

无机化学学报

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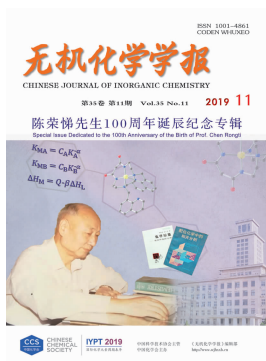
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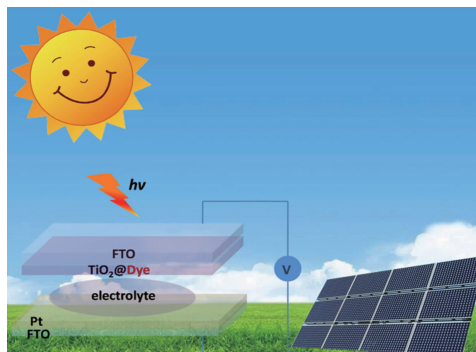
Reviews

Application of Polyoxometalates-Based Photosensitizers in Dye-Sensitized Solar Cells

GU Yi-Tong, CHEN Li, LI Jian-Ping, LIU Li, CHEN Wei-Lin, LIU Ding, WANG En-Bo

DOI:10.11862/CJIC.2019.227

Chinese J. Inorg. Chem., **2019**,*35*(11):1905-1920

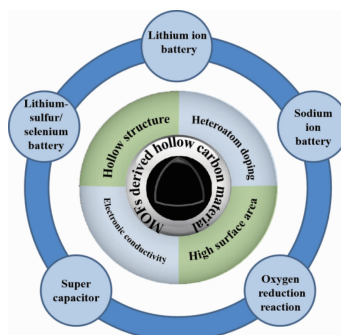


Metal-Organic Framework-Derived Hollow Carbon Materials for Electrochemical Energy Storage and Oxygen Reduction Reaction

LIU Hu, YANG Dong-Hui, WANG Xu-Yun, HAN Bao-Hang

DOI:10.11862/CJIC.2019.237

Chinese J. Inorg. Chem., **2019**,*35*(11):1921-1933



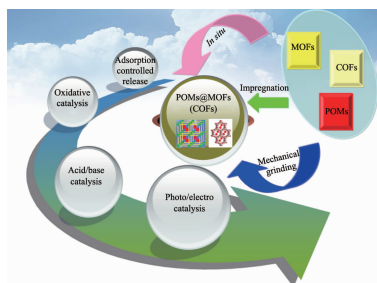
In this review, the preparation processes and electrochemical performances of hollow carbon materials derived from metal-organic frameworks are outlined, mainly including their applications in lithium-ion batteries, lithium-sulfur/selenium batteries, sodium-ion batteries, supercapacitors, and oxygen reduction reaction.

Polyoxometalate-Based Host-Guest Framework Materials POMs@MOFs(COFs)

LI Ji-Kun, ZHAO Shuai-Heng, HU Chang-Wen

DOI:10.11862/CJIC.2019.230

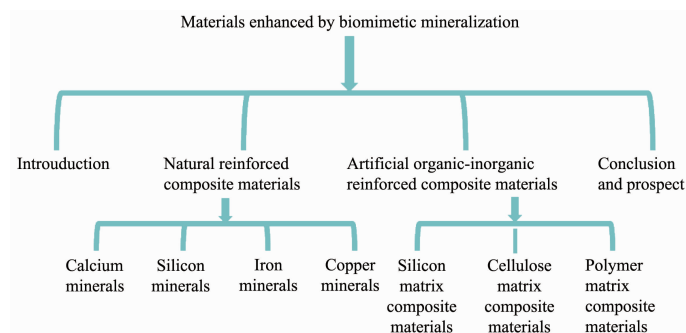
Chinese J. Inorg. Chem., **2019**,**35**(11):1934-1956



This review summarizes the recent research progress of the POMs@MOFs(COFs) materials. The synthesis, structures and properties of these materials have been discussed in detail. The future development trend of the POMs@MOFs(COFs) materials is also prospected.

Materials Enhanced by Biomimetic Mineralization

CAO Han, PAN Hai-Hua, TANG Rui-Kang



This review mainly introduces the natural reinforced composite materials from four types of minerals, and the artificial organic-inorganic reinforced composite materials with three kinds of matrices.

