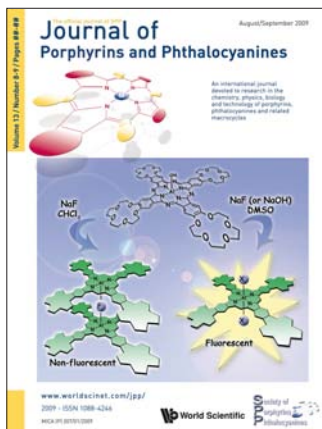


About the Cover



See Lyudmila A. Lapkina*, Nikita Yu. Konstantinov, Vladimir E. Larchenko, Yulia G. Gorbunova* and Aslan Yu. Tsivadze* pp. 859–864

Crown-substituted phthalocyanines are well-known selective cation receptors. The cover of this month's JPP issue illustrates the rare case of solvent dependent anion recognition by tetra-15-crown-5-substituted aluminum phthalocyanine $[(R_4Pc)Al(OH)]$. This compound exhibits a strong tendency towards formation of the non-emissive μ -fluoro dimer $[[[(R_4Pc)Al]_2F]^+$ when dissolved in the low-donor solvent $CHCl_3$ containing F^- but emissive species having the formula $[(R_4Pc)AlX_2]^+$ ($X = F, OH$) can be generated in the high-donor solvent DMSO during a reaction between $[(R_4Pc)Al(OH)]$ and the two above anions. Thus, tetra-15-crown-5-substituted aluminum phthalocyanine is proposed as a selective sensor for the recognition of F^- and OH^- anions in organic media.

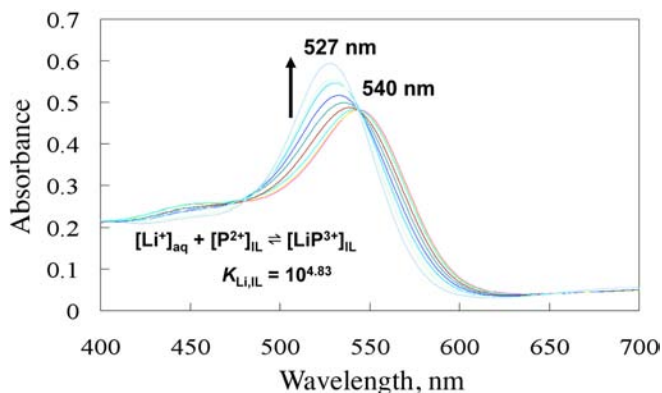
Articles

pp. 849–853

Equilibrium studies on lithium(I) transfer into ionic liquid with a water-soluble octabromoporphyrin ($H_2(OBTMPyP)^{4+}$) from aqueous phase

Takuya Shimomura, Masaaki Tabata* and Jun Nishimoto

Lithium(I) ion transferred quantitatively to ionic liquid, 1-butyl-3-methylimidazolium hexafluorophosphate ($BMIM^+PF_6^-$), with a water-soluble octabromoporphyrin, 2,3,7,8,12,13,17,18-octabromo-5,10,15,20-tetrakis(1-methylpyridinium-4-yl)porphyrin ($H_2(OBTMPyP)^{4+}$, H_2P^{4+}) with no addition of other anions. The equilibrium constants of LiP^{3+} and NaP^{3+} transfers to IL were found to be $10^{4.83}$ and $10^{1.31}$ for $K_{LiP,IL}$ and $K_{NaP,IL}$, respectively. LiP^{3+} transferred selectively in the presence of Na^+ ($K_{LiP,IL}/K_{NaP,IL} = 10^{3.52}$) to the IL phase through an ion-exchange mechanism.

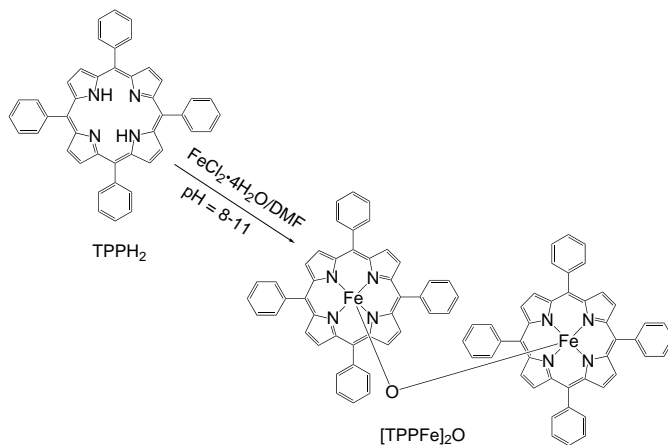


pp. 854–858

A new one-pot synthesis of μ -oxo dimeric iron(III) porphyrins from *meso*-tetraarylporphyrins

