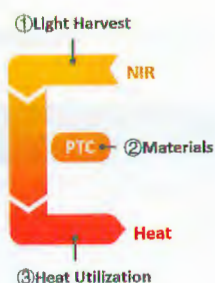


Chemistry Authors Up Close

Photothermal Polymers in Near Infrared Window

Yonglin He, Shenglong Liao, and Yapei Wang*

Chin. J. Chem. **2021**, *39*, 1435–1442. DOI: 10.1002/cjoc.202000637

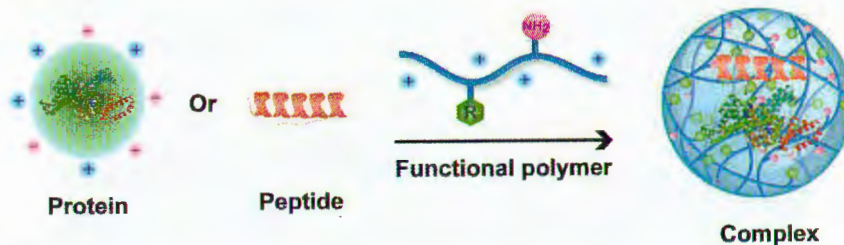


This account summarizes some efforts in the development of NIR photothermal conversion that were made by Prof. Yapei Wang's group.

Design of Polymers for Intracellular Protein and Peptide Delivery

Yiyun Cheng*

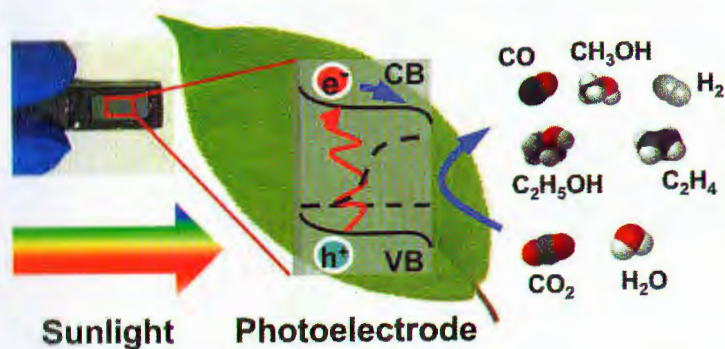
Chin. J. Chem. **2021**, *39*, 1443–1449. DOI: 10.1002/cjoc.202000655



Artificial Leaves for Solar Fuels

Gong Zhang, Bin Liu, Tuo Wang, and Jinlong Gong*

Chin. J. Chem. **2021**, *39*, 1450–1458. DOI: 10.1002/cjoc.202000616

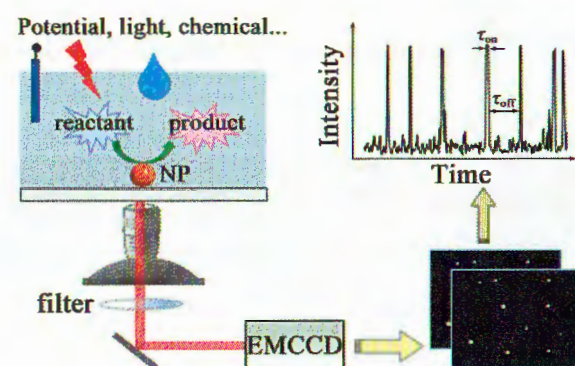


Being an electrocatalytic or photoelectrocatalytic process, artificial photosynthesis converts solar energy, CO₂ and water into solar fuels such as hydrogen or methanol, thereby achieving a zero-emission energy supply.

Single-Molecule Fluorescence Imaging of Nanocatalysis

Yi Xiao and Weilin Xu*

Chin. J. Chem. 2021, 39, 1459–1470. DOI: 10.1002/cjoc.202000682



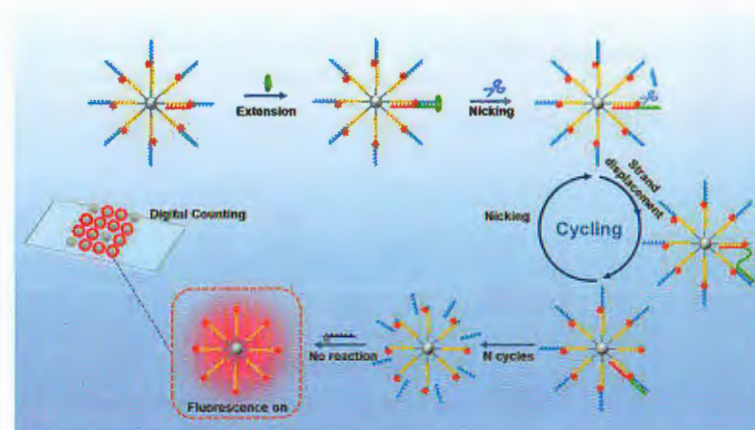
This review discussed the recent progress on single-molecule fluorescence imaging of nanocatalysis and the applications of SMFM method in probing chemocatalysis, electrocatalysis, photocatalysis and photoelectrocatalysis.

Concise Reports

Target Extension-Activated DNA Walker on Nanoparticles for Digital Counting-Based Analysis of MicroRNA

Qinya Feng, Yuqing Zhai, Wei Ren,* and Chenghui Liu*

Chin. J. Chem. 2021, 39, 1471–1476. DOI: 10.1002/cjoc.202000692

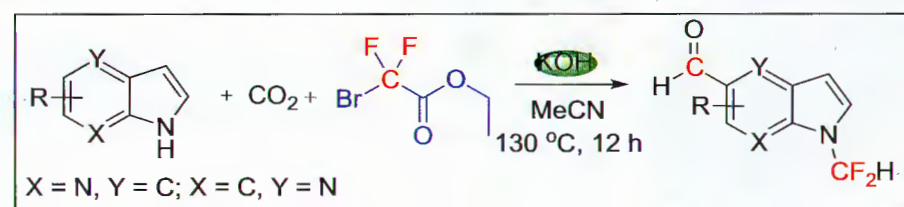


A new DNA walking mechanism is developed for the digital counting-based analysis of miRNA.