DOI:10.11862/CJIC.2019.250

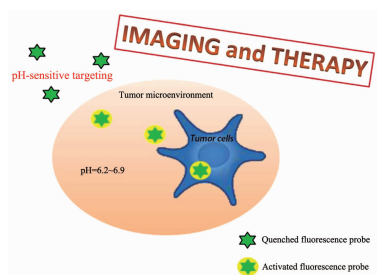
Chinese J. Inorg. Chem., **2019**,**35**(11):1957-1973

pH-Sensitive Iridium, Ruthenium and Platinum Complexes for Tumor-Specific Fluorescence Imaging and Cancer Therapy (English)

ZHANG Si-Qi, GAO Li-Hua, ZHAO Hua, WANG Ke-Zhi

DOI:10.11862/CJIC.2019.231

Chinese J. Inorg. Chem., **2019**,**35**(11):1974-1986



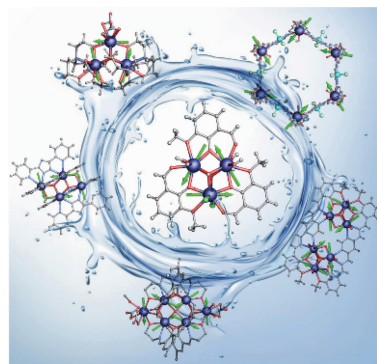
Acidic tumor environment is a significant hallmark of tumor tissues and provides a powerful platform for accurate tumor diagnosis and efficient therapy. Due to excellent photophysical properties and anticancer activities, pH-sensitive metal complexes of iridium, ruthenium and platinum have the potential to become tumor imaging and therapy agents.

Single-Molecule Toroids: Recent Advances and Perspectives

LI Xiao-Lei

DOI:10.11862/CJIC.2019.246

Chinese J. Inorg. Chem., **2019**,**35**(11):1987-1998



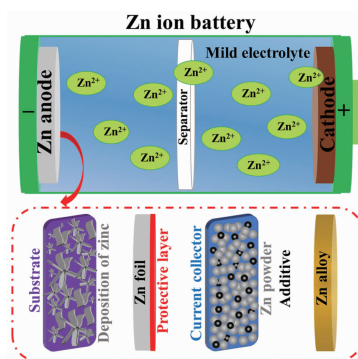
Up-to-date overview of the emerging single-molecule toroids (SMTs) are presented here in detail to expound the influencing factors and designing strategies of SMTs and ultimately inspire the searching of SMTs with enhanced toroidal moment.

Research Progress of Zinc Anode Materials for Aqueous Zinc Ion Recharge Battery

WANG Fu-Hui, LIU Hui-Biao

DOI:10.11862/CJIC.2019.239

Chinese J. Inorg. Chem., **2019**,**35**(11):1999-2012



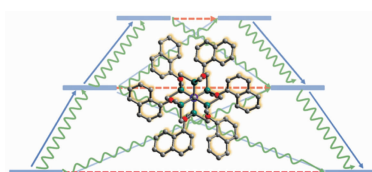
Zinc ion recharge battery, a new type of green environmental protection battery, the performance of zinc anode can be improved by controlling its morphology and surface modification. Herein, we reviews the development of anode materials for zinc ion batteries, including metal zinc anode, composite zinc anode and zinc alloy.

Research Progress on Single-Ion Magnets and Their Magnetic Relaxation Dynamics

GOU Xiao-Shuang, WANG Meng-Meng,
MENG Xi-Xi, CHENG Peng

DOI:10.11862/CJIC.2019.232

Chinese J. Inorg. Chem., **2019**,**35**(11):2013-2030



Single-ion magnets with high performance and their magnetic relaxation mechanism are reviewed.

