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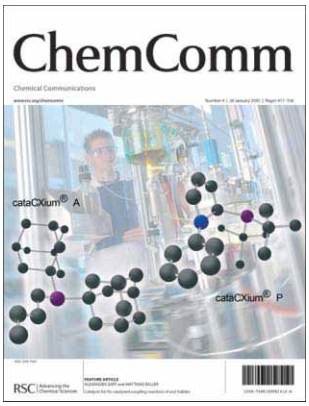
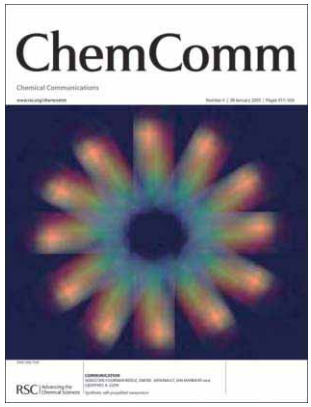
ISSN 1359-7345 CODEN CHCOFS (4) 417–556 (2005)



Cover
Synthesis of certain catalysts on a kilogram scale at a Degussa plant in Hanau (Germany). See p. 431.



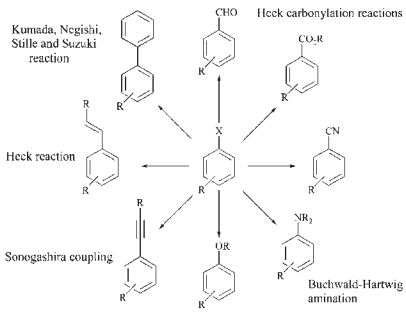
Inside cover
A silicon tethered nanorod rotor in action. See p. 441.

FEATURE ARTICLE

The development of efficient catalysts for palladium-catalyzed coupling reactions of aryl halides

Alexander Zapf* and Matthias Beller*

In the mid 1990s a program was started on the development of more efficient palladium catalysis for the C–C and C–N coupling reactions of aryl halides, especially aryl chlorides. In this contribution, investigations on new catalyst systems and their applications in organic synthesis are summarized.

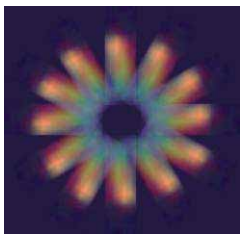


COMMUNICATIONS

Synthetic self-propelled nanorotors

Sébastien Fournier-Bidoz, André C. Arsenault, Ian Manners* and Geoffrey A. Ozin*

Self-powered nanorotors have been prepared from barcoded gold–nickel nanorods having the gold end anchored to the surface of a silicon wafer. Constant velocity circular movements are observed when hydrogen peroxide fuel is catalytically decomposed to oxygen at the unattached nickel end of the nanorod.



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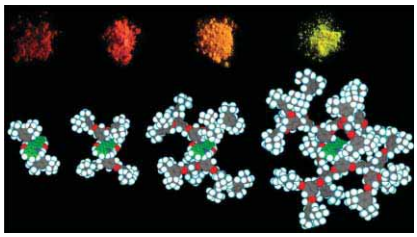