Qiang Liu, Yan-Zhi Gong, Chang-Jun Gong, Qing-Hong Li and Can-Cheng Guo*

A new synthesis of μ -oxo dimeric iron(III)porphyrins from the one-pot metallization of *meso*-tetraarylporphyrins in DMF are reported. μ -oxo dimeric iron(III)porphyrin was obtained at the yield of 93% from the reaction of *meso*-tetraarylporphyrin with ferrous salt in DMF solvent at pH 8–11. Compared with the other synthetic methods of μ -oxo dimeric iron(III)porphyrin from *meso*-tetraarylporphyrins, the one-pot metallization has the higher yields of μ -oxo dimeric iron(III)porphyrins and the simpler and more convenient procedures.

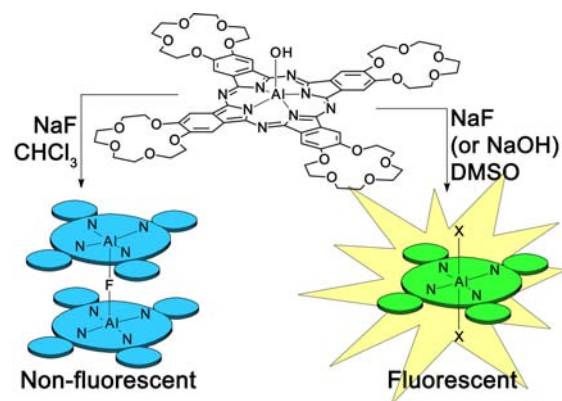


pp. 859–864

Behavior of aluminum(III)-tetra-15-crown-5-phthalocyanines in organic media by data of fluorescence and UV-visible spectroscopy

Lyudmila A. Lapkina*, Nikita Yu. Konstantinov, Vladimir E. Larchenko, Yulia G. Gorbunova and Aslan Yu. Tsivadze

Solvent dependent interaction of tetra-15-crown-5-substituted aluminum phthalocyanine with fluoro- and hydroxy-anions were investigated by the fluorescence and UV-vis spectroscopy.

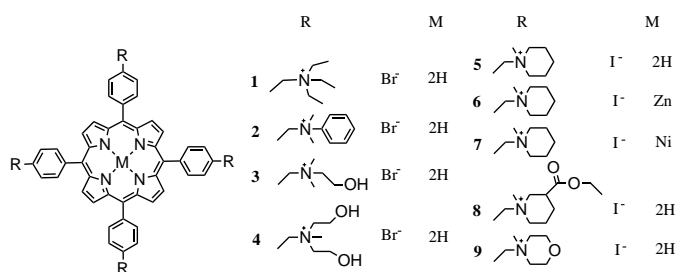


pp. 865–875

Some cationic porphyrins: synthesis, stabilization of G-quadruplexes, and down-regulation of *c-myc* in Hep G2 cells

Shao R. Wang, Dan Zhang, Feng L. Luo, Lin Liu, Xiao C. Weng, Jing Huang, Guo R. Li, Xiao L. Zhang and Xiang Zhou*

In the present work, we have designed and synthesized nine cationic porphyrins, and studied the interactions of these porphyrins with different DNA. The experimental results indicate that these porphyrins are capable of effectively inducing/stabilizing both human telomeric and NHE III₁ G-quadruplexes in the presence or absence of metal ions. Furthermore, we have discovered that porphyrins with a stronger stabilizing effect on *c-myc* G-quadruplexes lead to more pronounced down-regulation of the *c-myc* oncogene in the Hep G2 cell line.

