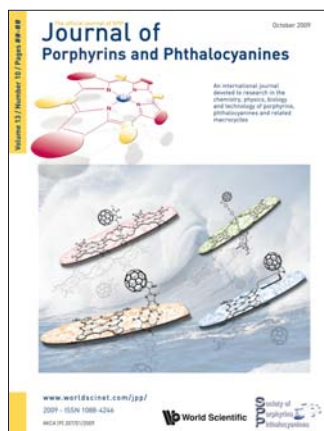


About the Cover



See Wolfgang Seitz, Axel Kahnt, Dirk M. Guldi* and Tomas Torres pp 1034–1039

The cover illustrates a series of covalently linked and non-covalently associated electron donor-acceptor conjugates/hybrids that upon photoexcitation give rise to the formation of long-lived radical ion pair states with great potentials in solar cell and photocatalysis technology.

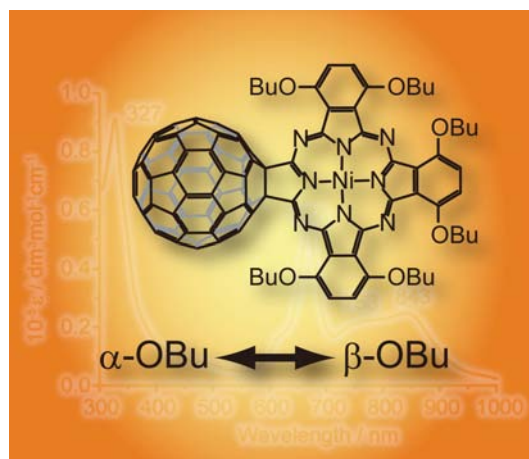
Articles

pp. 999–1005

Comparative study of spectroscopic properties of α - or β -butyloxy-substituted tribenzotetraazachlorin-fullerene conjugates

Takamitsu Fukuda, Hironori Kaneko and Nagao Kobayashi*

A novel α -butyloxy-substituted tribenzotetraazachlorin-fullerene (TBTAC- C_{60}) conjugate has been synthesized by a mixed condensation of 1,2-dicyanofullerene and 3,6-dibutyloxyphthalonitrile in the presence of nickel chloride, and its spectroscopic properties have been compared with those of the β -butyloxy substituted isomer.

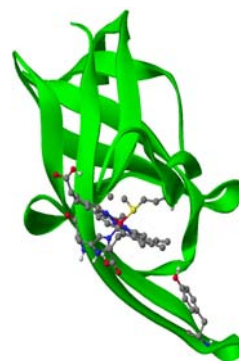


pp. 1006–1016

Characterization of IsdH (NEAT domain 3) and IsdB (NEAT domain 2) in *Staphylococcus aureus* by magnetic circular dichroism spectroscopy and electrospray ionization mass spectrometry

Michael T. Tiedemann, Naomi Muryoi, David E. Heinrichs* and Martin J. Stillman*

Absorption and magnetic circular dichroism (MCD) spectra, together with electrospray ionization mass spectral (ESI-MS) data are reported for the first two proteins, IsdH-NEAT domain 3 (IsdH-N3) and IsdB-NEAT domain 2 (IsdB-N2), which are considered to be involved in heme transport following heme scavenging from the hemoglobin of the host in *Staphylococcus aureus*.

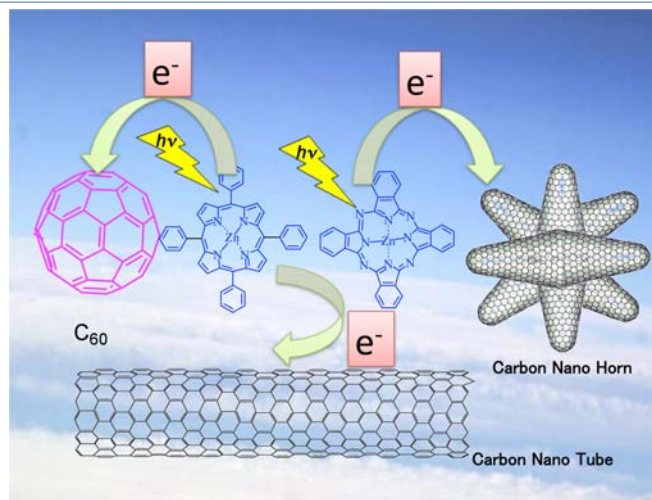


pp. 1017–1033

Photoinduced electron transfer in supramolecules composed of porphyrin/phthalocyanine and nanocarbon materials

Atula S.D. Sandanayaka and Osamu Ito*

The roles of porphyrin/phthalocyanine in the photosensitized electron transfer processes in the supramolecular hybrids composed of nanocarbon materials such as fullerenes, single-walled carbon nanotubes, and carbon nanohorns are revealed with time-resolved fluorescence and absorption spectral methods. Porphyrin/phthalocyanine act as electron donors while the nanocarbon materials act as electron acceptors in the supramolecular hybrids.