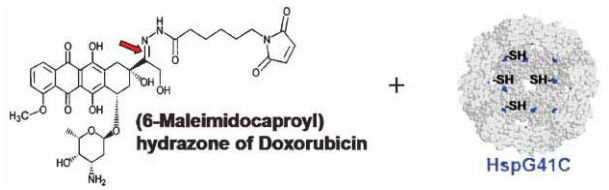

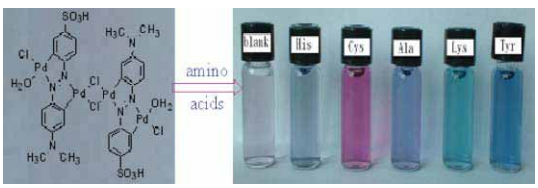

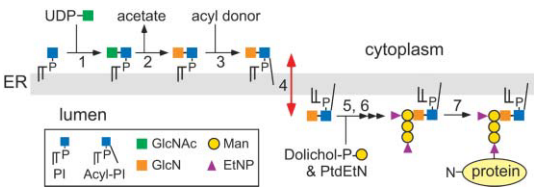

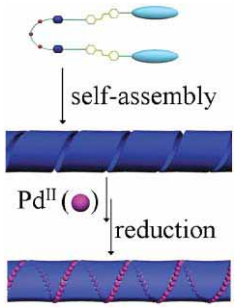

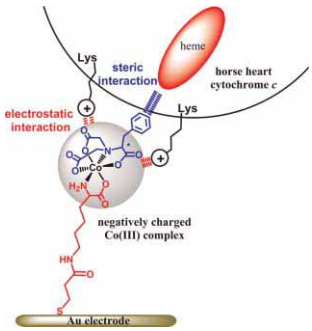

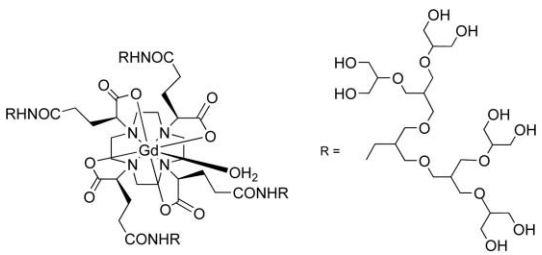

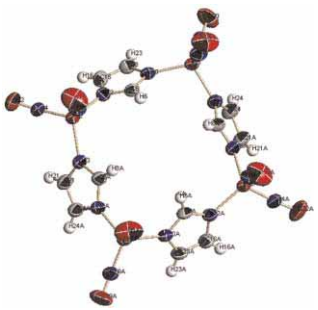

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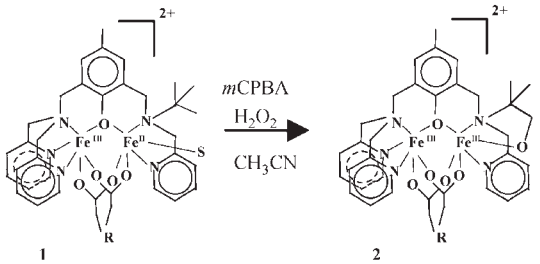

A diiron complex mediates an intramolecular aliphatic hydroxylation by various oxygen donors

Frédéric Avenier, Lionel Dubois, Patrick Dubourdeaux and Jean-Marc Latour*

The dangling *tert*-butyl residue **1** is quantitatively oxygenated to the butanolate **2** by H_2O_2 or *m*-CPBA. ^{18}O labelling experiments reveal that H_2O_2, but not *m*-CPBA, reacts akin to mononuclear complexes.

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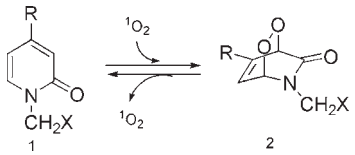

Reversible 1,4-cycloaddition of singlet oxygen to *N*-substituted 2-pyridones: 1,4-endoperoxide as a versatile chemical source of singlet oxygen

Masakatsu Matsumoto,* Masayo Yamada and Nobuko Watanabe

$^1O_2$ adds to nitrogen-analogues of α-pyranone, namely, *N*-substituted pyridones (**1**) to afford 1,4-endoperoxides (**2**) exclusively, and the thus-obtained peroxides (**2**) liberate $^1O_2$ in high yield.

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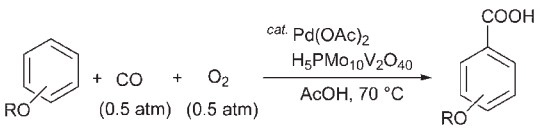

Carboxylation of anisole derivatives with CO and O_2 catalyzed by $Pd(OAc)_2$ and molybdovanadophosphates

Shinichiro Ohashi, Satoshi Sakaguchi and Yasutaka Ishii*

Anisole and its homologues were carboxylated under the influence of CO and O_2 catalyzed by $Pd(OAc)_2$ combined with molybdovanadophosphates (HPMoV) under mild conditions to give the corresponding carboxylic acids in fair to good yields.