Base-Promoted Formylation and N-Difluoromethylation of Azaindoles with Ethyl Bromodifluoroacetate as a Carbon Source

Yang Li,* Ning Sun, Cai-Lin Zhang, and Meng Hao

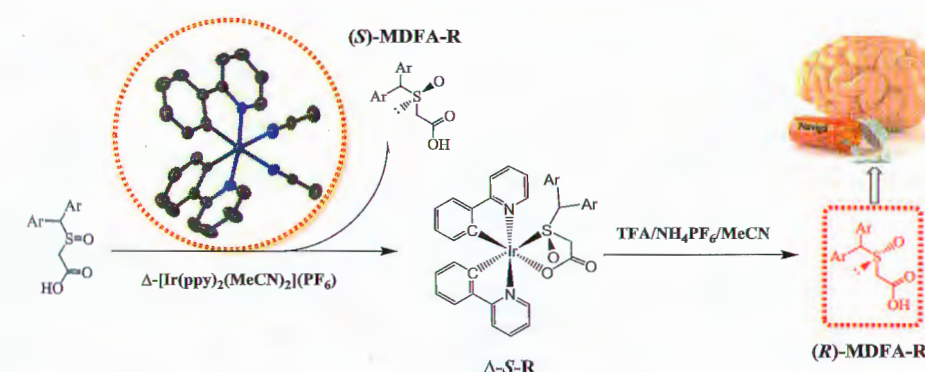
Chin. J. Chem. 2021, 39, 1477–1482. DOI: 10.1002/cjoc.202100008



Thermodynamic Resolution of Pharmaceutical Precursor Modafinil Acid on the Basis of Chiral-at-Metal Strategy

Man-Li Cao, Jun-Ling Zhu, Zhong-Lan Zhi, Bao-Hui Ye, Su-Yang Yao,* and Xiu-Lian Zhang*

Chin. J. Chem. 2021, 39, 1483–1490. DOI: 10.1002/cjoc.202000729

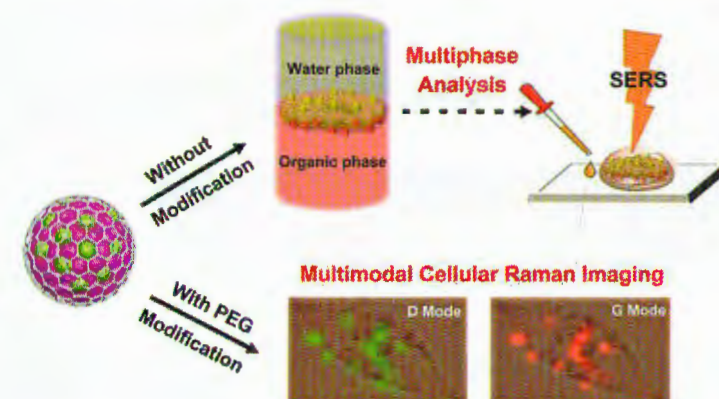


Chiral-at-metal strategy was employed for resolution of pharmaceutical intermediate *R* modafinil acid and its analogues. The chiral receptors are stable and can be recycled with complete retention of their configurations and without loss of the reaction activity and enantioselectivity. This work provides a complementary protocol for the synthesis of chiral modafinil acid, armodafinil, as well as their analogues and explores the application of chiral-at-metal strategy in chiral resolution.

Versatile Graphene-Isolated AuAg-Nanocrystal for Multiphase Analysis and Multimodal Cellular Raman Imaging

Shengkai Li, Zhaotian Zhu, Xinqi Cai, Minghui Song, Shen Wang, Qing Hao, Long Chen, and Zhuo Chen*

Chin. J. Chem. 2021, 39, 1491–1497. DOI: 10.1002/cjoc.202000734

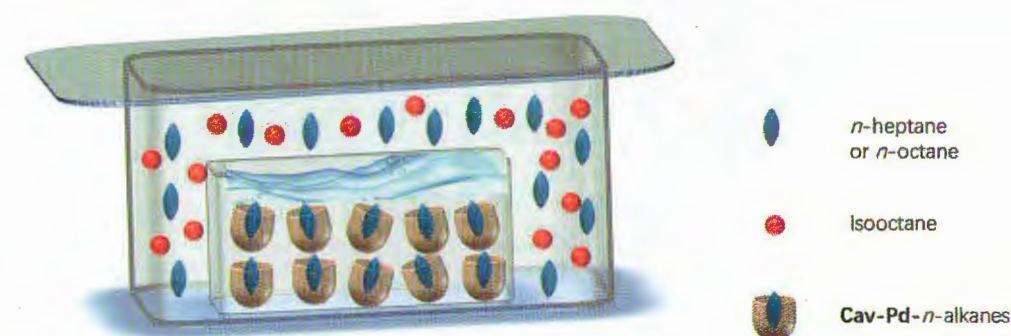


GIAAN with SERS-active AuAg core confined in a nanospace of few-layer graphene shell was used for multiphase analysis and multimodal cellular Raman imaging.

Shape Selectivity of a Metallo Cavitand Host Allows Separation of *n*-Alkanes from Isooctane

Yun-Hui Wan, Faiz-Ur Rahman, Julius Rebek Jr., and Yang Yu*

Chin. J. Chem. 2021, 39, 1498–1502. DOI: 10.1002/cjoc.202000709

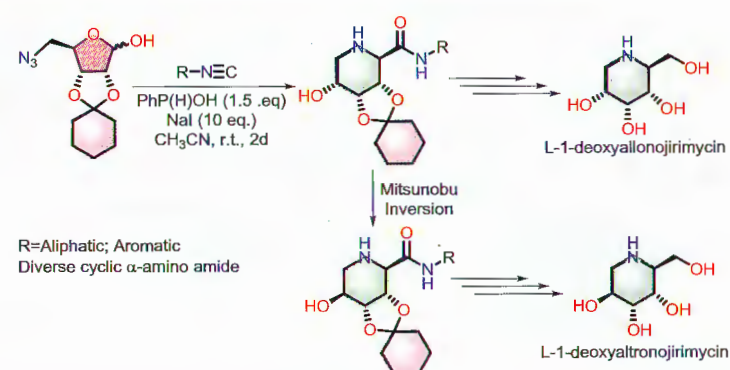


Metallo cavitand aqueous solution (Cav-Pd) selectively adsorb *n*-alkanes from their mixed vapor with isooctane.