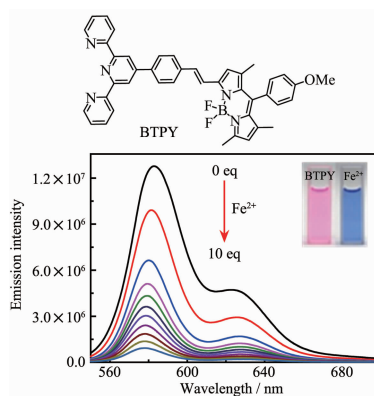
Articles

Construction and Fe²⁺ Sensing of a Chelation Based Fe²⁺ Probe

LI Ze-Ran, ZHU Jian-Ping, YU Han-Yang,
CHEN Yun-Cong, HE Wei-Jiang, GUO Zi-Jian

DOI:10.11862/CJIC.2019.223

Chinese J. Inorg. Chem., **2019**,**35**(11):2031-2037



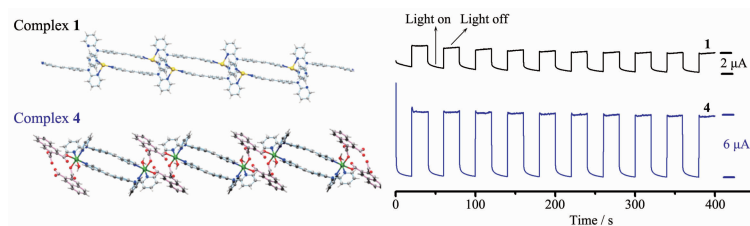
The probe BTPY was constructed via integrating a BODIPY fluorophore with terpyridine at α -position by a vinyl group. By combining absorption and fluorescence spectroscopy, BTPY is able to detect iron ions visually from metal ions commonly found in biological systems, and especially capable of distinguishing Fe²⁺ from Fe³⁺.

One-Dimensional Coordination Polymers Based on a Tripyridine Olefin Ligand: Synthesis, Structures and Photoelectronic Properties

CHEN Hui-Xian, LIU Chun-Yu, ZHOU Xuan,
CHEN Min-Min, NI Chun-Yan, LANG Jian-Ping

DOI:10.11862/CJIC.2019.228

Chinese J. Inorg. Chem., **2019**,**35**(11):2038-2044



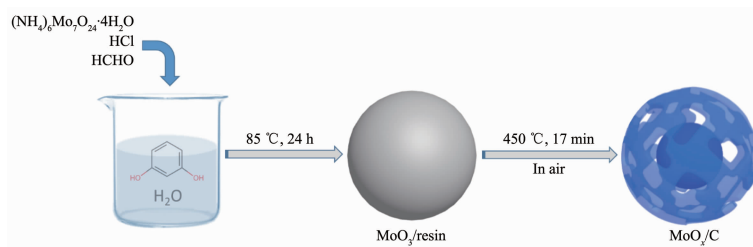
The reactions of a tripyridine olefin ligand (ppvppa) with Ag(I) or Ni(II) salts afforded four one-dimensional coordination polymers. Ag(I)-based complexes **1**~**3** showed good luminescent properties while no luminescence was observed for Ni(II)-based complex **4**. Complexes **1** and **4** as representative samples showed relatively prompt, rapid anodic photocurrent responses.

Preparation and Performance for Lithium Storage of Core-Shell-Structured MoO_3/C Microspheres

BAI Yu-Lin, WANG Cheng, WU Yue,
LIU Yu-Si, MA Chao, CAI Zhi-Peng,
WANG Kai-Xue, CHEN Jie-Sheng

DOI:10.11862/CJIC.2019.233

Chinese J. Inorg. Chem., **2019**,**35**(11):2045-2050



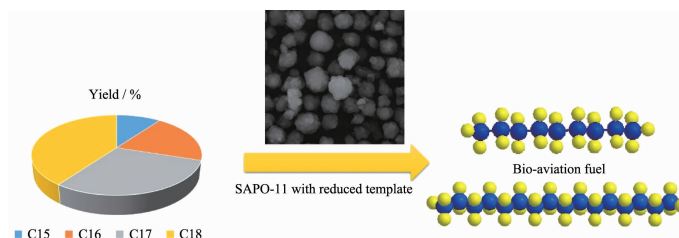
Core-shell-structured MoO_3/C microspheres were prepared through the calcination of a $\text{MoO}_3/\text{resin}$ precursor and showed excellent electrochemical lithium storage performance when used as an anode material for lithium-ion batteries.