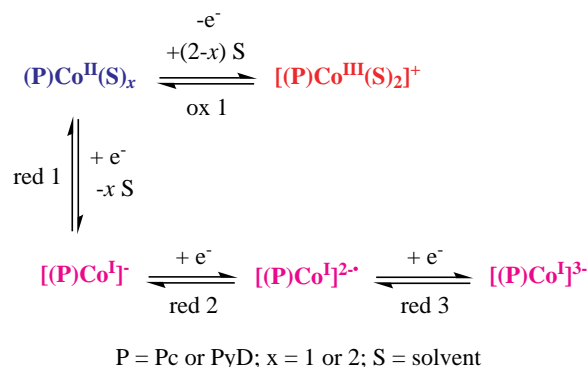


pp. 876–887

Electrochemical, spectroelectrochemical and ESR spectroscopic characterization of 2,3- and 3,4-cobalt tetrapyrroldiporphyrazine isomers in non-aqueous media

Jianguo Shao*, Juliette Commodore, Baocheng Han*, Cynthia Prunte and Christopher A. Hansen*

Two cobalt tetrapyrroldiporphyrazine complexes were investigated as to their electrochemical, UV-visible and ESR spectroscopic properties as well as their aggregation behavior in non-aqueous media. An overall electron transfer mechanism of both derivatives is proposed.

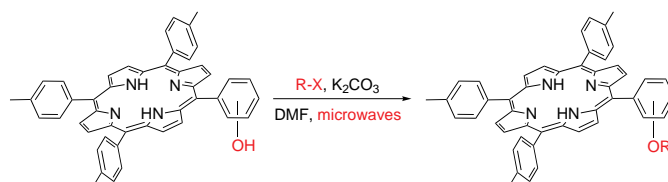


pp. 888–892

Microwave-assisted expeditious O-alkylation of meso-hydroxyphenylporphyrins

Vincent Chaleix*, Pierre Couleaud, Vincent Sol, Rachida Zerrouki, Sandra Alves and Pierre Krausz

A mild method for O-alkylation of meso-hydroxyphenylporphyrin has been developed using microwave irradiation. This method is clean and efficient for many substrates and results in significant improvement in reaction yield and in a dramatic decrease in reaction time in comparison to thermal heating.

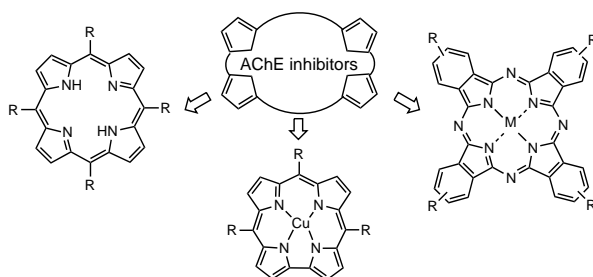


pp. 893–902

Cationic tetrapyrrolic macromolecules as new acetylcholinesterase inhibitors

Tian Tian, Liwei Weng, Shaoru Wang, Xiaocheng Weng*, Lixia Zhang and Xiang Zhou*

A series of tetrapyrrolic macrocycles such as porphyrins, phthalocyanines and corroles were found to have inhibitory abilities toward acetylcholinesterase (AChE). Their structure-activity relationship was studied. Several compounds were found to have good inhibitory abilities, which could be developed as potential candidates of AChE inhibitors.

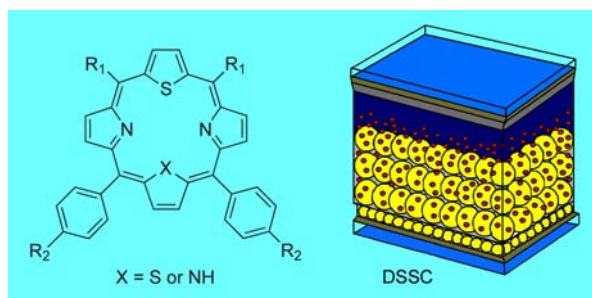


pp. 903–909

Structural effects of core-modified porphyrins in dye-sensitized solar cells

Yu Xie, Prakash Joshi, Mike Ropp, David Galipeau, Lifeng Zhang, Hao Fong, Youngjae You* and Qiquan Qiao*

A series of core-modified porphyrins with different chemical structures were evaluated as light-harvesting dyes for dye-sensitized solar cell (DSSC). A short side functional group and a carboxylic acid anchoring group (R_2) led to higher device efficiency. In addition, a thiophenyl group was better than the other substituted phenyl groups at *meso* positions of core-modified porphyrin (R_1).