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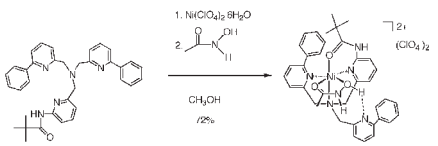
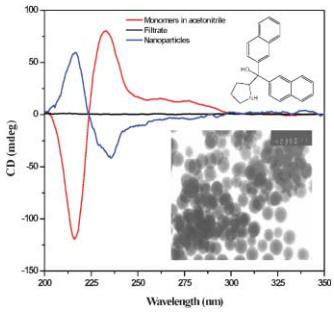
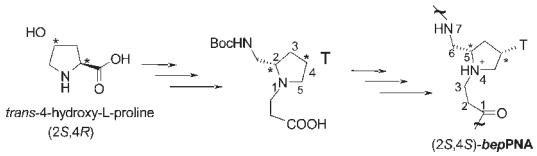


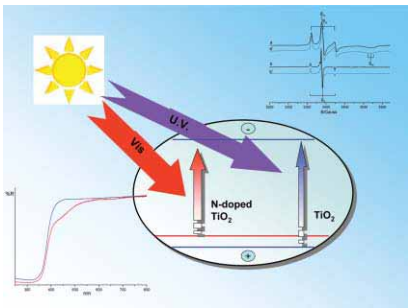
Neutral acetohydroxamic acid coordination to a mononuclear Ni(II) center stabilized by an intramolecular hydrogen-bonding interaction

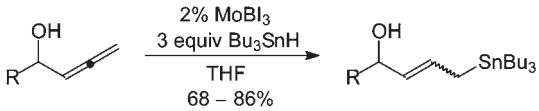
Katarzyna Rudzka, Magdalena M. Makowska-Grzyska, Ewa Szajna, Atta M. Arif and Lisa M. Berreau*

A novel mononuclear Ni(II) complex having a coordinated neutral acetohydroxamic acid ligand was isolated using a chelate ligand that provides an internal hydrogen bond acceptor.









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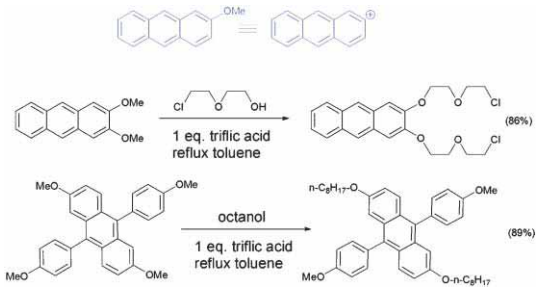

Synthesis of anthracene ethers from anthracene methyl ethers *via* an acid-catalyzed exchange reaction

Chih-Hsiu Lin* and Krishnan Radhakrishnan

We have developed a general synthesis of anthracene ethers *via* acid-catalyzed exchange reactions. The net reaction conveys anthracene methyl ether as an anthracene cation synthon, granting convenient entry into various anthracene derivatives for potential supramolecular assemblies and electronic devices.

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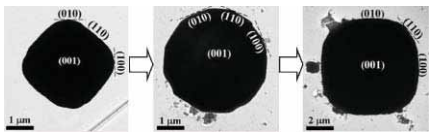

Solution route to single crystalline SnO platelets with tunable shapes

Shuai Wang, Songhai Xie, Hexing Li, Shirun Yan, Kangnian Fan and Minghua Qiao*

Square and round single crystalline SnO platelets were prepared in a solution-based chemical route aided with sonication at room temperature.

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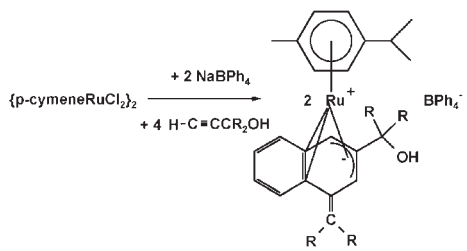

Coupling of alkynols and a phenyl group to a novel η^5-dihydronaphthalenide ligand on a ruthenium template

Jadranka Čubrilo, Rainer F. Winter* and Dietrich Gudat

{(*p*-cymene)$RuCl_2$}$_2$ promotes the stoichiometric coupling of a phenyl group and two equivalents of a disubstituted alkynol to unprecedented η^5-1-methylene-1,2-dihydronaphthalenide ligands in a reaction involving BPh_4^- as a phenylating agent.