Phosphinic Acid/NaI Mediated Reductive Cyclization Approach for Accessing the L-1-Deoxynojirimycin Using a Two-Component Three-Centered (2C3C) Ugi Type Reaction

Chandra S Azad, Pratibha Shukla, Mark A Olson,* and Anudeep K Narula*

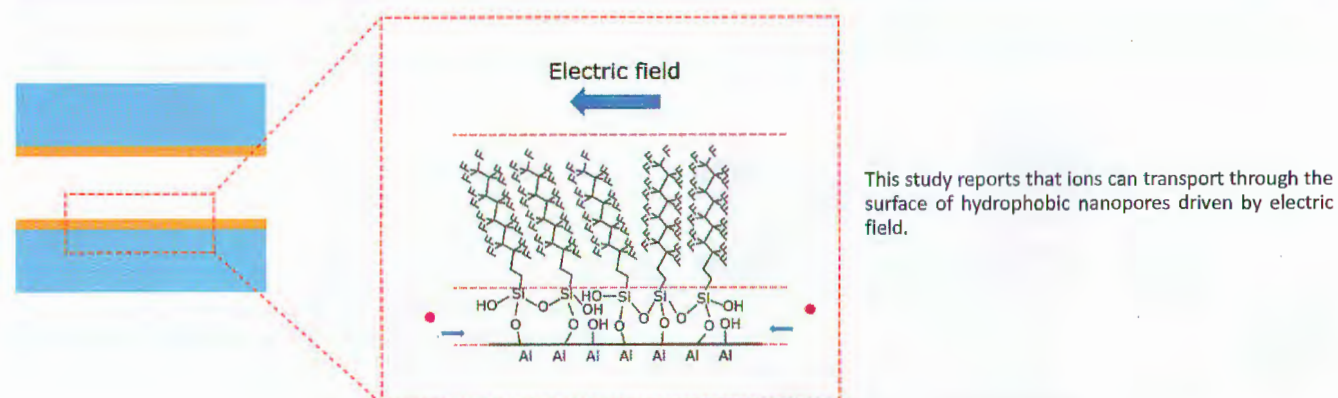
Chin. J. Chem. 2021, 39, 1503–1510. DOI: 10.1002/cjoc.202000634



Electric Field Driven Surface Ion Transport in Hydrophobic Nanopores

Xin-Lei Ding, Zeng-Qiang Wu, Zhong-Qiu Li,* and Xing-Hua Xia*

Chin. J. Chem. 2021, 39, 1511–1516. DOI: 10.1002/cjoc.202000730

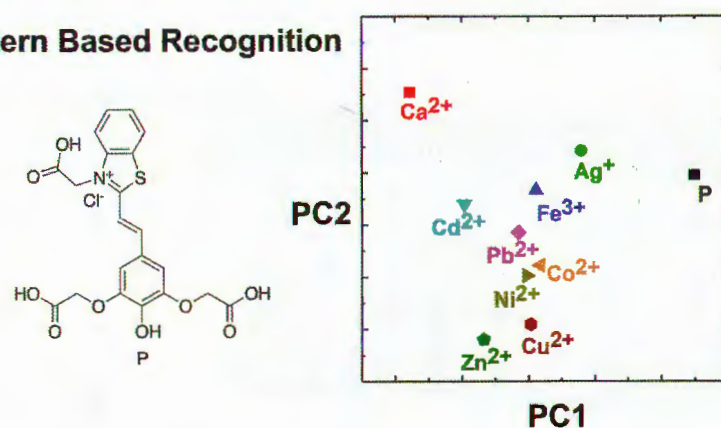


Single-Component Chemical Nose with a Hemicyanine Probe for Pattern-Based Discrimination of Metal Ions

Jingying Zhai, Yaotian Wu, and Xiaojiang Xie*

Chin. J. Chem. 2021, 39, 1517–1522. DOI: 10.1002/cjoc.202100013

Pattern Based Recognition

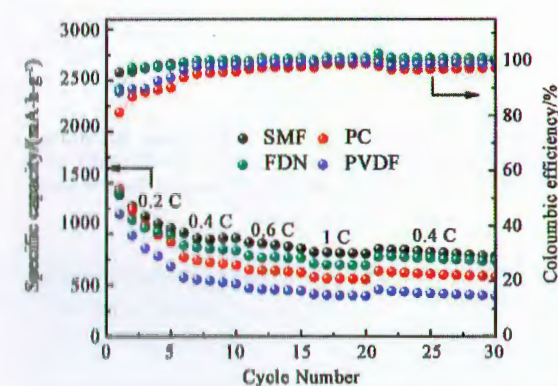


A chemical nose with a nonspecific probe P containing a hemicyanine chromophore and multiple acetates and hydroxyl binding moieties is able to distinguish multiple metal ions based on the different information-rich absorption spectra.

Water Reducer: A Highly Dispersing Binder for High-Performance Lithium-Sulfur Batteries

Xin Geng, Ruihao Lin, Xingxing Gu,* Zhi Su,* and Chao Lai*

Chin. J. Chem. 2021, 39, 1523–1530. DOI: 10.1002/cjoc.202000702

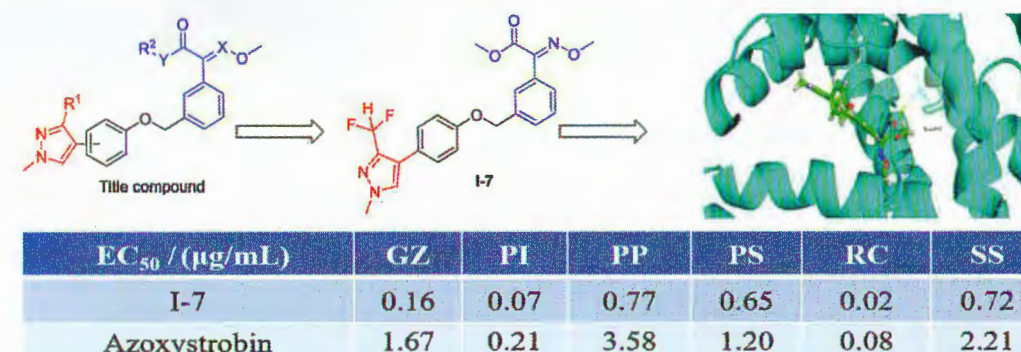


High performance sulfur cathodes are obtained simply using water-reducers as binders, which not only can ensure the uniform distribution of active materials, but also can well suppress the dissolution of polysulfides.