Green Preparation of SAPO-11 and Application in the Production of Bio-aviation Fuel by Catalytic Hydrogenation of Palm Oil

LIU Si-Yang, BAI Yi-Fan, LI Wei

DOI:10.11862/CJIC.2019.242

Chinese J. Inorg. Chem., **2019**,**35**(11):2051-2056



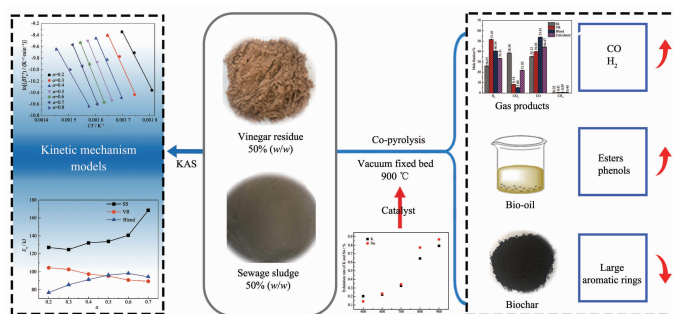
Bio-aviation fuel can be obtained by hydroisomerization palm oil HDO product (C15~C18) through SAPO-11 with reduced template as to reducing environment pollution.

Co-pyrolysis Characteristics of Sewage Sludge and Vinegar Residue and Migration Law of Alkali Metals

LI Qiang-Qiang, ZHANG Yang-Qian,
ZHENG Yan, ZHANG Yi-Min

DOI:10.11862/CJIC.2019.252

Chinese J. Inorg. Chem., **2019**,**35**(11):2057-2065



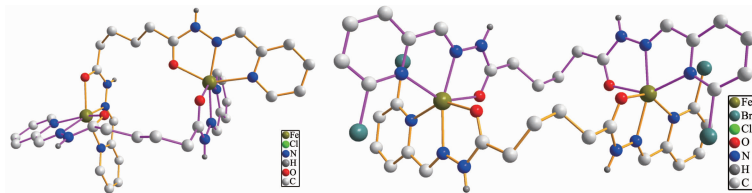
Co-pyrolysis of sewage sludge and vinegar residue was conducted in a thermogravimetric analyzer (TGA) and vacuum fixed bed reactor to investigate the effects of interactions on the products, kinetic behavior and the alkali metals migration rules.

Synthesis and Magnetism of Binuclear $\text{Fe}(\text{II})$ Complexes Based on Bis-pyridylhydrazone Schiff Base Ligands

ZHANG Nan, YUAN Juan, LIU Mei-Jiao,
JIN Yi-Shu, KOU Hui-Zhong

DOI:10.11862/CJIC.2019.234

Chinese J. Inorg. Chem., **2019**,**35**(11):2066-2072



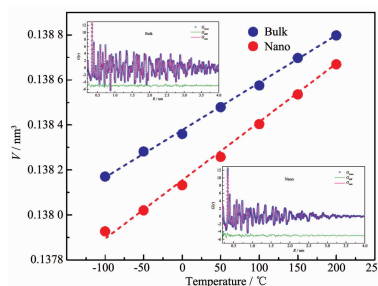
Compartmental bis-pyridylhydrazones coordinate to two $\text{Fe}(\text{II})$ ions, giving rise to high-spin binuclear complexes.

Synthesis and Thermal Expansion in Nanosized Hafnium Oxide

SUN Jing, LI Qiang, LIN Kun, LIU Zhan-Ning,
XING Xian-Ran

DOI:10.11862/CJIC.2019.249

Chinese J. Inorg. Chem., **2019**,**35**(11):2073-2077



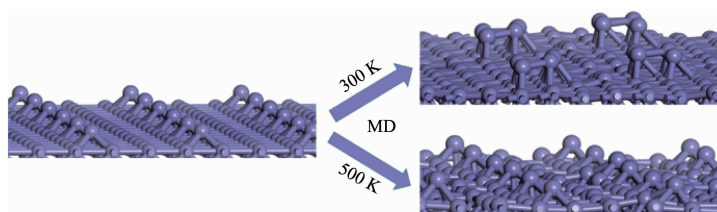
Hafnium oxide nanocrystals with average size of 4 nm were prepared. The thermal expansion property were measured by using the technique of X-ray pair distribution function. Compared with bulk material, hafnium oxide nanocrystals had an enhanced anisotropy on lattice thermal expansion, which derived from the structure distortion in nanocrystals.