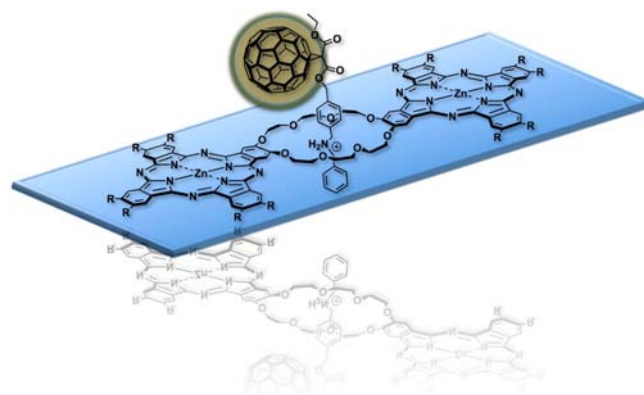


pp. 1034–1039

Controlling charge transfer in fullerene/phthalocyanine electron donor-acceptor conjugates/hybrids

Wolfgang Seitz, Axel Kahnt, Dirk M. Guldi* and Tomas Torres

In this manuscript, we are highlighting approaches to employ fullerenes and phthalocyanines, which are ideally suited for devising integrated, multi-component model systems to transmit and process solar energy. Specifically, we describe how the specific composition of phthalocyanines chromophores associated with C_{60} – yielding artificial light harvesting antenna and reaction center mimics – have been elegantly utilized to tune the electronic couplings between donor and acceptor sites.

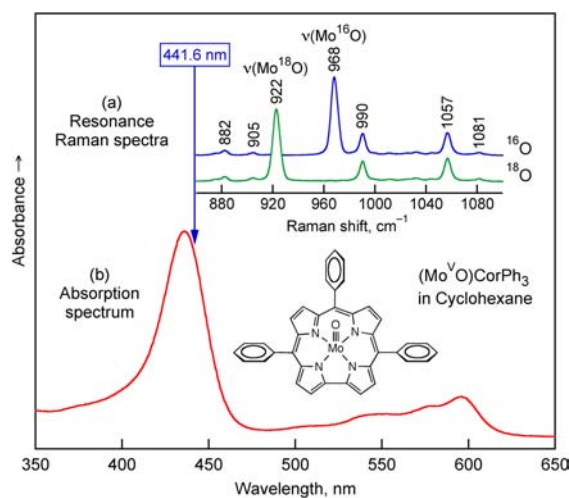


pp. 1040–1052

Solvent effects on the electronic and vibrational properties of high-valent oxomolybdenum(V) 5,10,15-triphenylcorrole probed by UV-visible and resonance Raman spectroscopy

Vicky V. Mody, Marzena B. Fitzpatrick, Samantha S. Zabaneh, Roman S. Czernuszewicz*, Michał Gałęzowski and Daniel T. Gryko

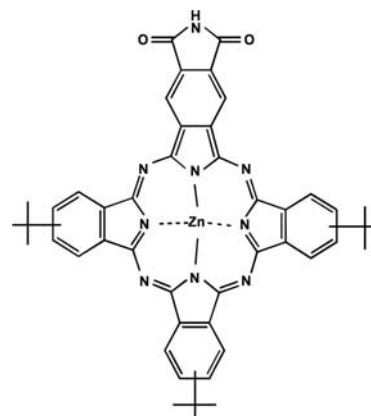
Using UV-visible absorption and resonance Raman (RR) scattering methods, electronic and vibrational data have been obtained for a high-valent molybdenum(V) oxo complex of 5,10,15-triphenylcorrole in a wide range of aprotic organic solvents. Optical absorption spectra exhibit a strong bathochromic effect of the corrole π - π^* electronic transitions upon increasing solvent polarizability. The key vibrational mode, $\nu(\text{Mo}^{\text{V}}\text{O})$ stretch, is identified by ^{18}O -isotope labeling of the terminal oxo ligand. This stretching vibration is strongly enhanced in resonance with the Soret electronic transition and its frequency is sensitive to solute-solvent interactions that weaken the $\text{Mo}^{\text{V}}\text{O}$ triple bond by inhibiting $\text{O}^{2-} \rightarrow \text{Mo}^{5+}$ electron donation.



pp. 1053–1062**Effect of peripheral fused ring substitution on the optical spectroscopy and electronic structure of metal phthalocyanine complexes**

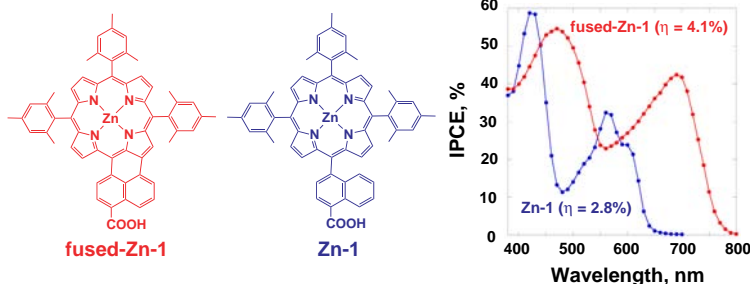
Wadzanai Chidawanyika, John Mack, Soji Shimizu, Nagao Kobayashi* and Tebello Nyokong*

The impact of peripheral substitution with a strongly withdrawing fused ring group on the optical spectroscopy of metal phthalocyanines is analyzed based on a detailed study of the UV-visible absorption and MCD spectra of [9 (or 10), 16 (or 17), 23 (or 24)-tri-*tert*-butylimidophthalocyaninato]zinc(II) (ZnttbIPc) and the results of time dependent density functional theory (TD-DFT) calculations.

