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Award Accounts

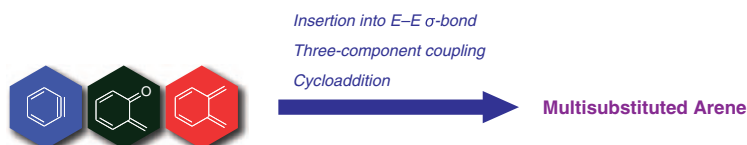
The Chemical Society of Japan Award for Young Chemists for 2007

Aryne, *ortho*-Quinone Methide, and *ortho*-Quinodimethane: Synthesis of Multisubstituted Arenes Using the Aromatic Reactive Intermediates

H. Yoshida,* J. Ohshita, and A. Kunai

Bull. Chem. Soc. Jpn. **2010**, *83*,
199–219

Direct synthesis of diverse multisubstituted arenes and benzo-annulated heterocycles based upon new transformations using such aromatic reactive intermediates as arynes, *ortho*-quinone methides, and *ortho*-quinodimethanes is described in this account.



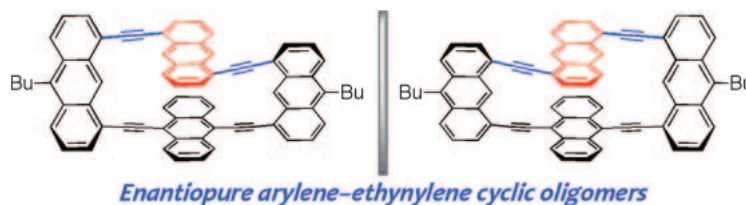
BCSJ Award Article

Chemistry of Anthracene–Acetylene Oligomers XV. Synthesis, Structures, and Dynamic Behavior of Chiral Anthrylene–Ethyne Cyclic Tetramers and Related Derivatives and Resolution of Enantiomers

T. Ishikawa, T. Shimasaki, H. Akashi, T. Iwanaga, S. Toyota,* and M. Yamasaki

Bull. Chem. Soc. Jpn. **2010**, *83*,
220–232

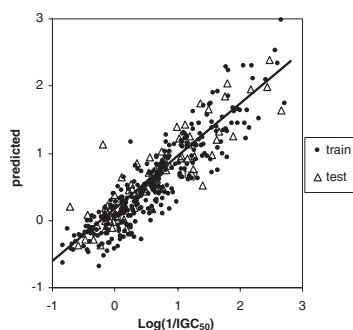
The rotation of the crank anthrylene group about acetylene linkers was so restricted that the enantiomers of the following cyclic tetramer were resolved by chiral HPLC. The structural and spectroscopic features of this compound are compared with another three derivatives having different crank moieties.



Prediction of $\text{Log}(\text{IGC}_{50})^{-1}$ for Benzene Derivatives to Ciliate *Tetrahymena pyriformis* from Their Molecular Descriptors

M. H. Fatemi* and H. Malekzadeh

Bull. Chem. Soc. Jpn. **2010**, *83*,
233–245



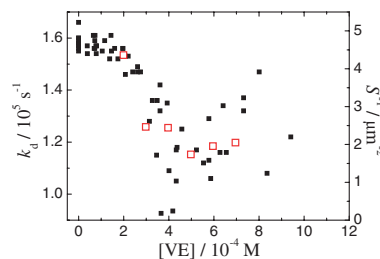
The structure–toxicity relationships approaches were used to predict $\text{Log}(\text{IGC}_{50})^{-1}$ of 392 substituted benzenes to the ciliate *Tetrahymena pyriformis*. The best MLR model had statistics of $R^2 = 0.822$ and $SE = 0.312$ for training set and $R^2 = 0.815$ and $SE = 0.337$ for prediction set.

Singlet Oxygen Lifetime in Vitamin E Emulsion Depends on the Oil-Droplet Size

K. Ohara,* T. Origuchi, and S. Nagaoka

Bull. Chem. Soc. Jpn. **2010**, *83*, 246–253

Singlet oxygen ($^1\text{O}_2$) lifetime in the emulsion dispersing natural vitamin E was dependent on size of the contained oil-droplet. The results indicate that the $^1\text{O}_2$ emission occurs in the interface region around the oil-droplet rather than in the bulk phase.