Thermal Stability of Single Atom Metal Catalysts: ReaxFF Molecular Dynamics Study

YANG Wen-Qi, WANG Jie, QIAO Yuan-Yuan,
WANG Gui-Chang

DOI:10.11862/CJIC.2019.251

Chinese J. Inorg. Chem., **2019**,**35**(11):2078-2082



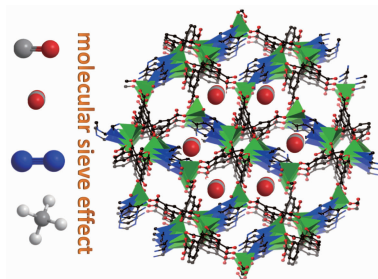
The stability research of single atom metal catalyst (SAC) model performed by MD simulation shows that Fe₁/Fe(100) can exist stable at relatively high temperature (~500 K) while other M₁/M(111) (M=Cu, Pt, Pd et.al) models occur aggregation phenomenon.

Selective Adsorption of CO₂ by Biological Metal-Organic Framework ZnBTCA

CAI Hong, WU Guang-Wei, LAI Jia-Li,
CHEN Jin-Ping, CHEN Yan-Fei, LI Dan

DOI:10.11862/CJIC.2019.236

Chinese J. Inorg. Chem., **2019**,**35**(11):2083-2088



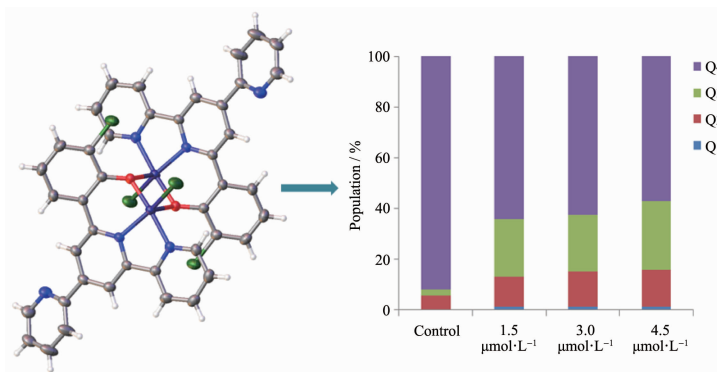
The unique adsorption behavior of ZnBTCA for CO₂ involving weak chemical interaction of N-active sites and molecular sieve effect.

Synthesis, Structural Characterization and Antitumor Activity of Copper(II) Complex of 4-(2-Hydroxy-3-chlorine)phenyl-2,2':6',2'-terpyridine

ZHONG Yu-Jun, CHEN Zhen-Feng,
LIANG Hong

DOI:10.11862/CJIC.2019.253

Chinese J. Inorg. Chem., **2019**,**35**(11):2089-2094



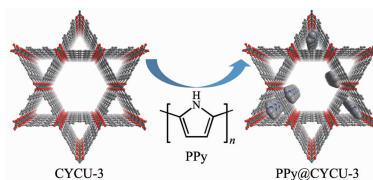
The anti-tumor activity of a new copper(II) complex (**1**) of 4-(2-hydroxy-3-chloro)phenyl-2,2':6',2'-tribipyridine was synthesized and characterized. Its IC₅₀ value is (3.36 ± 0.43) μmol · L⁻¹ toward MGC80-3 cells. Complex **1** could significantly induce apoptosis of MGC80-3 cells.

Synthesis and Conductivity of Polypyrrole in CYCU-3

ZHOU Ying-Xi, WANG Hui-Feng, SUN Fu-Xing

DOI:10.11862/CJIC.2019.238

Chinese J. Inorg. Chem., **2019**,**35**(11):2095-2100



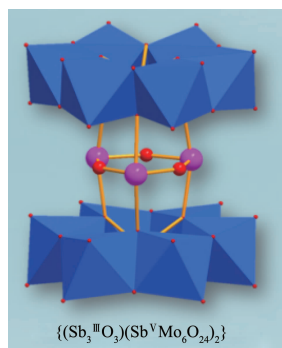
The polymerization of pyrrole was carried out in the pores of a metal-organic framework (MOF) called CYCU-3 with one-dimensional (1D) mesoporous channels. The composite combines the properties of conductivity and porosity.