Design, Synthesis, and Evaluation of Fungicidal Activity of Novel Pyrazole-Containing Strobilurin Derivatives

Zesheng Hao, Welbo Wang, Bin Yu, Xin Qi, You Lv, Xiaoyu Liu, Haoyin Chen, Tatiana A. Kalina, Tatiana V. Glukhareva*, and Zhijin Fan*

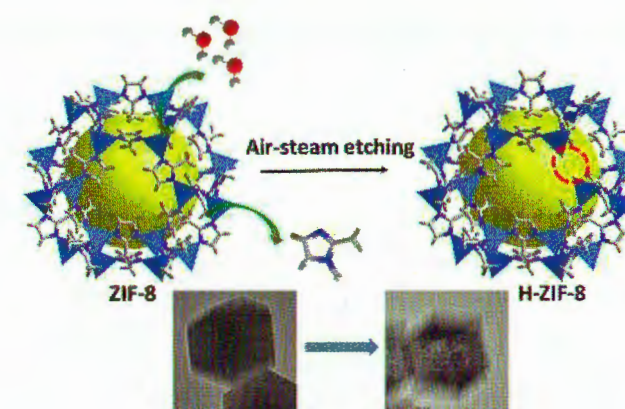
Chin. J. Chem. 2021, 39, 1531–1537. DOI: 10.1002/cjoc.202000685



Air-Steam Etched Construction of Hierarchically Porous Metal-Organic Frameworks

Hongliang Huang, Yuxiu Sun,* Xueming Jia, Wenjuan Xue, Chenxu Geng, Xin Zhao, Donghai Mei,* and Chongli Zhong*

Chin. J. Chem. 2021, 39, 1538–1544. DOI: 10.1002/cjoc.202100718

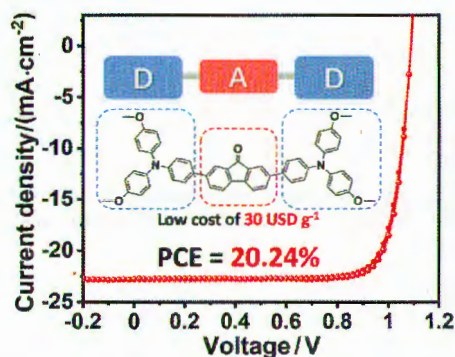


A simple, scalable and green method was developed to prepare hierarchically porous MOFs via an air-steam etching process without using any template or solvent. Water steam in air serves as an etching agent, which provides proton to linker, guaranteeing the feasibility of linker removal during etching process. This etching strategy not only can tune the mesopore structure of ZIF-8 but also exhibits universal applicability to other ZIFs.

A Cost-Effective D-A-D Type Hole-Transport Material Enabling 20% Efficiency Inverted Perovskite Solar Cell

Jiachen Huang, Jie Yang, Huiliang Sun,* Kui Feng, Qiaogan Liao, Bolin Li, He Yan,* and Xugang Guo*

Chin. J. Chem. 2021, 39, 1545–1552. DOI: 10.1002/cjoc.202100022

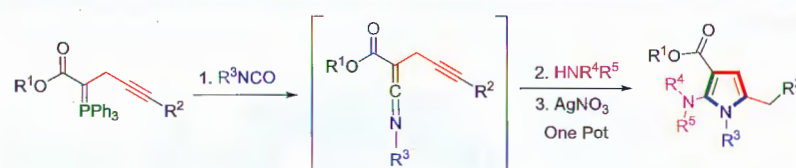


A cost-effective donor-acceptor-donor type hole-transporting material is developed. Benefiting from the good energy level alignment and efficient surface passivation, the TPA-FO-based dopant-free inverted perovskite solar cell shows a high power conversion efficiency of 20.24% with negligible hysteresis.

One-Pot Synthesis of Polysubstituted Pyrroles via Sequential Ketenimine Formation/Ag(I)-Catalyzed Alkyne Cycloisomerisation Starting from the Ylide Adducts

Jun Xiong,* Zhi-Ying Mu, Gang Yao, Jia-An Zhang, Qi-Xun Feng, Hui-Ting He, Yong-Long Pang, Hang Shi, and Ming-Wu Ding*

Chin. J. Chem. 2021, 39, 1553–1557. DOI: 10.1002/cjoc.202000639



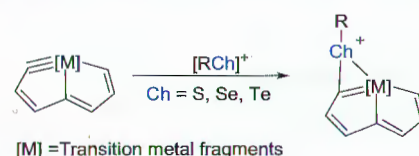
- One-Pot Fashion
- Ketenimine Chemistry
- Mild Reaction Condition
- Good Yield

We developed an efficient one-pot method for the preparation of polysubstituted pyrroles via ketenimine formation/Ag(I)-catalyzed alkyne cycloisomerisation starting from the easily accessible phosphonium ylide derivatives under mild reaction conditions.

Synthesis, Characterization, and Reactivity of Metalla-Chalcogenirenium Compounds

Ming Luo, Yapeng Cai, Xinlei Lin, Lipeng Long, Hong Zhang,* and Haiping Xia*

Chin. J. Chem. 2021, 39, 1558–1564. DOI: 10.1002/cjoc.202100745

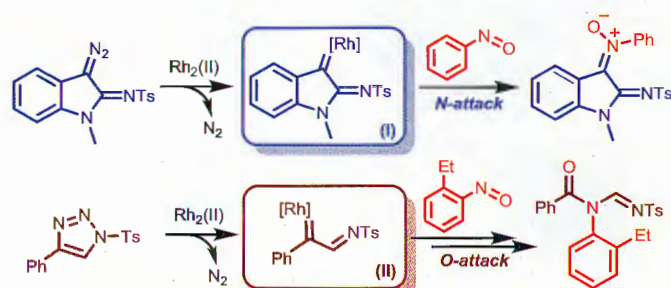


[M] = Transition metal fragments

Understanding Mechanistic Differences between 3-Diazoindolin-2-Imines and N-Sulfonyl-1,2,3-Triazoles in the Rh₂(II)-Catalyzed Reactions with Nitrosoarenes

Rui Fu, Luyao Kou, Ke Gao, Shaofang Zhou, and Xiaoguang Bao*

Chin. J. Chem. 2021, 39, 1565–1572. DOI: 10.1002/cjoc.202100033



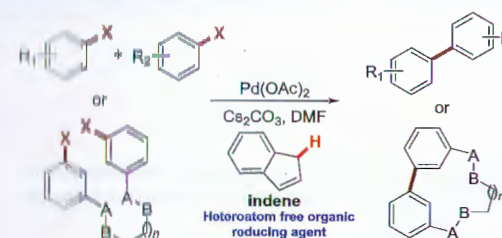
The Rh₂(II)-catalyzed reactions of 3-diazoindolin-2-imines with nitrosoarenes to produce 2-iminoindolin-nitrones are described. In addition, the mechanistic differences for the reactions of nitrosoarenes with α-imino rhodium carbene species I and II are revealed by density functional calculations.

