio Hisaeda* and Hisashi Shimakoshi*

A one-pot synthesis procedure for trifluoroacetamide has been developed using electrochemical method with the B₁₂ complex as a catalyst under mild conditions, in air, at room temperature. Thirty examples of trifluoroacetamide were synthesized from 1,1,1-trichlorotrifluoroethane (CFC-113a) in moderate to good yields. This user-friendly strategy is compatible with a broad range of trifluoroacetamides which implies the generality of the method.

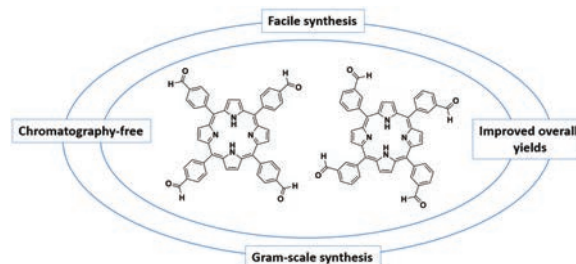


pp. 427–433

A chromatography-free synthesis of *meso*-tetrakis(4-formylphenyl)porphyrin and *meso*-tetrakis(3-formylphenyl)porphyrin: Versatile synthons in supramolecular and macromolecular chemistry

Valentinos Mouarrawis, Simon Mathew, Eva J. Meeus, Bas de Bruin* and Joost Reek*

A facile synthetic strategy has been developed for the synthesis of *meso*-tetrakis(4-formylphenyl)porphyrin and *meso*-tetrakis(3-formylphenyl)porphyrin. This method gives facile access to practical amounts of these synthons in high purity and good overall yield, without employing laborious chromatographic separations.

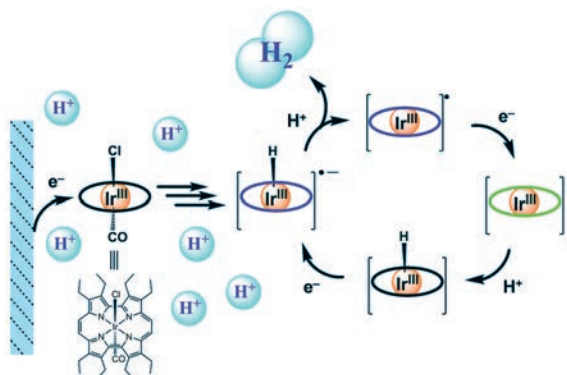


pp. 434–442

Redox behavior of iridium octaethylporphycene and electrocatalytic hydrogen evolution

Zhi Zhang, Taro Koide*, Zihan Zhou, Hisashi Shimakoshi and Yoshio Hisaeda*

The electrochemical properties and catalytic reactivity of a β -octaethylporphycene iridium complex for the hydrogen evolution reaction were determined. Based on the results of cyclic voltammetry measurements and those of spectroscopic measurements combined with electrochemistry, the reduction process of iridium porphycene was a ligand-centered reduction to form a radical anion and dianion species, while the reduction of porphyrin seemed to be metal-centered. Iridium porphycene could catalyze the hydrogen evolution reaction with high faradaic efficiency, although the amount of the hydrogen gas obtained from the catalytic hydrogen evolution reaction by using iridium porphycene as a catalyst was almost the same as that obtained by using iridium porphyrin. This ligand-centered reduction feature of the porphycene metal complexes might be applicable to multi-step, multi-electron related reactions.

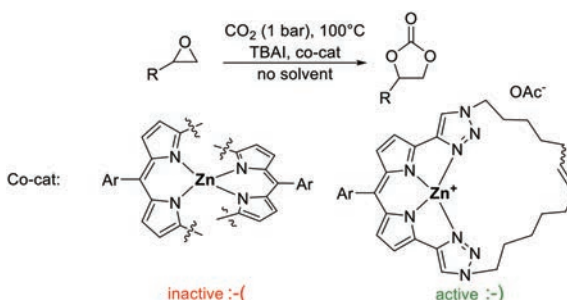


pp. 443–451

Zinc triazole-appended dipyrromethene complex as a new catalyst for the carbonation reaction

Aur lie Rago, Eric Framery* and Bruno Andrioletti*

The synthesis of an unprecedented macrocyclic Triazole-Appended Dipyrromethene (TAD) is described. In contrast with the open TAD ligand, the macrocyclic structure prevents the dimerization in the presence of $Zn(OAc)_2$. A direct consequence of the different structural arrangement around the Zn atom was observed in the carbonation of epoxides reaction, as the ML_2 complex appeared catalytically inactive while the 1:1 Zn/macrocycle complex was proven to be very active even in the presence of 1 bar of CO_2 at 100 °C.