Synthesis, Structure and Properties of a Sandwich-Type Polyoxomolybdate Containing Mixed-Valence Antimony

YANG Zong-Fei, MU Qiu-Shui, WANG Ya-Ping, MA Peng-Tao, WANG Jing-Ping, NIU Jing-Yang

DOI:10.11862/CJIC.2019.245

Chinese J. Inorg. Chem., **2019**,**35**(11):2101-2107



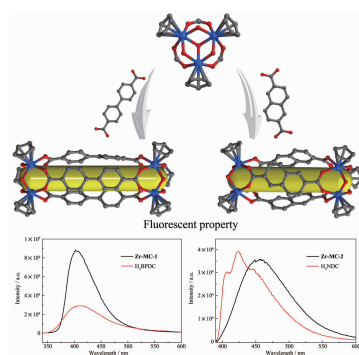
A new type of polyoxomolybdate containing mixed-valence antimony, $[(\text{Sb}_3\text{O}_3)(\text{Sb}^{\text{V}}\text{Mo}_6\text{O}_{24})_2]^{11-}$, has been isolated in aqueous solution, which exhibits intriguing allochroic properties.

Synthesis, Crystal Structures and Fluorescence Properties of Two Nanosized Zr-Based Molecular Capsules (English)

TAO Yan-Li, CHEN Wei-Chao, WANG Xin-Long, SU Zhong-Min

DOI:10.11862/CJIC.2019.224

Chinese J. Inorg. Chem., **2019**,**35**(11):2108-2116



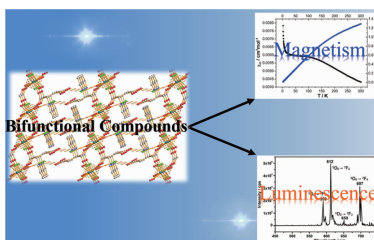
Two new nanosized Zr-based MCs constructed from trinuclear $\text{Cp}_3\text{Zr}_3(\mu_3\text{-O})(\mu_2\text{-OH})_3$ SBUs and linear dicarboxylate ligands have been obtained, which might be excellent candidates of blue-light-emitting diode devices.

Bi-functional Lanthanide Compounds: Synthesis, Structures, Magnetism and Fluorescence (English)

HAN Yong-Fang, CAI Li-Zhen, GUO Guo-Cong

DOI:10.11862/CJIC.2019.229

Chinese J. Inorg. Chem., **2019**,**35**(11):2117-2124



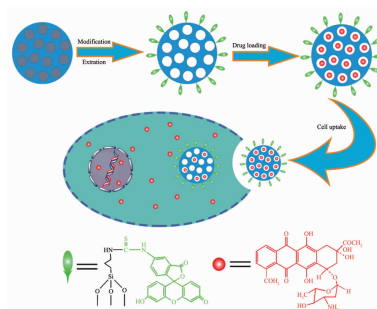
The structure, magnetism and fluorescence of two isostructural lanthanide (Ln) compounds with the *N*-succinopyridine (HL) ligand, namely $[\text{Ln}(\text{HL})_2(\text{H}_2\text{O})_4]\text{Cl}_3$ (Ln=Pr (**1**), Eu (**2**)), have been studied and discussed. The magnetic studies revealed the presence of antiferromagnetic interaction between Pr(III) ions for **1** but weak ferromagnetic interactions between Eu(III) ions for **2**. And **2** emitted intense red luminescence at room temperature.

Synthesis of Fluorescent Mesoporous Silica Nanoparticles and Application for Intracellular Drug Delivery (English)

CHEN Min-Min, GENG Hao-Ran, HU Jin-Xia,
ZHANG Qiong, Godfred Amfo Agyekum,
ZHANG Zhuo-Qi, CAO Xi-Chuan

DOI:10.11862/CJIC.2019.244

Chinese J. Inorg. Chem., **2019**,**35**(11):2125-2135



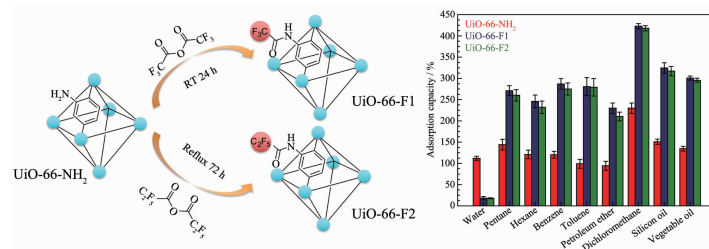
MSNs functionalized with fluorescein isothiocyanate (FITC), as the intracellular tracer, plays critical role in anti-cancer drug delivery application due to the potential for simultaneous intracellular tracing and treatment of diseases.

