

无机化学学报

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CHINESE JOURNAL OF INORGANIC CHEMISTRY

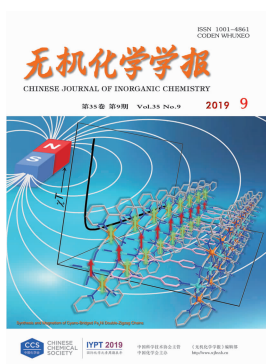
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Synthesis and Magnetism of Cyano-Bridged Fe₂Ni Double-Zigzag Chains (English)

HE Yan-Li, MENG Yin-Shan, SUN Hui-Ying, JIANG Wen-Jing, JIAO Cheng-Qi, LIU Tao

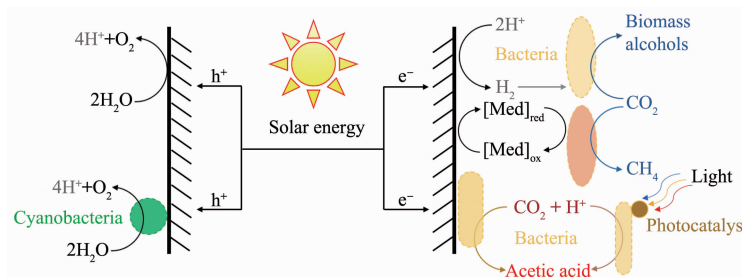
DOI:10.11862/CJIC.2019.176

Chinese J. Inorg. Chem., **2019**,**35**(9):1570-1578

Reviews

Semi-artificial Photosynthesis Based on Inorganic Material-Microbe Hybrids

XIONG Wei, FENG Jian-Yong, MA Wei-Min, ZHAO Jing, LI Zhao-Sheng, ZOU Zhi-Gang



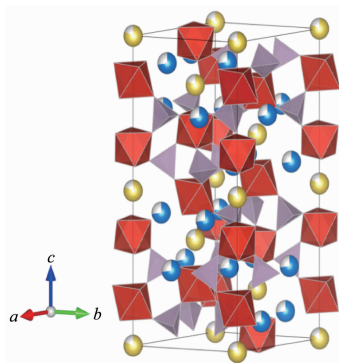
Semi-artificial photosynthesis based on inorganic material-microbe hybrid is a new strategy for solar-chemical energy conversion, which aim to conjunct catalytic selectivity of microbe and photo-response property of inorganic materials. This review expounds semi-artificial photosynthesis based on inorganic material-microbe hybrid from semi-artificial water oxidation, semi-artificial photosynthetic reduction and material-microbe interface.

DOI:10.11862/CJIC.2019.186

Chinese J. Inorg. Chem., **2019**,**35**(9):1521-1534

Research Progress on NASICON-Type Cathode Materials for Sodium Ion Batteries

GU Zhen-Yi, GUO Jin-Zhi, YANG Yang, ZHAO Xin-Xin, YANG Xu, NIE Xue-Jiao, HE Xiao-Yan, WU Xing-Long



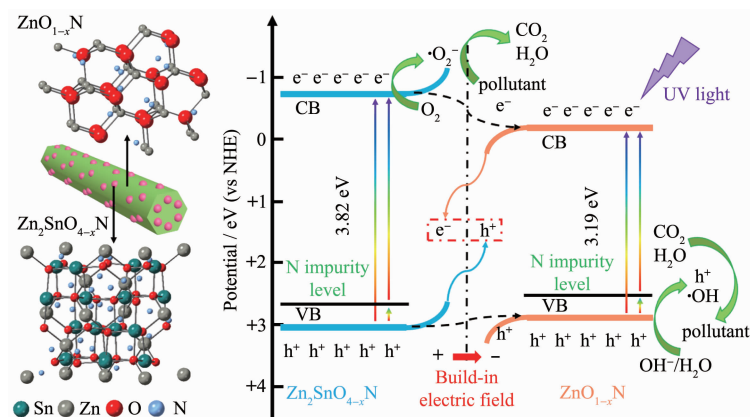
Amongst all types of cathodes for sodium-ion batteries (SIBs), Na superionic conductor (NASICON) type materials are one class of compounds with ultrafast Na⁺ transformation and high structural stability during the successive de-sodiation/sodiation processes, suggesting its obvious application possibility for actual SIBs.