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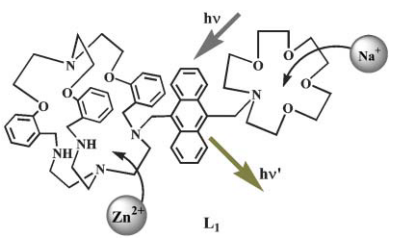
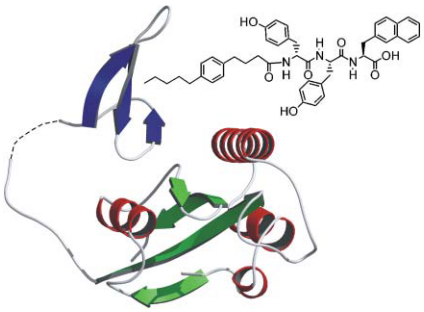
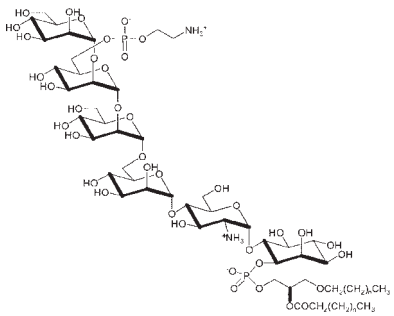


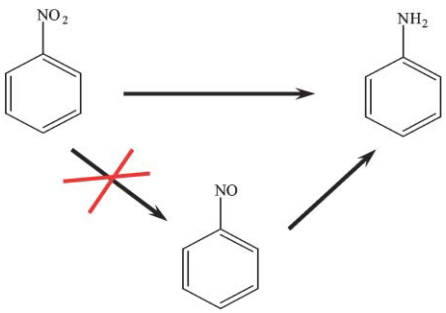
Fluorescence enhancement of a signaling system in the simultaneous presence of transition and alkali metal ions: a potential *AND* logic gate

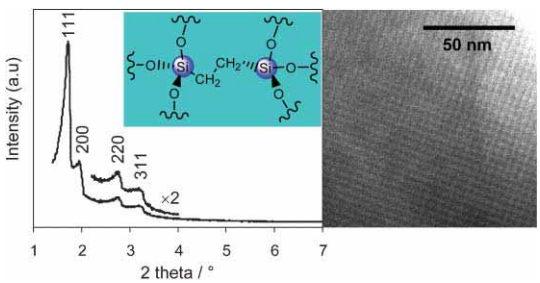
Bamaprasad Bag and Parimal K. Bharadwaj*

Fluorescence enhancement of a signaling system $\mathbf{L_1}$ in simultaneous presence of a transition metal ion and an alkali metal ion that mimics the function of an *AND* logic gate.









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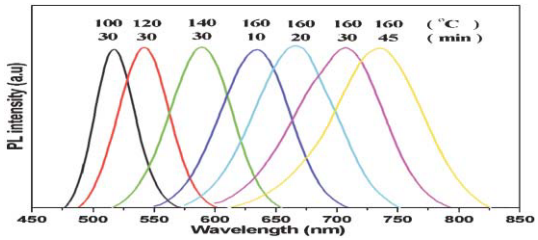

Rapid synthesis of highly luminescent CdTe nanocrystals in the aqueous phase by microwave irradiation with controllable temperature

Liang Li, Huifeng Qian and Jicun Ren*

A rapid aqueous synthesis of broad size range CdTe nanocrystals with high quantum yield by microwave irradiation with controllable temperature.