Postsynthetic Modification of UiO-66 with Perfluoroalkyl for Adsorbing Organic Pollutants (English)

XU Meng-Ying, SONG Gan-Lin, HAN Bao-Hang

DOI:10.11862/CJIC.2019.247

Chinese J. Inorg. Chem., **2019**,**35**(11):2136-2144



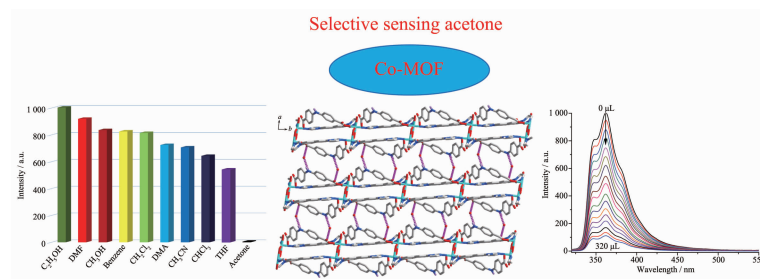
Two hydrophobic metal-organic frameworks were prepared by postsynthetic modification. The modified materials can effectively adsorb organic liquid and aromatic compounds dissolved in water.

Metal-Organic Frameworks with 2,6-Di(1*H*-imidazol-1-yl)naphthalene and Dicarboxylate Ligands: Synthesis, Crystal Structure and Photoluminescence Sensing Property (English)

LIU Zhi-Qiang, CAO Shi-Hu, ZHANG Zhe,
WU Jun-Feng, ZHAO Yue, SUN Wei-Yin

DOI:10.11862/CJIC.2019.225

Chinese J. Inorg. Chem., **2019**,**35**(11):2145-2151

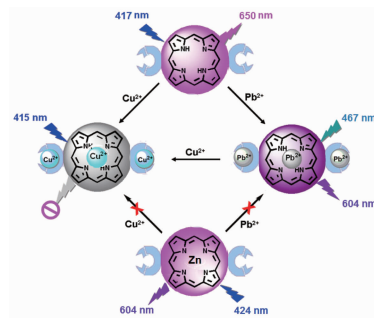


Receptor Influence on Sensing Performance of Metal-Free Porphyrin Sensor (English)

GENG Cong, ZHENG Hui, CHEN Yu-Ting,
JIANG Jian-Zhuang

DOI:10.11862/CJIC.2019.235

Chinese J. Inorg. Chem., **2019**,**35**(11):2152-2158



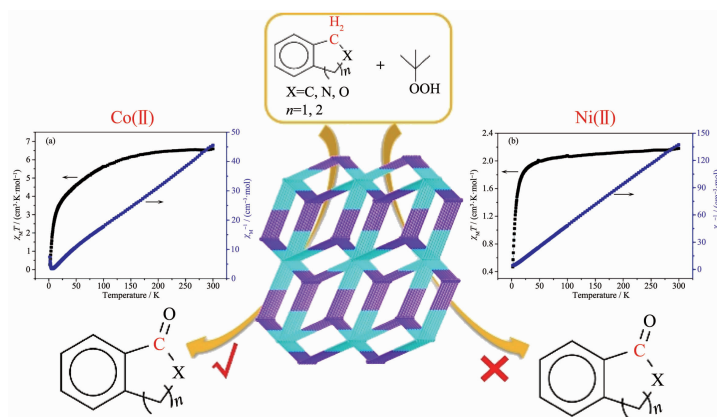
A metal-free tetra(aryl)porphyrin chemosensor with two *N,N*-bis(2-pyridylmethyl) amino groups (DPA) was synthesized for Pb²⁺/Cu²⁺ on the basis of dual-optical signals due to combined action of the rigid tetrapyrrole macrocyclic primary receptor with the no-conjugated DPA auxiliary receptor.