**pp. 1063–1068****Porphyrin-modified electrodes for solar energy conversion**

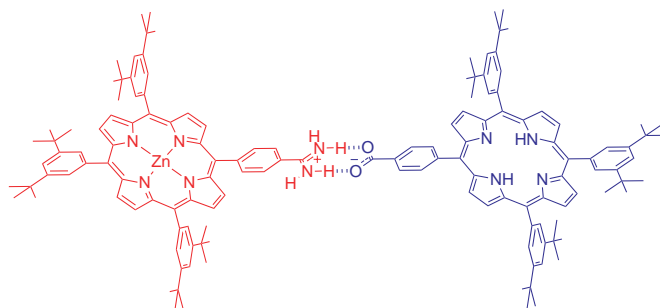
Hiroshi Imahori* and Tomokazu Umeyama

Organization of porphyrins on semiconducting electrodes plays an important role in solar energy conversion. Porphyrin/fullerene and porphyrin/carbon nanotube composites as well as asymmetrically π -extended porphyrin carboxylic acids have been assembled onto semiconducting electrodes to develop efficient photoelectrochemical devices and solar cells.

**pp. 1069–1081****Energy transfer in non-covalent porphyrin assemblies: through-space or through-bond?**

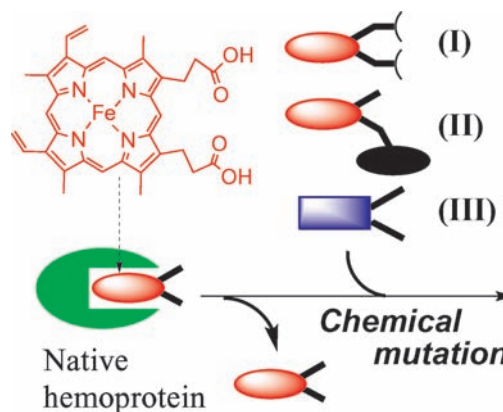
Joe Otsuki*

Non-covalent porphyrin assemblies, in which singlet-singlet energy-transfer processes were characterized, are reviewed from the viewpoint of the mechanisms. Porphyrin dyads constructed through amidinium-carboxylate interactions are unique in that the through-bond mechanism may operate across the hydrogen bonding bridge.

**pp. 1082–1089****Electron transfer and oxidase activities in reconstituted hemoproteins with chemically modified cofactors**

Takashi Matsuo and Takashi Hayashi*

The replacement of the heme cofactor with a synthetic one has been recognized as “chemical mutation” of hemoproteins. The synthetic cofactors include protoheme IXs equipped with a binding site or a function group at the terminal of heme propionates (I and II) and porphyrin derivatives with the different arrangements of pyrrole rings (III). This review will focus on the modification of hemoproteins using these synthetic cofactors.

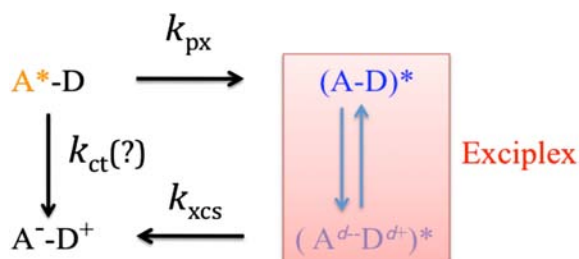


pp. 1090–1097

Transient states in photoinduced electron transfer reactions of porphyrin- and phthalocyanine-fullerene dyads

Helge Lemmetyinen*, Nikolai Tkachenko, Alexander Efimov and Marja Niemi

Photoinduced electron transfer reactions of pheophytin-, phthalocyanine-, and porphyrin-fullerene dyads, in which donor and acceptor moieties are covalently linked to each other, are studied. The molecules form an intramolecular exciplex as a transient state before the formation of the charge separation state. The mechanism is discussed in frames of the Marcus electron transfer and the radiationless quantum transition theories.



pp. 1098–1110

Refined syntheses of hydrodipyrin precursors to chlorin and bacteriochlorin building blocks

Michael Kraye, Thiagarajan Balasubramanian, Christian Ruzié, Marcin Ptaszek, David L. Cramer, Masahiko Taniguchi and Jonathan S. Lindsey*

Access to synthetic bromo-chlorins and bromo-bacteriochlorins requires scalable syntheses of the critical bromo-substituted hydrodipyrin precursors. Refined syntheses of such precursors via a common intermediate, 4-bromo-2-(2-nitroethyl)-1-*N*-tosylpyrrole, have been achieved. The syntheses are efficient (with limited use of chromatography, chlorinated solvents, and excess materials), employ high concentrations, rely on crystallization, and afford improved yields of most steps.