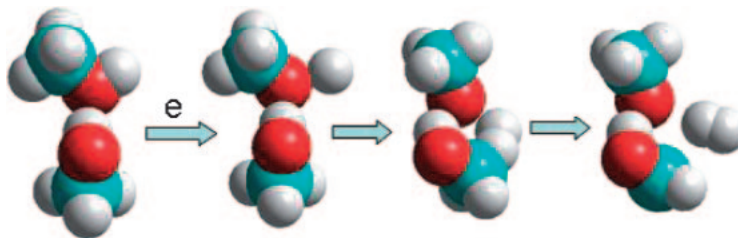


Dissociative Electron Capture of Hydrogen-Bonded Hydroxy Groups: Molecular Dynamics and Matrix Isolation ESR Study

P. H. Kasai

Bull. Chem. Soc. Jpn. **2010**, *83*, 254–260

A molecular dynamics calculation has shown that on capture of an electron, hydrogen-bonded methanol dimer dissociates as follows. The OH-hydrogen of the acceptor side cleaves as an atom and abstracts a hydrogen from the methyl unit of the donor side. A matrix isolation ESR study confirmed the formation of the predicted radical, $\text{CH}_3\text{-O}^-\cdots\text{HO-CH}_2\bullet$.

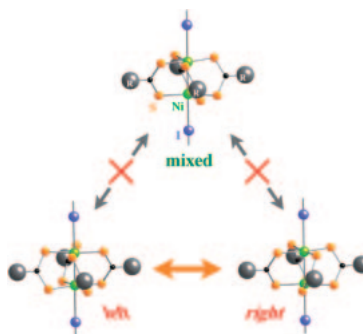


Selected Paper

Calorimetric Study of Correlated Ligand Dynamics in Mixed-Valence MMX Chain Complex $[\{\text{Ni}_2(n\text{-BuCS}_2)_4\}\text{I}]$

S. Ikeuchi, Y. Yamamura, Y. Yoshida, M. Mitsumi, K. Toriumi, and K. Saito*

Bull. Chem. Soc. Jpn. **2010**, *83*, 261–266

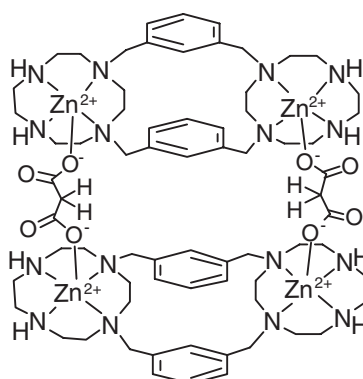


The heat capacity of $[\{\text{Ni}_2(n\text{-BuCS}_2)_4\}\text{I}]$ was measured by adiabatic calorimetry. The experimental entropy is much smaller than a simple estimate based on the structural disorder found in the crystal structure, indicating the occurrence of correlated dynamics.

Dibridged Bis(Zn^{2+} -cyclen): A Novel Host Molecule of Malonate Dianion in Aqueous Solution

H. Fujioka,* S. Kishida, T. Ishizu, M. Shiro, E. Kinoshita, and T. Koike

Bull. Chem. Soc. Jpn. **2010**, *83*, 267–272

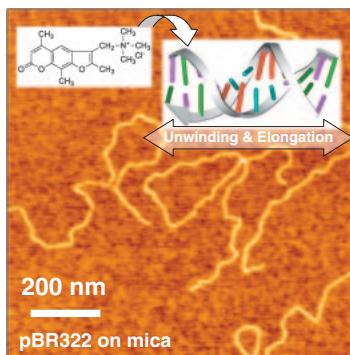


A dinuclear zinc(II) complex, *m,m*-bis-(Zn^{2+} -cyclen) was synthesized as a novel host molecule for a malonate dianion.