DOI:10.11862/CJIC.2019.188

Chinese J. Inorg. Chem., **2019**,**35**(9):1535-1550

Synthesis and Mechanism of Direct Z-Scheme $\text{Zn}_2\text{SnO}_{4-x}\text{N}_x/\text{ZnO}_{1-y}\text{N}_y$ Heterojunction Photocatalyst

WANG Min, TAN Guo-Qiang, ZHANG Dan, LI Bin, WANG Ying, DANG Ming-Yue, REN Hui-Jun, XIA Ao, LIU Yun



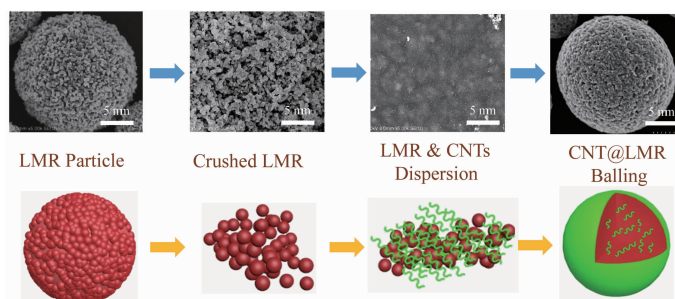
Z-scheme $\text{Zn}_2\text{SnO}_{4-x}\text{N}_x/\text{ZnO}_{1-y}\text{N}_y$ with dual impurity levels and built-in electric field exhibited wider light absorption and faster separation efficiency of photoinduced charge carriers, resulting in the enhanced photocatalytic activity.

DOI:10.11862/CJIC.2019.161

Chinese J. Inorg. Chem., 2019,35(9):1551-1560

A Strategy for Carbon Nanotubes Modified Lithium-Manganese-Rich Cathode Material

LI Zhao, WANG Zhong, LI Qiang, BAN Li-Qing, ZHUANG Wei-Dong, LU Shi-Gang



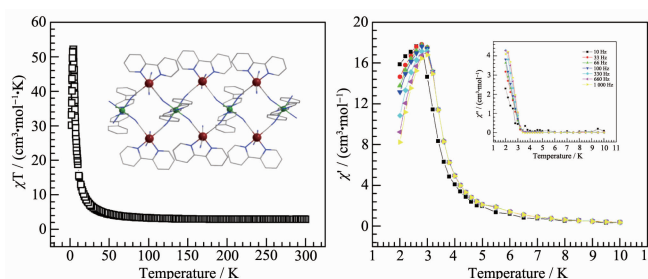
Carbon nanotubes modified lithium-manganese-rich composite cathode materials (CNT@LMR) were synthesized by compressed air crush, high pressure microfluidization dispersion and spray dehydration, and showed higher rate capability and cycle stability.

DOI:10.11862/CJIC.2019.192

Chinese J. Inorg. Chem., 2019,35(9):1561-1569

Synthesis and Magnetism of Cyano-Bridged Fe_2Ni Double-Zigzag Chains (English)

HE Yan-Li, MENG Yin-Shan, SUN Hui-Ying, JIANG Wen-Jing, JIAO Cheng-Qi, LIU Tao



Three cyano-bridged Fe_2Ni chains were synthesized via using cyanometallate building blocks and auxiliary ligands with different steric hindrance. Compound **1** displayed single-chain magnet behavior with the relaxation energy barrier E_a/k_B of 10.9 K. Compounds **2** and **3** showed ferromagnetic behavior.