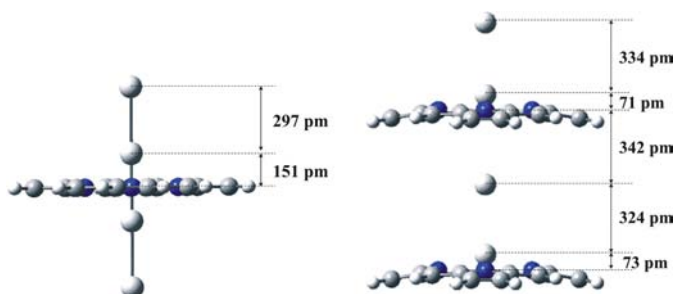


pp. 910–926

Equilibrium, photophysical, photochemical and quantum chemical examination of anionic mercury(I) porphyrins

Zsolt Valicsek*, György Lendvai and Ottó Horváth

Hg_2^{2+} and H_2TSPP^+ can form 2:1 (clusters:porphyrin) and 2:2 complexes, while the 1:1 species may be an intermediate only. The differences between the mercury(I) and the corresponding mercury(II) porphyrins in several aspects can prove that no mercury(II) porphyrins can form due to possible disproportion. However, numerous similarities suggest that the out-of-plane position of the metal center and the distorted structure of the complexes may be responsible for the common properties, the so-called sitting-atop characteristics.

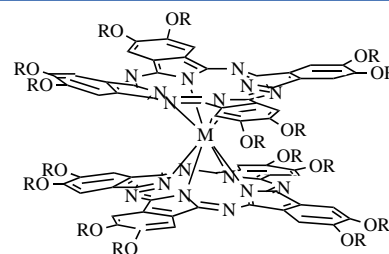


pp. 927–932

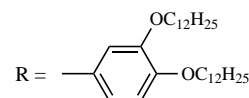
Discotic liquid crystals of transition metal complexes 41: influence of the rare-earth metal ions on clearing points of sandwich type of bis[octakis(3,4-didodecylphenoxy)phthalocyaninato]lanthanoid(III) complexes

Hidetomo Mukai, Kazuaki Hatsusaka and Kazuchika Ohta*

We have synthesized a series of novel sandwich type phthalocyanine-based lanthanoid complexes, $\{[(C_{12}O)_2PhO]_8Pc\}_2M$. We revealed for the first time in metallomesogens that their clearing points strongly depend on the total spin quantum number (S) of the central rare-earth metal ions.



M = La, Ce, Eu, Gd, Tb, Yb, Lu

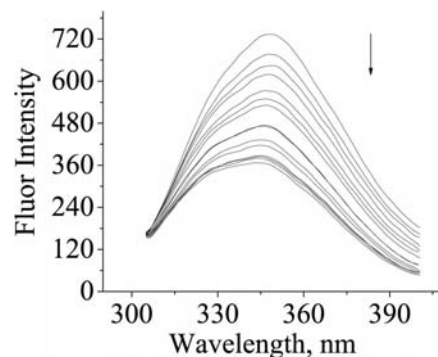


pp. 933–938

Quenching and binding mechanism of the intrinsic fluorescence of bovine serum albumin by 5-phenyl-10,15,20-tri-(4-pyridyl)-porphyrin

Xin Chen, Yanyan Cai, Yanfang Zhao, Hongmin Ma, Dan Wu, Bin Du and Qin Wei*

The quenching mechanism between TriPyP and BSA was studied by fluorescent method and synchronous fluorescence spectra. In addition, the fluorescence spectra of BSA and the absorption spectra of TriPyP was studied by energy transfer theory. It was investigated that the interaction is static quenching progress and similar to the non-radiation energy transfer. The main type of binding force between TriPyP and BSA was also discussed by calculating thermodynamic function. This system could be considered as a model to gain fundamental insights into drug-protein binding.