An Atomic Force Microscopy Assay of Intercalation Binding, Unwinding, and Elongation of DNA, Using a Water-Soluble Psoralen Derivative as a Covalent Binding Probe Molecule

K. Nakano,* Y. Katsumi, N. Soh, and T. Imato

Bull. Chem. Soc. Jpn. **2010**, *83*, 273–275



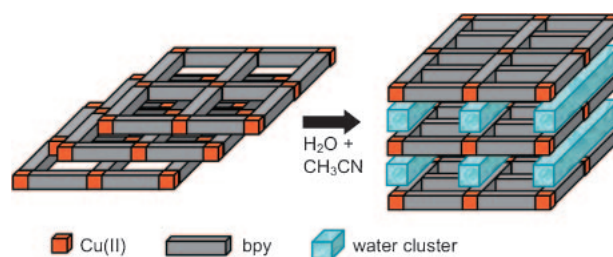
A single-molecule strategy using atomic force microscopy has simply yet robustly probed an intercalation binding related specific structural relaxation or double-strand elongation of pBR322 by taking advantage of a new psoralen (7*H*-furo[3,2-*g*]chromen-7-one) derivative that covalently binds to DNA through a photochemical reaction.

Water Molecules as Binders in Transformation of 2D Coordination Polymer [Cu(4,4'-bpy)₂(OTf)₂]_n into Parallel Aligned 3D Architectures

K. Komori-Orisaku, K. Hoshino, S. Yamashita, and Y. Koide*

Bull. Chem. Soc. Jpn. **2010**, *83*, 276–278

A conversion of 2D frameworks of $[\text{Cu}(4,4'\text{-bpy})_2(\text{OTf})_2] \cdot 2\text{CH}_3\text{CN}]_n$ is performed and crystallographically characterized. Infinite linear water networks assembled in the inter-layer spaces are playing roles of binders that link multiple metal centers through the interplay of coordination and hydrogen bonding.

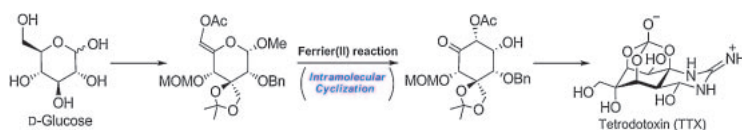


Total Synthesis of (–)-Tetrodotoxin from D-Glucose: A New Route to Multi-Functionalized Cyclitol Employing the Ferrier(II) Reaction toward (–)-Tetrodotoxin

S. Akai, H. Seki, N. Sugita, T. Kogure, N. Nishizawa, K. Suzuki, Y. Nakamura, Y. Kajihara, J. Yoshimura, and K. Sato*

Bull. Chem. Soc. Jpn. **2010**, *83*, 279–287

Total synthesis of (–)-tetrodotoxin from D-glucose employing the Ferrier(II) reaction is described.

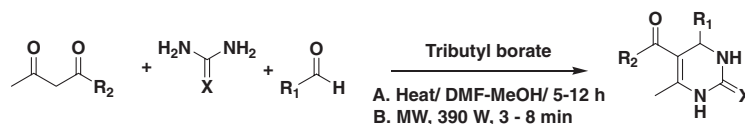


Tributyl Borate Mediated Biginelli Reaction: A Facile Microwave-Assisted Green Synthetic Strategy toward Dihydropyrimidinones

C. Ranjith,* G. V. Srinivasan, and K. K. Vijayan*

Bull. Chem. Soc. Jpn. **2010**, *83*, 288–290

A new boron-based catalyst, tributyl borate, is introduced for the synthesis of multi-functionalized pharmacologically active dihydropyrimidinones under a solvent-free, fast, cost effective, and efficient microwave-assisted greener protocol is described.

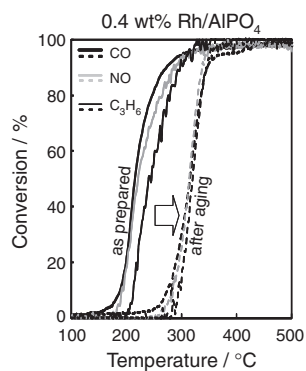


Selected Paper

Thermostable Rh Catalysts Supported on Metal Phosphates: Effect of Aging on Catalytic Activity for NO-CO-C₃H₆-O₂ Reactions

K. Ikeue, K. Murakami, S. Hinokuma,
K. Uemura, D. Zhang, and M. Machida*

Bull. Chem. Soc. Jpn. **2010**, *83*,
291–297



Rh catalysts supported on tridymite AlPO₄ exhibit higher thermal stability and catalytic activity for the NO-CO-C₃H₆-O₂ reaction ($A/F = 14.6$), compared to those supported on metal oxides, other metal phosphates, and other AlPO₄ polymorphs.