DOI:10.11862/CJIC.2019.176

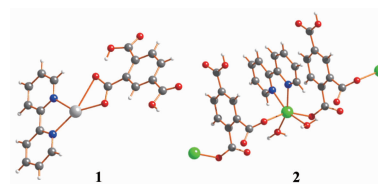
Chinese J. Inorg. Chem., 2019,35(9):1570-1578

Syntheses, Crystal Structures, Thermal Stabilities and Fluorescence Properties of Silver(I) and Cadmium(II) Complexes Based on 1,2,4-Benzenetricarboxylic Acid and 2,2'-Bipyridine

YANG Hong-Li, CHEN Fang, ZHANG Dan, HE Xiong, ZHANG Xiu-Qing

DOI:10.11862/CJIC.2019.193

Chinese J. Inorg. Chem., **2019**,**35**(9):1579-1585



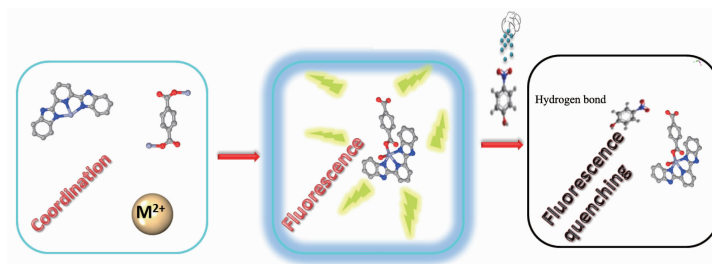
Two transition metal complexes, $[\text{Ag}(\text{H}_2\text{btc})(\text{bpy})]$ (**1**) and $[\text{Cd}(\text{Hbtc})(\text{bpy})(\text{H}_2\text{O})_2]_n$ (**2**), were synthesized under pH-controlled hydrothermal conditions, and both complexes have fluorescent properties.

Two Metal-Organic Coordination Polymer for Fluorescence Detection of 4-Nitrophenol

HU Zhuo, LUO Ran, WANG Shu-Hua, ZHANG Ning, CHEN Chao

DOI:10.11862/CJIC.2019.191

Chinese J. Inorg. Chem., **2019**,**35**(9):1586-1592



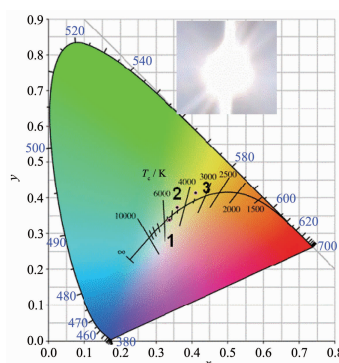
Two kinds of luminescent metal-organic coordination polymers were synthesized by hydrothermal method using 2,6-bis (benzimidazolyl)pyridine and terephthalic acid as the ligands. Fluorescence detection shows that they have obvious fluorescence quenching effect on 4-nitrophenol.

Soft-Chemical Preparation and Performance of Red Phosphor $\text{Cs}_2\text{SiF}_6:\text{Mn}^{4+}$ for White LEDs

LIU Man-Man, GENG Ai-Fang, YAN Jing-Hui, LIAN Hong-Zhou

DOI:10.11862/CJIC.2019.179

Chinese J. Inorg. Chem., **2019**,**35**(9):1593-1601



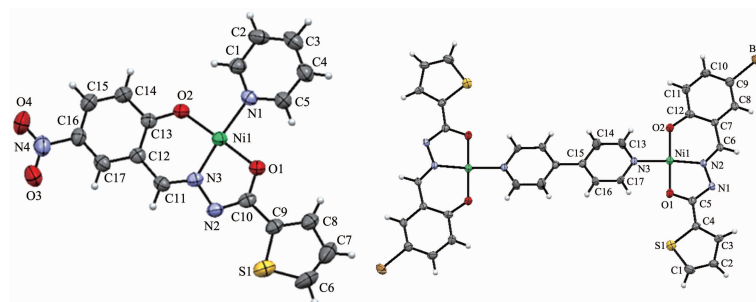
A new method combining ion exchange and co-precipitation was used to prepare $\text{Cs}_2\text{SiF}_6:\text{Mn}^{4+}$ red optical material. The optical properties of the materials were studied by various characterization methods, and warm white light in the devices are realized.