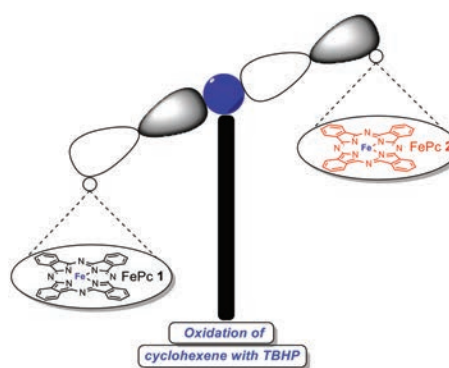


pp. 452–457

Substituent effect on iron phthalocyanines as cyclohexene oxidation catalysts

Çiğdem Yüceel, Zeynel Şahin and Ümit İşci*

The effect of electron withdrawing vs electron donating substituents on the catalytic activity of iron phthalocyanines was investigated using cyclohexene oxidation as a model reaction. We demonstrate that iron phthalocyanine with electron-withdrawing substituents showed better conversion and selectivity into 2-cyclohexen-1-one (ON) oxidation products.

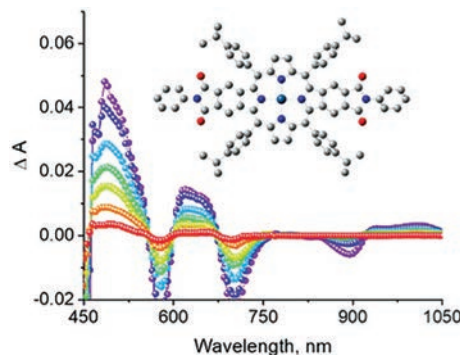


pp. 458–468

Optical and photophysical properties of platinum benzoporphyrins with C_{2v} and D_{2h} symmetry

Ting Han, Youngwoo Jang, Jacob Arvidson, Francis D'Souza* and Hong Wang*

Mono- and bis-benzo fused platinum porphyrins carrying acetate and imide peripheral substituents have been newly synthesized and characterized. Electrochemical studies coupled with transient absorption spectral studies revealed moderate amounts of push-pull effects originating from their respective triplet excited states.



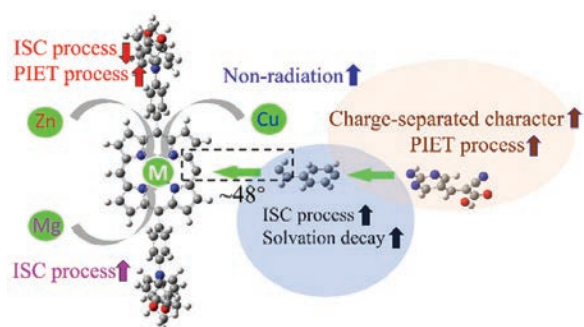
Other Articles

pp. 469–484

Spectral properties and photophysical processes of *meso* styryl substituent triphenylamine-porphyrin derivatives

Rong Wang, Kun Gong, Ruihong Liu, Dongzhi Liu, Wei Li*, Lichang Wang and Xueqin Zhou*

A large dihedral angle prohibits electronic delocalization between the porphyrin macrocycle and *meso*-substituted styryl motif, accelerating the inter-system crossing (ISC). Introduction of an additional electron-deficient pyrimidine group induces photoinduced intramolecular electron transfer (PIET), endowing the compound with charge-separation character. Metal ions produce a different impact on the photophysical processes, among which are Mg^{2+} and Zn^{2+} that are helpful/adverse to the ISC process, respectively, while Cu^{2+} boosts the non-radiation process.



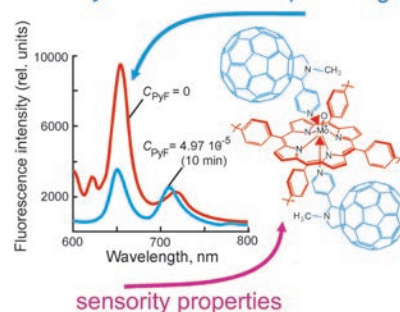
pp. 485–494

The formation kinetics, chemical structure and the application prospects of (ethoxy)(oxo)(5,10,15,20-(4-*tert*-butylphenyl)porphinato)molybdenum(V) coordination complexes with pyridine/pyridine bearing 1-N-methyl-3,4-fullero[60]pyrrolidine