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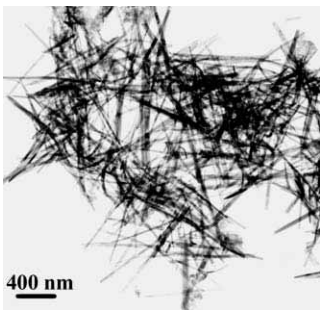

Protein-assisted synthesis of single-crystal nanowires of bismuth compounds

Feng Gao, Qingyi Lu and Sridhar Komarneni*

Protein lysozyme has been found to be a new morphology-directing reagent and by this simple and mild bio-molecule assisted method single-crystal bismuth compound nanowires could be synthesized.

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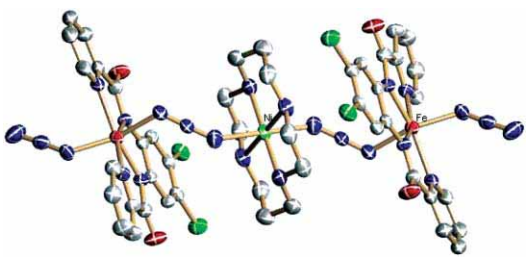

Rational design of azide-bridged bimetallic complexes. Crystal structure and magnetic properties of $Fe^{III}MFe^{III}$ ($M = Ni^{II}$ and Cu^{II}) trinuclear species

Enrique Colacio,* Jean-Pierre Costes, José M. Domínguez-Vera, Ikram Ben Maimoun and José Suárez-Varela

The first examples of azide-bridged bimetallic trinuclear complexes $\{[M(cyclam)][FeL(N_3)(\mu_{1,5}\text{-}N_3)]_2\}$ (M = Ni(II), Cu(II); H_2L = 4,5-dichloro-1,2-bis(pyridine-2-carboxamido) benzene) have been prepared and structurally characterized. The magnetic study revealed the existence of irregular spin state structures with antiferro- and ferromagnetic interactions, respectively.

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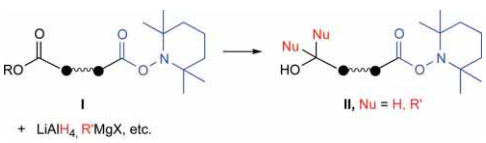
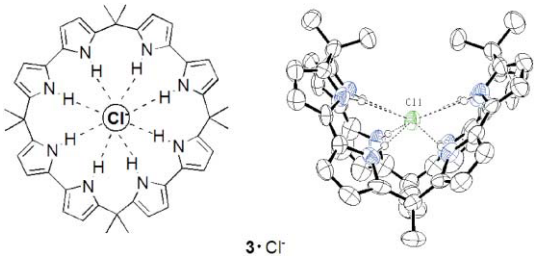
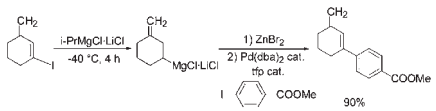


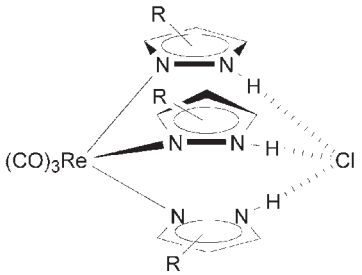
Reactivity of *N*-alkanoyloxy-2,2,6,6-tetramethylpiperidines (*O*-acylTEMPOs) towards hydride-transferring or metallic alkylating reagents; unprecedented stability and application to chemoselective transformations

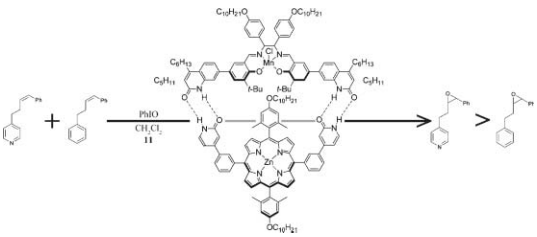
Tsutomu Inokuchi,* Hiroyuki Kawafuchi and Junzo Nokami

Chemoselective transformations of diacid mixed alkyl/TEMP-1-yl esters, where *O*-acylTEMPOs remained intact, were achieved with hydride-transferring and metallic alkylating reagents, *i.e.*, $LiAlH_4$, R′MgX, *etc.*, giving the corresponding carbinols.









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