Two Nickel(II) Complexes with Hydrazone Ligands: Hydrothermal Syntheses, Structures, Antitumor Activities and Quantum Chemical Calculation

CHEN Yan-Min, XIE Qing-Fan

DOI:10.11862/CJIC.2019.180

Chinese J. Inorg. Chem., **2019**,**35**(9):1602-1608



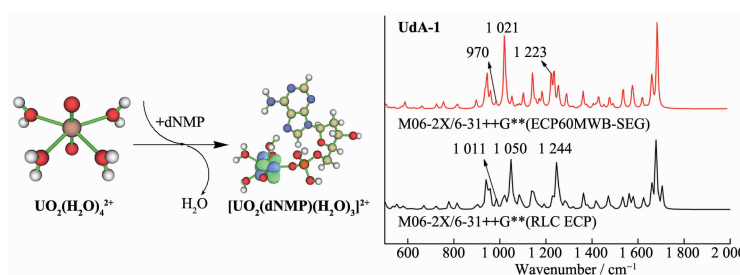
Two nickel(II) complexes with different hydrazone ligand and pyridine or 4,4'-bipyridine as co-ligand have been hydrothermally synthesized. Both complexes have strong *in vitro* antitumor activity against human acute promyelocytic leukemia cells HL-60.

Theoretical Calculations of Interaction between Four Deoxyribonucleotides and Hydrated Uranyl Ion in Aqueous Solution

MOU Yong-Xiao, CAO Jian-Ping,
CHEN Yuan-Yuan, WEI Tao, WANG Chao-Jie

DOI:10.11862/CJIC.2019.197

Chinese J. Inorg. Chem., 2019,35(9):1609-1618



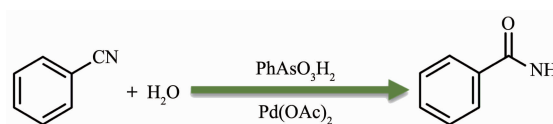
The geometric structures, binding energies and electronic structures of $[\text{UO}_2(\text{dNMP})(\text{H}_2\text{O})_3]^{2+}$ in aqueous phase have been studied using density functional theory (DFT) method M06-2X with RLC ECP and ECP60MWB-SEG basis sets.

Preparation of Benzamide by Hydration of Benzonitrile with Palladium Acetate and Phenylarsonic Acid as Synergistic Catalyst

WANG Tao, LIN Zheng-Guo, HU Chang-Wen

DOI:10.11862/CJIC.2019.181

Chinese J. Inorg. Chem., 2019,35(9):1619-1622



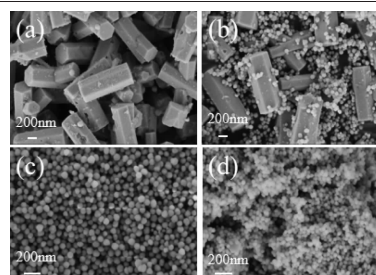
A new strategy for benzonitrile hydration by using palladium acetate and phenylarsonic acid (molar ratio $n_{\text{Pd}}:n_{\text{As}}=3:2$) as highly efficient and recyclable catalyst was presented.

Effect of Microwave-Assisted Hydrothermal Reaction Parameters on Phase, Morphology and Luminescence Properties of $\text{NaYF}_4:\text{Dy}^{3+}$ Phosphors

GAO Duan, CHENG Li-Hong, CHEN Bao-Jiu,
LIU Sheng-Yi, LI Xiang-Ping, SUN Jia-Shi,
XU Sai, ZHANG Jin-Su