Tatyana N. Lomova*, Elena V. Motorina and Nataliya G. Bichan

The self-assembly in the mixtures of (ethoxy)(oxo)5,10,15,20-(4-*tert*-butylphenyl)porphinato)molybdenum(V) ($O=Mo(OEt)TtBuPP$) with pyridine and 1-N-methyl-2-(pyridin-4-yl)-3,4-fullero[60]pyrrolidine (PyF) in toluene was quantitatively studied using the UV-vis, IR, 1H NMR, mass spectrometry methods, chemical thermodynamics/kinetics, and X-ray phase analysis.

macrocycle fluorescence quenching

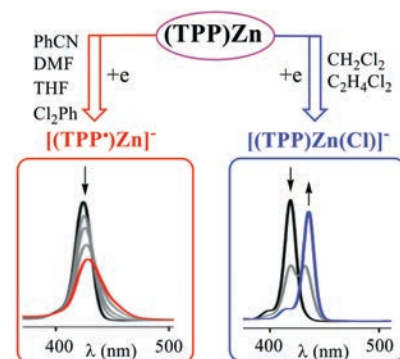


pp. 495–502

Spectroelectrochemical one-electron reduction product of (TPP)Zn in nonaqueous media? Not always the expected porphyrin π -anion radical

W. Ryan Osterloh*, Yuanyuan Fang, Zhongping Ou and Karl M. Kadish*

The electrochemical and spectroelectrochemical product(s) of singly reduced zinc tetraphenylporphyrin were examined in different nonaqueous media. In some solvents the expected π -anion radical was observed but when utilizing chlorinated alkanes as the solvent an axially coordinated species was *in-situ* generated and confirmed to be the chloride bound species, $[(TPP)Zn(Cl)]^-$.

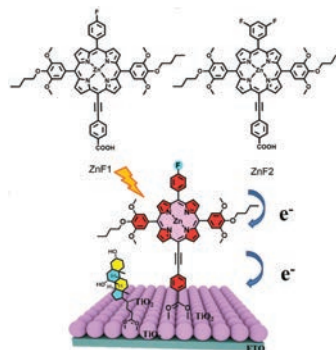


pp. 503–509

Synthesis of zinc porphyrin with fluorophenyl group and applications in dye sensitized solar cells

Cuili Li, Qifan Jia, Yan Fan, Wenyuan Zhang, Xueqin Sun, Jing Cao*, Nengzhi Jin* and Jiacheng Liu*

Two new types of zinc porphyrins with different fluorophenyl groups were designed and synthesized. These assemblies were then immobilized on a TiO_2 electrode surface for improvement of photovoltaic performance in a dye sensitized solar cell.

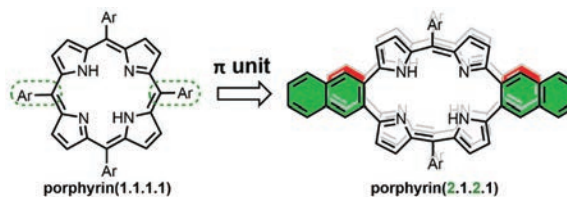


pp. 510–516

Synthesis of porphyrin(2.1.2.1) with embedded naphthalene

Xiaojuan Lv, Ningchao Liu, Bentian Xiao, Hirofumi Morimoto, Daiki Kuzuhara*, Naoki Aratani, Hiroko Yamada, Fengxian Qiu* and Songlin Xue*

The expanded nonaromatic porphyrins(2.1.2.1) were successfully synthesized by 2,3-di(1H-pyrrol-2-yl)naphthalene as building blocks and aromatic aldehydes under acid catalyzed condensation conditions in acceptable isolated yields. NMR, X-ray diffraction analysis, absorption, electrochemical, and density functional theory revealed non-aromaticity in these macrocycles due to the highly saddle-shaped molecular structures of dinaphthoporphyrin(2.1.2.1).



pp. 517–526

Synergistic photodynamic and photothermal effects of organic nanomaterials derived from a cross-linked porphyrin polymer

Ruilin Zhang, Yuyan Zhu, Xiaogang Luo, Quanquan Zhang* and Fengshou Wu*

A new porphyrin-based polymer (ZP-PT) was designed and synthesized by cross-linking of fluoroporphyrin and HS-terminated pentaerythritol tetra(3-mercaptopropionate). After transformation into nanoparticles (ZP-PT NPs), they could generate reactive oxygen species and thermal energy simultaneously under 635 nm laser irradiation with a singlet oxygen yield and the photothermal conversion efficiency as high as 0.46 and 27.07% respectively.