- Synthesize 2-iminoindolin-nitrones; 23 examples up to 94% yield
- Rationalize different chemo-selectivities between I and II

Reductive Coupling of Aryl Halides via C—H Activation of Indene

Bo-Sheng Zhang,* Ying-Hui Yang, Fan Wang, Xue-Ya Gou, Xi-Cun Wang,* Yong-Min Liang,* Yuke Li,* and Zheng-Jun Quan*

Chin. J. Chem. 2021, 39, 1573–1579. DOI: 10.1002/cjoc.202100034

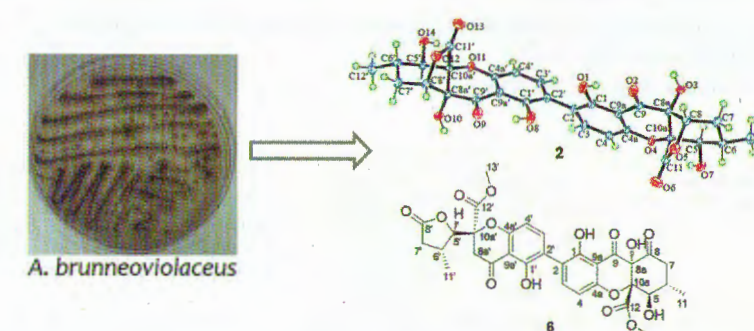


This paper describes the first case of a reductive coupling reaction with indene, a non-heteroatom olefin used as a reducing agent.

Antileptoporotic Tetrahydroxanthone Dimers from *Aspergillus brunneoviolaceus* FB-2 Residing in Human Gut

Xiao Jing Lv, Fei Ding, Ying Jie Wei, and Ren Xiang Tan*

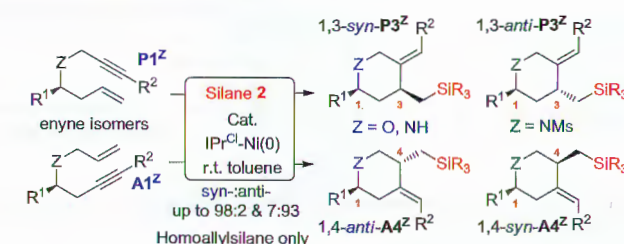
Chin. J. Chem. 2021, 39, 1580–1586. DOI: 10.1002/cjoc.202100026



Diastereodivergent Hydrosilylative Enyne Cyclization Catalyzed by N-Heterocyclic Carbene-Ni(0)

Meng Yu, Xuefeng Yong, Weiwei Gao, and Chun-Yu Ho*

Chin. J. Chem. 2021, 39, 1587–1592. DOI: 10.1002/cjoc.202000651

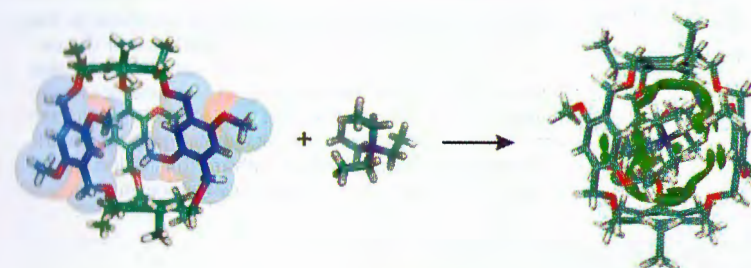


R¹ = linear/cyclic alkyls, alkenyls, aryls & heteroaryl
R² = H and alkyl; Allow Contiguous & Skipped Stereocenters Synth.
NHC Steric & Electronic Controlled Cyclization over Direct Hydrosilylation

Selective Recognition of Quaternary Ammonium Ions by Structurally Flexible Cages

Qi-Cheng Huang, Mao Quan, Huan Yao, Liu-Pan Yang,* and Wei Jiang*

Chin. J. Chem. 2021, 39, 1593–1598. DOI: 10.1002/cjoc.202000738

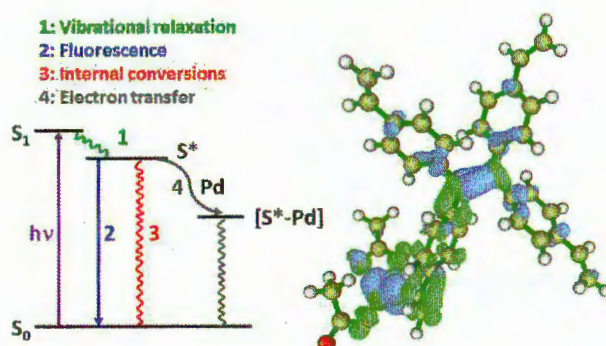


The binding behaviors of three structurally similar and flexible cages to a series of quaternary ammonium ions have been systematically studied.

Vinyl Groups Containing Tetraphenylethylene Derivatives as Fluorescent Probes Specific for Palladium and the Quenching Mechanism

Xiaoqing Liu, Yuxuan Shang, and Zhong-Ren Chen*

Chin. J. Chem. 2021, 39, 1599–1605. DOI: 10.1002/cjoc.202000746

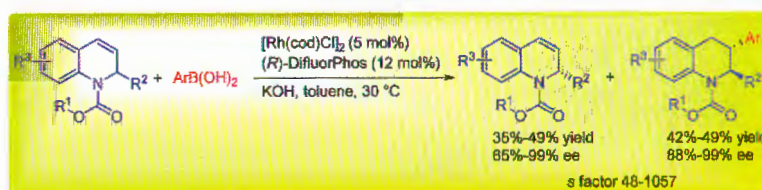


We report fluorescent probes specific for palladium based on tetraphenylethylene (TPE) and the dynamic quenching mechanism via the electron transfer between TPE derivative and palladium.

Kinetic Resolution of 2-Substituted 1,2-Dihydroquinolines by Rhodium-Catalyzed Asymmetric Hydroarylation

Baohua Cai, Qingjing Yang, Ling Meng, and Jun (Joelle) Wang*

Chin. J. Chem. 2021, 39, 1606–1610. DOI: 10.1002/cjoc.202000742

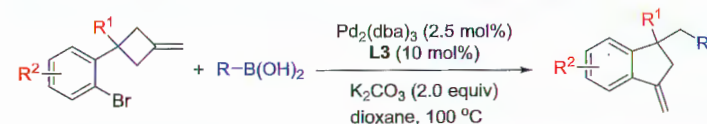


A highly efficient kinetic resolution of racemic 2-substituted 1,2-dihydroquinolines via Rh-catalyzed asymmetric hydroarylation has been described for the first time.