DOI:10.11862/CJIC.2019.203

Chinese J. Inorg. Chem., 2019,35(9):1623-1634



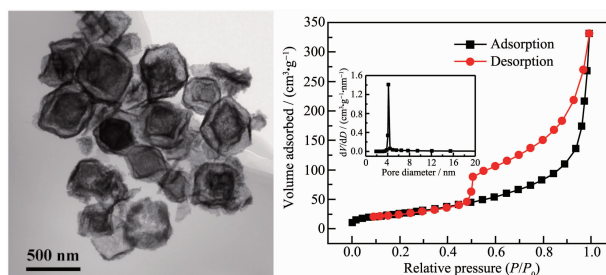
As the amounts of EDTA-2Na increased, the morphology of $\text{NaYF}_4:\text{Dy}^{3+}$ changed, and the overall trend transformed from rod to sphere. Combined with the XRD pattern, it can be found that the crystal phase of the sample changes from hexagonal phase to cubic phase. The luminescence intensity of the sample was gradually weakened with more EDTA-2Na, indicating that the hexagonal phase NaYF_4 luminescence intensity is higher than the cubic phase NaYF_4 luminescence intensity, and the hexagonal phase NaYF_4 material with high luminescence efficiency may have potential applications in photonic devices.

Preparation and Electrochemical Properties of ZIF-Skeleton Double-Shell Nanocage $\text{CoS}/\text{NiCo}_2\text{S}_4$

XIE Fang, REN Yu, ZHOU Yu-Qing,
SUN Yue-Ming, WANG Yu-Qiao

DOI:10.11862/CJIC.2019.196

Chinese J. Inorg. Chem., 2019,35(9):1635-1641

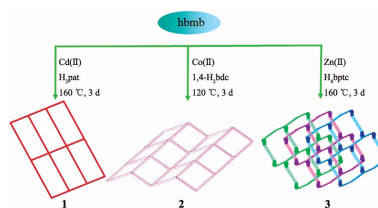


The supercapacitor based on $\text{CoS}/\text{NiCo}_2\text{S}_4$ exhibited high specific capacitance and stability, due to its high specific surface area ($98 \text{ m}^2 \cdot \text{g}^{-1}$), abundant interconnected channel (4 nm pore diameter), and stable cavity skeleton.

Syntheses, Characterization and Crystal Structures of Cd(II)/Co(II)/Zn(II) Complexes Based on Flexible Bis(methylbenzimidazole) and Carboxylate Ligands (English)

ZHANG Zhao-Pei, Vlasenko Volodymyr Anatoliyovych, Liu Run-Qiang, YANG Li, LIU Lu, ZHANG Yu-Ping

DOI:10.11862/CJIC.2019.194
Chinese J. Inorg. Chem., **2019**,35(9):1642-1650

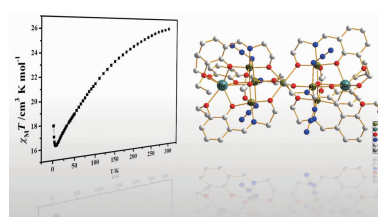


Complex **1** is a flat 4-connected 2D topology net with point symbol of $(4^4 \cdot 6^2)$, complex **2** features a undulated 2D network with point symbol of $(4^2 \cdot 6)(4^2 \cdot 6^3 \cdot 8)$, while complex **3** (3,4,4)-connected 3-fold interpenetrating network with a vertex symbol of $(4^2 \cdot 6^2 \cdot 8^2)(4 \cdot 6^2)(4 \cdot 6^4 \cdot 8)$ topology.

Heptanuclear Manganese Complexes with Schiff-Base Ligand: Syntheses, Crystal Structures and Magnetic Properties (English)

YANG Li-Guo, WANG Fang, GENG Cui-Huan, YU Zhi-Chao, WANG Xin, WANG Kai, ZHANG Yong-Hui, NIU Yong-Sheng, LI Da-Cheng