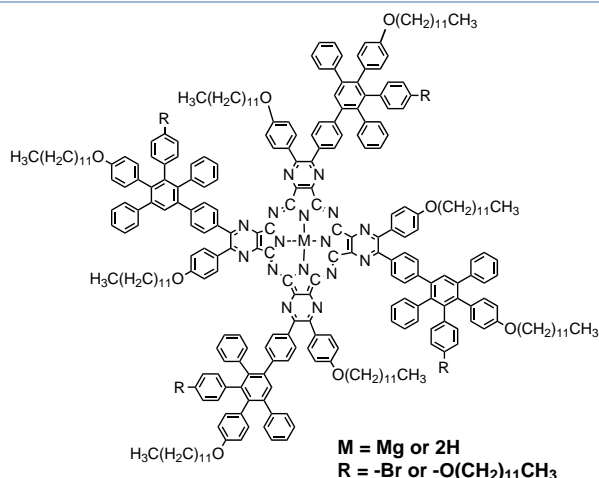


pp. 939–948

Synthesis and optical properties of tetrapyrazinoporphyrazine containing phenylene dendron unit as a peripheral substituent

Chun Keun Jang and Jae Yun Jaung*

The new tetrapyrazinoporphyrazine derivatives containing both flexible (linear) and more rigid (dendritic) groups were synthesized. Their spectral properties were discussed in relation to their chemical structures. The synthesized tetrapyrazinoporphyrazine metal complexes were characterized by UV-visible spectroscopy, MALDI-TOF-MS (matrix-assisted laser desorption ionization time-of-flight mass) spectroscopy and ^1H NMR spectroscopy.

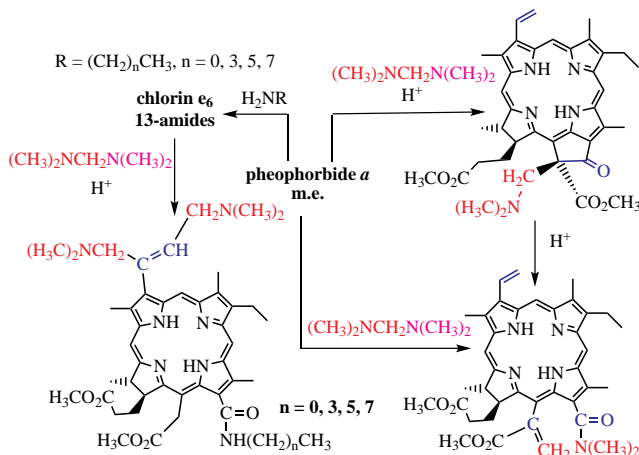


pp. 949–956

Aminomethylation of chlorophyll *a* derivatives using bis(*N,N*-dimethylamino)methane

Dmitri V. Belykh*, Irina S. Tarabukina, Ivan V. Gruzdev, Mikhail I. Kodess and Aleksandr V. Kutchin

Selective methylpheophorbide *a* exo-ring aminomethylation using bis(*N,N*-dimethylamino)methane was realized and isomerization of the exo-ring aminomethylation product with rhodochlorin 15-acrylic derivative formation was studied. It has been shown that the action of bis(*N,N*-dimethylamino)methane in the presence of weak acid is a simple and effective method for synthesis of a new chlorin *e₆* derivative with two *N,N*-dimethylaminomethyl substituents in vinyl group.

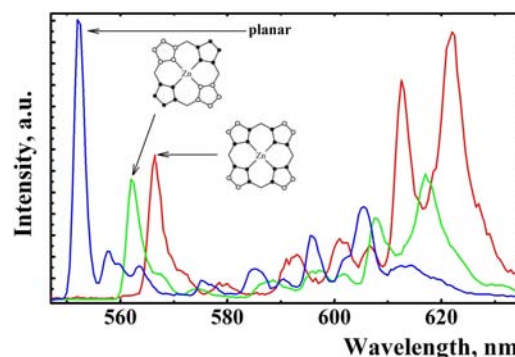


pp. 957–963

Distorted forms of metalloporphyrins probed by methods of highly resolved spectroscopy

Aleksander Starukhin* and Mikalai Kruk

The spectral manifestations of the distorted forms of sterically unconstrained metallocomplexes of porphyrin ($M = \text{Mg}, \text{Zn}, \text{Pd}, \text{Pt}$) in rare gas and Shpol'skii matrices at cryogenic temperatures were detected. The distinctly different frequencies of the vibronic transitions have been revealed for planar and distorted forms. The appearance of the out-of-plane modes in the phosphorescence spectra of the Pd- and Pt-porphyrin has been demonstrated.