Palladium-Catalyzed C–C Bond Activation/Suzuki Reaction of Methylene-cyclobutanes

Xiao-Bing Chen, Li Li, Wan-Chun Yang, Kun-Long Song, Bin Wu, Wan-Er Gan, Jian Cao,* and Li-Wen Xu*

Chin. J. Chem. 2021, 39, 1611–1615. DOI: 10.1002/cjoc.202000700

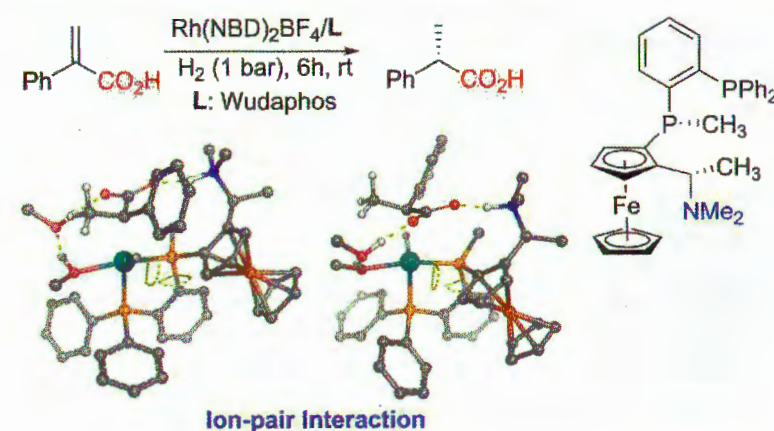


We report here a novel palladium-catalyzed C–C bond activation manner of methylene-cyclobutanes followed by subsequent Suzuki cross-coupling reaction affording multisubstituted indanes. The tandem reaction process involves intramolecular carbopalladation of double bond, β -carbon elimination and intermolecular trapping of the transient σ -alkylpalladium complex with boronic acids.

A Computational Study of Asymmetric Hydrogenation of 2-Phenyl Acrylic Acids Catalyzed by a Rh(I) Catalyst with Ferrocenyl Chiral Bisphosphorus Ligand: The Role of Ion-Pair Interaction

Xiangru Fan, Lini Zheng, Yuhong Yang, Xiu-Qin Dong,* Xumu Zhang, and Lung Wa Chung*

Chin. J. Chem. 2021, 39, 1616–1624. DOI: 10.1002/cjoc.202000741

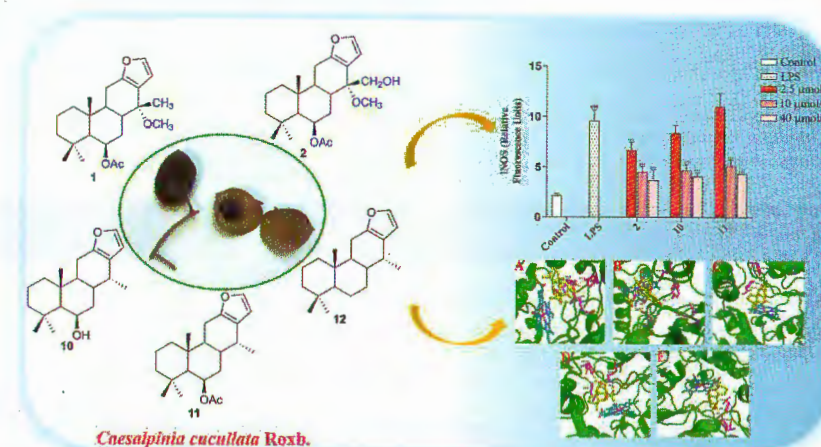


Different from the C=C coordination to the metal in the common oxidative addition step, the chelation of the carboxyl group of the substrate to the cationic metal was found in Rh(I)/Wudaphos-catalyzed asymmetric hydrogenation of 2-phenyl acrylic acid. The high enantioselectivity is governed by a better catalyst/substrate geometric complementarity in the major pathway to have less distortion of the catalyst for a strong ion-pair interaction.

New Cassane Diterpenoids from the Seed Kernels of *Caesalpinia cucullata*, Exhibit Anti-inflammatory Effect in vitro by Inhibiting iNOS Enzymatic Activity

Miao Wang, Yi-Ren Yang, Yan Yin, Kai-Ru Song, Li-Ping Long, Xian-Zhe Li, Bei Zhou,* and Hui-Yuan Gao*

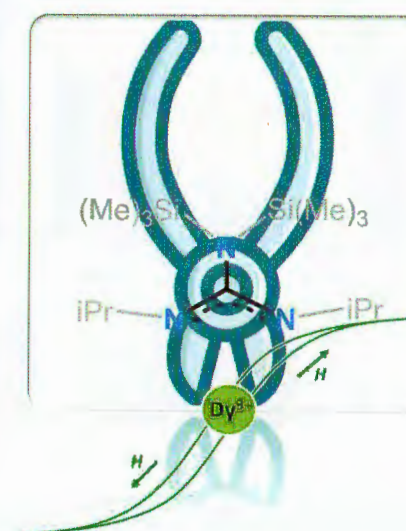
Chin. J. Chem. 2021, 39, 1625–1634. DOI: 10.1002/cjoc.202000683



Chelating Guanidines for Dysprosium(III) Single-Molecule Magnets

Peng-Bo Jin, Ke-Xin Yu, Yuan-Qi Zhai, Qian-Cheng Luo, Yi-Dian Wang, Xu-Feng Zhang, Yi Lv, and Yan-Zhen Zheng*

Chin. J. Chem. 2021, 39, 1635–1640. DOI: 10.1002/cjoc.202100041

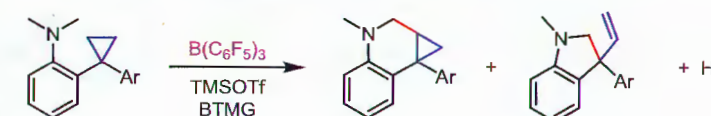


Two guanidine-based Dy(III) complexes have been confirmed to be single-molecule magnets with great potential.

Divergent Synthesis of N-Heterocycles by Merging Borane-Mediated Cyclopropane Ring-Opening and Hydride Abstraction

Zi-Yu Zhang, Jie Ren, Ming Zhang, Xiu-Fang Xu, and Xiao-Chen Wang*

Chin. J. Chem. 2021, 39, 1641–1645. DOI: 10.1002/cjoc.202100056

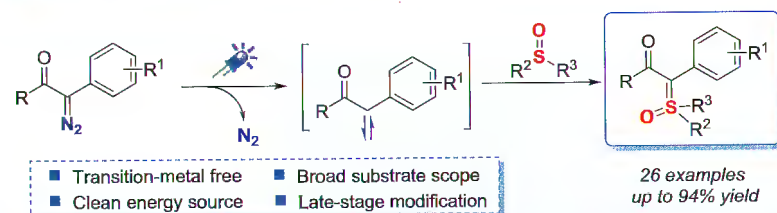


Feature: Merging two activities of B(C₆F₅)₃ in a single reaction

Visible Light-Promoted Sulfoxonium Ylides Synthesis from Aryl Diazoacetates and Sulfoxides