Synthesis, Crystal Structure, Magnetic Properties and Catalytic Activity of Co(II)/Ni(II) Complexes with 3,3'-(Pyridine-3,5-diyl) Dibenzoic Acid (English)

HAN Xiao, SHAO Zhi-Chao, ZHAO Bei, REN Ning, DING Jie, MENG Xiang-Ru, HOU Hong-Wei

DOI:10.11862/CJIC.2019.241

Chinese J. Inorg. Chem., 2019,35(11):2159-2167

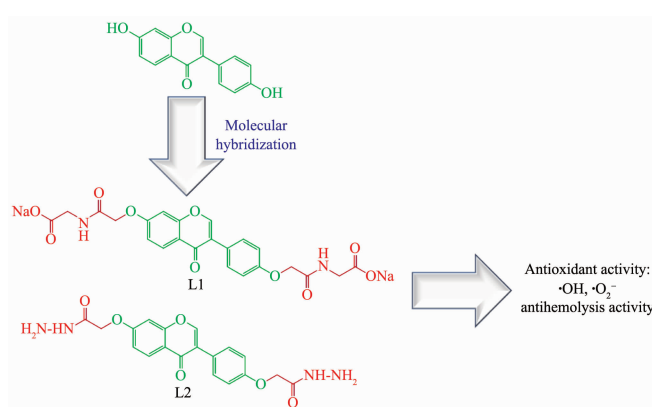


Anti-hemolysis of Human Erythrocytes by Two Daidzein Derivatives Containing Nitrogen (English)

LIU Hui-Qing, YU Mei-Xuan, SONG Jing-Lei, YAN Xi, XU Ning, HAO Hai-Jun

DOI:10.11862/CJIC.2019.240

Chinese J. Inorg. Chem., 2019,35(11):2168-2176

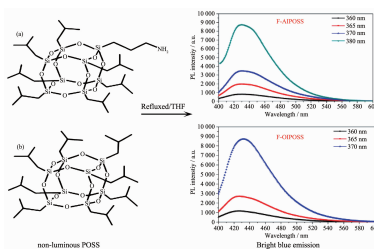


A Unique Luminescence Behavior Based on Polyhedral Oligomeric Silsesquioxane Compounds (English)

ZHANG Qing-Rui, SONG Ming-Xing, DENG Rui-Ping, ZHOU Liang, ZHANG Hong-Jie

DOI:10.11862/CJIC.2019.248

Chinese J. Inorg. Chem., 2019,35(11):2177-2184



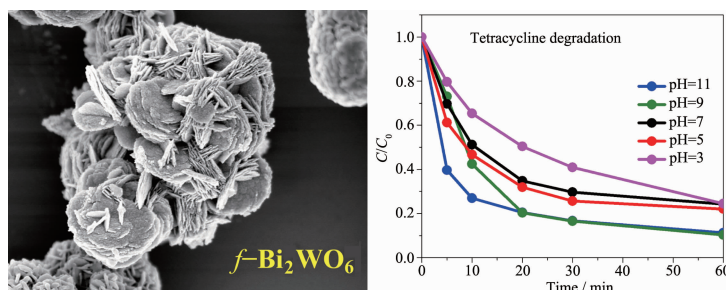
The non-luminous POSS AIPPOSS (a) and OIPPOSS (b) showed bright blue luminescence after heating and refluxed in their THF solutions. It is investigated and supposed to be attributed to the formation of the POSS/solvent adducts, which modulate the electronic structures of the POSS compounds, and consequently lead to the unique luminescence behavior.

Hydrothermal Synthesis of Hierarchically Structured Flower-like Bismuth Tungstate for Photocatalytic Tetracycline Degradation (English)

ZHANG Yu-Qing, ZENG Xue-Yu, YU Kai, LIU Gui-Fang, CAO Hai-Lei, LÜ Jian, CAO Rong

DOI:10.11862/CJIC.2019.243

Chinese J. Inorg. Chem., 2019,35(11):2185-2191



The hierarchically structured flower-like bismuth tungstate is able to produce various active species toward the degradation of tetracycline antibiotics (tetracycline and oxytetracycline) under visible light irradiation.