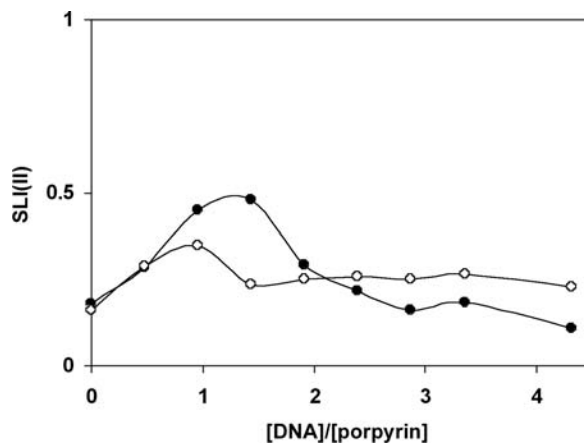


pp. 964–972

Thermodynamic investigation of manganese(III) 5-(1-(4-carboxybutyl)pyridinium-4-yl) 10,15,20-tris(1-methylpyridinium-4-yl)porphyrin with calf thymus DNA

Hamid Dezhmpanah*, Abdol-Khalegh Bordbar* and Shahram Tangestaninejad

Binding properties of two water soluble metalloporphyrins, Mn(III)5-CBPpP and Mn(III)TMPpP, in the presence of DNA has been studied at various temperatures by several spectroscopy techniques and viscosity measurement. The thermodynamic data indicate that the process is exothermic, enthalpy- and entropy-driven, suggesting that electrostatic forces play a considerable role in the interaction process.

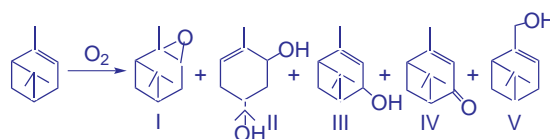


pp. 973–979

Aerobic oxidation of α -pinene catalyzed by nano-titania-supported manganese tetraphenylporphyrin

Wei-Jun Yang*, Can-Cheng Guo, Zi-Yang Li and Neng-Ye Tao

Manganese tetraphenylporphyrin supported on nano-TiO₂ has been synthesized and structurally characterized. It has been shown to have excellent catalytic activity for the aerobic oxidation of α -pinene. Experimental results showed that this much-enhanced activity could arise from possible co-catalysis between metalloporphyrin and the nano-TiO₂ support.

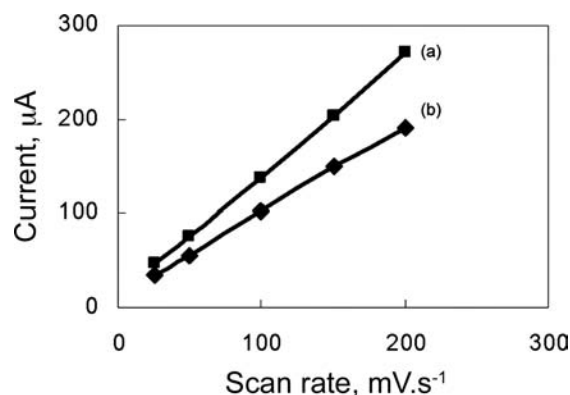


pp. 980–985

Synthesis of polyaniline/TiO₂ nanocomposites with metalloporphyrin and metallophthalocyanine catalysts

Mohammad Reza Nabid*, Roya Sedghi, Abdolmajid Bayandori Moghaddam, Mohammad Barari, Parisa R. Jamaat and Nasser Safari

In this work for first time the polyaniline/TiO₂ nanocomposites were successfully synthesized by catalytic aniline polymerization in the presence of TiO₂ nanoparticles with metalloporphyrin and metallophthalocyanine catalysts. The present study is a very simple and economical method for the preparation of polyaniline/TiO₂ nanocomposites. Characterization of this nanocomposite was done with SEM, TGA, FT-IR and CV.



pp. 986–997

Effects of the number of ring substituents of cobalt carboxyphthalocyanines on the electrocatalytic detection of nitrite, cysteine and melatonin

Fungisai Matemadombo, Nthapo Sehlotho and Tebello Nyokong*

Cobalt phthalocyanine (CoPc), cobalt tetracarboxy phthalocyanine (CoTCPc) and cobalt octacarboxy phthalocyanine (CoOCPc), when adsorbed onto glassy carbon electrodes, show electrocatalytic activity towards the detection of nitrite, L-cysteine and melatonin, which depends on the number of substituents.