Jun Lu, Lei Li,* Xiang-Kui He, Guo-Yong Xu,* and Jun Xuan*

Chin. J. Chem. 2021, 39, 1646–1650. DOI: 10.1002/cjoc.202100064



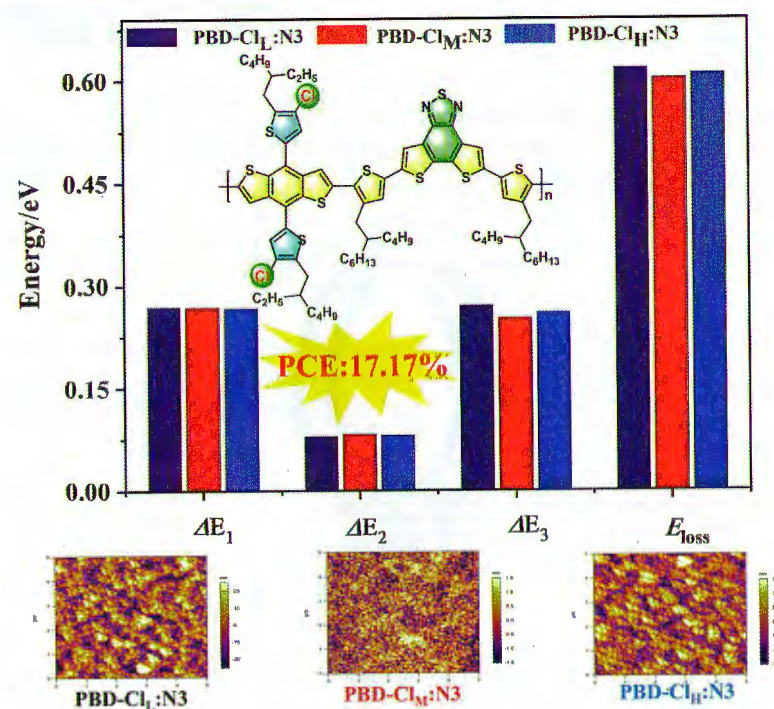
A visible light-promoted reaction of donor/acceptor diazoalkanes with sulfoxides towards the synthesis of synthetically useful sulfoxonium ylides is reported. The reaction occurred under sole visible light irradiation without the need of any transition-metal or additive, affording the corresponding sulfoxonium ylides in moderate to good yields.

Comprehensive Reports

Tuning the Molecular Weight of Chlorine-Substituted Polymer Donors for Small Energy Loss

Tingxing Zhao, Huan Wang, Mingrui Pu, Hanjian Lai, Hui Chen, Yulin Zhu, Nan Zheng, and Feng He*

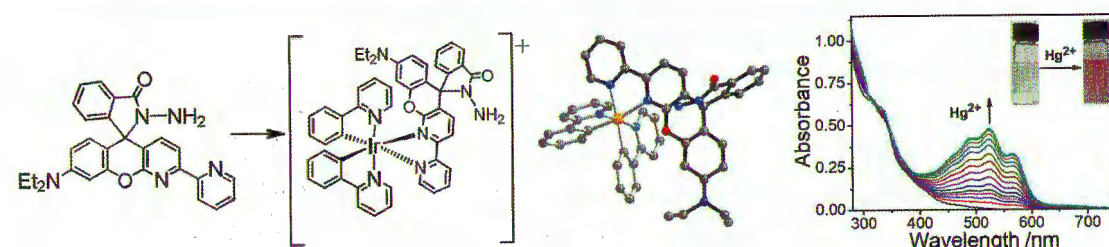
Chin. J. Chem. 2021, 39, 1651–1658. DOI: 10.1002/cjoc.202000735



Design, Synthesis and Ring-Opening Properties of a New Bipyridine Fused Rhodamine-Like Chelating Ligand and the Related Transition Metal Complexes

Zhiyuan Qian, Yukun Cheng, Shunan Zhao, and Keith Man-Chung Wong*

Chin. J. Chem. 2021, 39, 1659–1666. DOI: 10.1002/cjoc.202000748

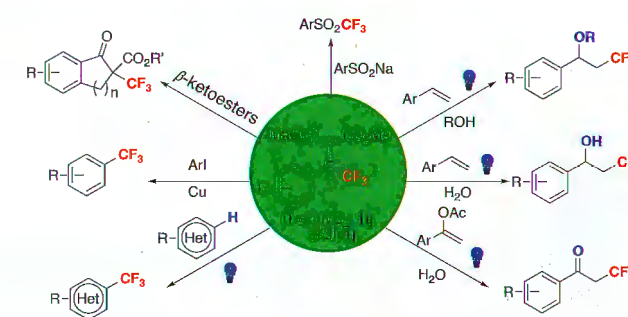


A new bipyridine embedded rhodamine-like chelating ligand with sensory function, together with the related transition metal complexes, have been designed, synthesized and characterized. The corresponding spirocarbon ring-opening process results in drastic color change and emission perturbation and the corresponding sensing behaviors have been studied by UV-Vis absorption and emission spectroscopies.

Rational Design and Development of Low-Price, Scalable, Shelf-Stable and Broadly Applicable Electrophilic Sulfonyl Ylide-Based Trifluoromethylating Reagents

Yafei Liu, Yijing Ling, Hangming Ge, Long Lu,* and Qilong Shen*

Chin. J. Chem. 2021, 39, 1667–1682. DOI: 10.1002/cjoc.202100107

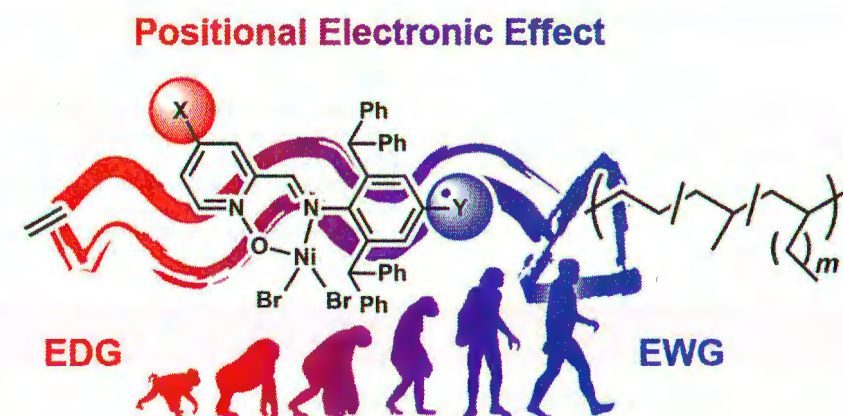


A shelf-stable and highly reactive electrophilic trifluoromethylating reagents (trifluoromethyl)(4-nitrophenyl)bis(carbomethoxy)methylide **1g** was invented. A low cost and easy-to-handle process for the scalable preparation of reagent **1g** was developed. Reagent **1g** reacted with β -ketoesters and allyl enol ethers to give α -trifluoromethylated- β -ketoesters or α -trifluoromethylated ketones in high yields, and could serve as a trifluoromethyl radical for a variety of trifluoromethylative transformations under visible light irradiation, including radical trifluoromethylation of electron-rich indoles and pyrroles and sodium aryl sulfonates as well as trifluoromethylative difunctionalization with styrene derivatives. In addition, as a complimentary, under reductive coupling conditions, reagent **1j** reacted with a variety of (hetero)aryl iodides for the formation of trifluoromethylated (hetero)arenes.