DOI:10.11862/CJIC.2019.164
Chinese J. Inorg. Chem., **2019**,35(9):1651-1658

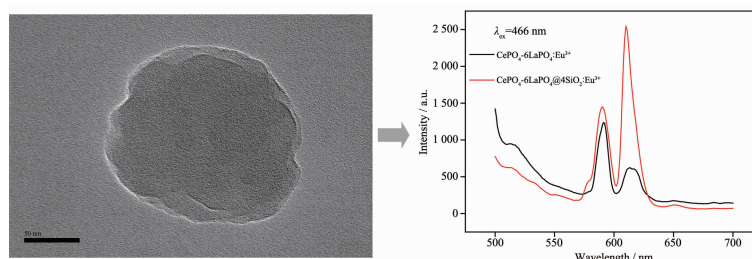


Two new mixed-valence heptanuclear manganese complexes, $[\text{Na}_2\text{Mn}^{\text{II}}\text{Mn}^{\text{III}}\text{O}_6(\text{L})_6(\text{N}_3)_4(\text{CH}_3\text{COO})_2] \cdot 4\text{DMF}$ (**1**) and $[\text{Na}_2\text{Mn}^{\text{II}}\text{Mn}^{\text{III}}\text{O}_6(\text{L})_6(\text{SCN})_4(\text{CH}_3\text{COO})_2] \cdot 2\text{DMF}$ (**2**) ($\text{H}_2\text{L} = 3\text{-ethoxy-6-}((2\text{-hydroxyethyl})\text{imino})\text{methyl phenol}$) were synthesized and characterized by single crystal X-ray diffraction. The magnetic property of the complexes was studied.

Luminescent Properties of a Red Phosphor $\text{CePO}_4\text{-6LaPO}_4\text{:Eu}^{3+}$ (English)

LIU Ru, WANG Xi-Gui

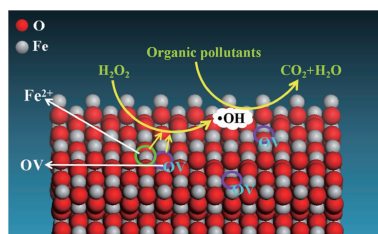
DOI:10.11862/CJIC.2019.202
Chinese J. Inorg. Chem., **2019**,35(9):1659-1664



Core-shell structure like $\text{CePO}_4\text{-6LaPO}_4\text{:Eu}^{3+}$ was fabricated via cladding SiO_2 , which was more conducive to the doping of Eu^{3+} and improved red luminescent properties of the sample.

Surface-Electronic-State-Modulated, Single-Crystalline (001) $\alpha\text{-Fe}_2\text{O}_3$ Nanosheets with Dual Reaction Sites for Efficient Fenton-Like Catalysis (English)

QIU Jiang-Yuan, QIN Fang-Hong, XIAO Bi-Yuan, ZHANG Mei-Ting, WAN Ting, LIU Jin-Ping, CHEN Jian-Hua, HUANG Zai-Ying



The oxygen-deficient $\alpha\text{-Fe}_2\text{O}_{3-x}$ with dual reaction sites (Fe^{2+} and oxygen vacancy) for H_2O_2 activation. Meanwhile, the oxygen vacancy sites which favors the adsorption of organic pollutant and the generated $\cdot\text{OH}$ to rapid react with adjacent adsorbed pollutant, thus showing excellent Fenton-like catalytic performance.

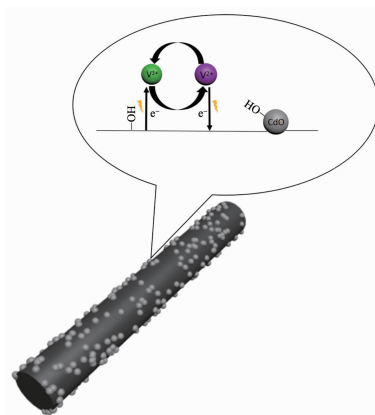
DOI:10.11862/CJIC.2019.199
Chinese J. Inorg. Chem., **2019**,35(9):1665-1677

CdO-Modified Graphite Felt as a High-Performance Negative Electrode for a Vanadium Redox Flow Battery (English)

XIAO Qin-Hao, WANG Lei, LI Dan,
JING Wen-Heng

DOI:10.11862/CJIC.2019.200

Chinese J. Inorg. Chem., **2019**,**35**(9):1678-1686



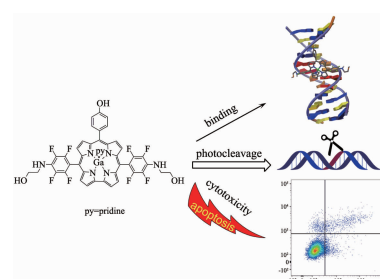
CdO-modified graphite felt (CdO/GF) was synthesized by the hydrothermal method. CdO/GF effectively inhibited the activity of the hydrogen evolution reaction, and exhibit increased electrochemical activity and reversibility for the V^{3+}/V^{2+} redox couple relative to graphite felt. These performance can be attributed to the the well-deposited CdO nanoparticles, which play an important role as an electrocatalyst for the redox reaction of V^{3+}/V^{2+} .

Tri-hydroxyl Corrole and Its Gallium(III) Complex: DNA-Binding, Photocleavage and *in Vitro* Photodynamic Antitumor Activities (English)

CHEN Xuan, WANG Hua-Hua, Waseem Akram,
SUN Yan-Mei, LIAO Yu-Hui, SI Li-Ping,
LIU Hai-Yang, Chi-Kwong Chang

DOI:10.11862/CJIC.2019.201

Chinese J. Inorg. Chem., **2019**,**35**(9):1687-1697



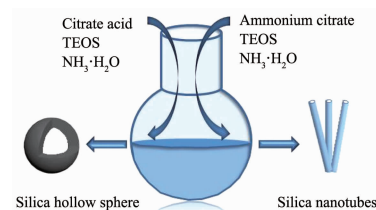
Tri-hydroxyl gallium(III) corrole binds to CT-DNA via outside groove binding mode and exhibits good photonuclease activity. They demonstrated high photocytotoxic activity against tumor cells.

One-Step Controllable Synthesis of Silica Nanotubes and Hollow Spheres (English)

LIU Yang, PAN Zhao-Rui, SHI Xiao-Ran,
LANG Lei-Ming

DOI:10.11862/CJIC.2019.198

Chinese J. Inorg. Chem., **2019**,**35**(9):1698-1704



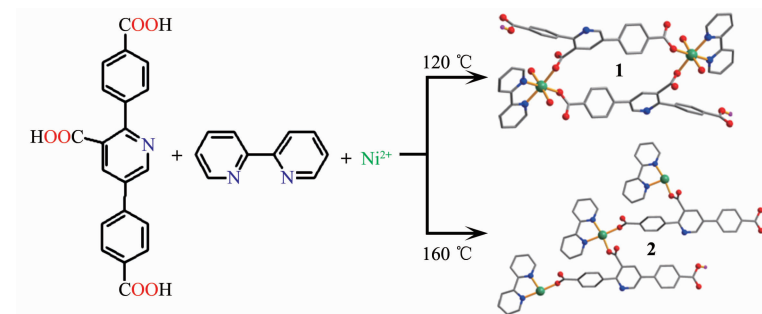
Novel uniform silica nanotubes and hollow spheres were controllably fabricated in the same reaction system by a simple sol-gel method using ammonium citrate and citrate acid as a structure-directing agent, respectively.

Syntheses of Two Nickel(II) Coordination Compounds Based on a Rigid Linear Tricarboxylic Acid (English)

ZOU Xun-Zhong, WU Jiang, GU Jin-Zhong,
ZHAO Na, FENG An-Sheng, LI Yu

DOI:10.11862/CJIC.2019.190

Chinese J. Inorg. Chem., **2019**,**35**(9):1705-1711



Zero dimensional dinuclear nickel(II) coordination compound $[Ni_2(\mu-HL)_2(2,2'-bipy)_2(H_2O)_4] \cdot 6H_2O$ (**1**) and 1D nickel(II) coordination polymer $\{[Ni(\mu-HL)(2,2'-bipy)(H_2O)_2] \cdot H_2O\}_n$ (**2**) have been constructed and the structures and magnetic properties of the compounds were investigated.