Positional Electronic Effects in Iminopyridine-N-oxide Nickel Catalyzed Ethylene Polymerization

Mingjun Chi, Ao Chen, Wenmin Pang, Chen Tan,* and Changle Chen*

Chin. J. Chem. 2021, 39, 1683–1689. DOI: 10.1002/cjoc.202000712

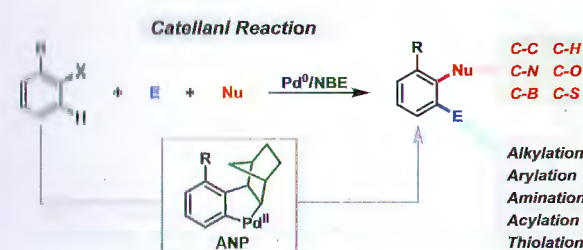


Cornerstones in Chemistry

Catellani Reaction: An Enabling Technology for Vicinal Functionalization of Aryl Halides by Palladium(0)/Norbornene Cooperative Catalysis

Shihao Dong and Xinjun Luan*

Chin. J. Chem. 2021, 39, 1690–1705. DOI: 10.1002/cjoc.202000600



The Catellani reaction, originally discovered by Catellani in 1997, and further developed by Catellani, Lautens and others, has emerged as a powerful strategy for the synthesis of polysubstituted arenes, which would be difficult to access via traditional methods. In this process, both *ortho*- and *ipso*-positions of aryl halides could be functionalized simultaneously with different electrophiles and terminating agents under the cooperative catalysis of palladium and norbornene (NBE). This review focuses on the significant progress of such transformations, and the section of typical Catellani reactions is divided into five parts according to the functionalization mode of *ortho*-C-H bond: alkylation, arylation, amination, acylation or thiolation.

Recent Advances

WO₃ Inverse Opal Photonic Crystals: Unique Property, Synthetic Methods and Extensive Application

Xueming Dang, Xiao Jiang, Tingting Zhang, and Huimin Zhao*

Chin. J. Chem. 2021, 39, 1706–1715. DOI: 10.1002/cjoc.202000687

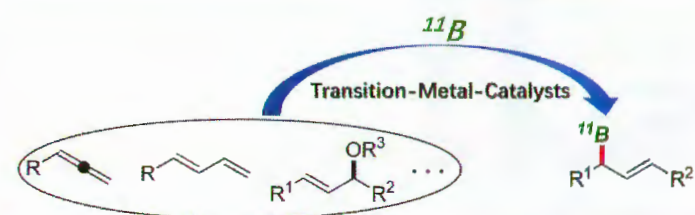


Tungsten trioxide inverse opal photonic crystals (WO₃ IOPCs) can be fabricated through the electrodeposition method, sol-gel method and dynamic template strategy. Benefiting from the great optical and electrical property, they have a wide application in chemical sensor, photo(electro)catalysis, electrochromic material and photochromic field.

Transition-Metal-Catalyzed Synthesis of Chiral Allylboronates

Wenbo Ming, Xiaocui Liu, Lujia Mao, Xiao Gu, and Qing Ye*

Chin. J. Chem. 2021, 39, 1716–1725. DOI: 10.1002/cjoc.202000708



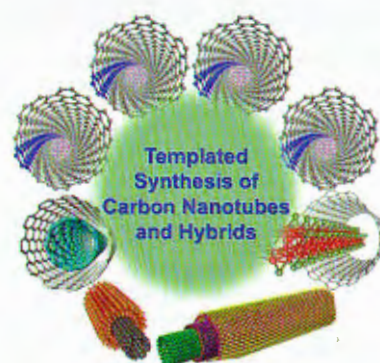
This review article describes recent advances in transition-metal catalyzed synthesis of chiral allylboronates, especially on those in the past three years, and with the emphasis on the aspect of asymmetric catalysis. According to the mechanism of achieving the chemo-, regio-, stereo- and enantioselectivities, the discussion is divided in two parts: substrate-controlled and catalyst-controlled synthesis.

Critical Review

Precise Synthesis of Carbon Nanotubes and One-Dimensional Hybrids from Templates

Xusheng Yang, Xin Zhao, Tianhui Liu, and Feng Yang*

Chin. J. Chem. 2021, 39, 1726–1744. DOI: 10.1002/cjoc.202000673

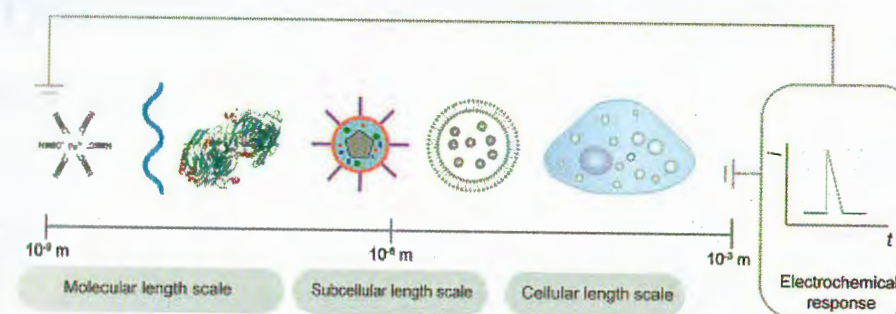


We review the main achievements on templated synthesis of carbon nanotube (CNTs) and one-dimensional (1D) hybrids on two aspects: chirality-specific growth of CNTs from well-defined catalysts and nanocarbon templates, atomically precise synthesis of 1D hybrids with the template of CNTs.

Electrochemical Analysis for Multiscale Single Entities on the Confined Interface

Haipei Zhao, Jinliang Ma, Xiaolei Zuo, and Fan Li*

Chin. J. Chem. 2021, 39, 1745–1752. DOI: 10.1002/cjoc.202000722



Single entities detection reveals heterogeneity and random processes hidden in ensemble measurements. Obtaining accurate single-entity information is challenging. The electrochemical analysis is at high spatial resolution and high temporal resolution to analyze single entities and measure the fast kinetics process. In this minireview, we will focus on the electrochemical strategies for single multiscale entities.