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Synthesis and Magnetism of Cyano-Bridged Fe$_2$Ni 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


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

DOI:10.11862/CJIC.2019.186


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

DOI:10.11862/CJIC.2019.188


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.

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.
Synthesis and Mechanism of Direct Z-Scheme Zn₃SnO₆₋ₓNₓ/ZnO₋ₓNₓ Heterojunction Photocatalyst

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

DOI:10.11862/CJIC.2019.161

Z-scheme Zn₃SnO₆₋ₓNₓ/ZnO₋ₓNₓ with dual impurity levels and build-in electric field exhibited wider light absorption and faster separation efficiency of photoinduced charge carriers, resulting in the enhanced photocatalytic activity.

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

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

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

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Synthesis and Magnetism of Cyano-Bridged Fe₃Ni 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

Three cyano-bridged Fe₃Ni 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 \( E_r/k_B \) of 10.9 K. Compounds 2 and 3 showed ferromagnetic behavior.
Syntheses, Crystal Structures, Thermal Stabilities and Fluorescence Properties of Silver(1) and Cadmium(IIl) Complexes Based on 1,2,4-Benzene-tricarboxylic Acid and 2,2′-Bipyridine

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

DOI:10.11862/CJIC.2019.193

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

Soft-Chemical Preparation and Performance of Red Phosphor Cs$_{2}$SiF$_{6}$Mn$^{4+}$ for White LEDs

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

DOI:10.11862/CJIC.2019.179

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

CHEN Yan-Min, XIE Qing-Fan

DOI:10.11862/CJIC.2019.180

Two transition metal complexes, [Ag(H$_{2}$btc)(bpy)] (I) and [Cd(H$_{2}$btc)(bpy)(H$_{2}$O)$_{2}$], (2), were synthesized under pH-controlled hydrothermal conditions, and both complexes have fluorescent properties.

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.

A new method combining ion exchange and co-precipitation was used to prepare Cs$_{2}$SiF$_{6}$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(Ill) complexes with different hydrazine 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

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

Effect of Microwave-Assisted Hydrothermal Reaction Parameters on Phase, Morphology and Luminescence Properties of NaYF₄:Dy³⁺ 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

Preparation and Electrochemical Properties of ZIF-Skeleton Double-Shell Nanocage CoS/NiCo₂S₄

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

DOI:10.11862/CJIC.2019.196

The geometric structures, binding energies and electronic structures of [UO₂(dNMP)(H₂O)]²⁺ in aqueous phase have been studied using density functional theory (DFT) method M06-2X with RLC ECP and ECP60MWB-SEG basis sets.

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

As the amounts of EDTA-2Na increased, the morphology of NaYF₄:Dy³⁺ 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 NaYF₄ luminescence intensity is higher than the cubic phase NaYF₄ luminescence intensity, and the hexagonal phase NaYF₄ material with high luminescence efficiency may have potential applications in photonic devices.

The supercapacitor based on CoS/NiCo₂S₄ exhibited high specific capacitance and stability, due to its high specific surface area (98 m² g⁻¹), abundant interconnected channel (4 nm pole diameter), and stable cavity skeleton.
Syntheses, Characterization and Crystal Structures of Gd(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

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

Luminescent Properties of a Red Phosphor CePO₄-6LaPO₄@4SiO₂:Eu³⁺ (English)

LIU Ru, WANG Xi-Gui

DOI:10.11862/CJIC.2019.202

Surface-Electronic-State-Modulated, Single-Crystalline (001) α-Fe₂O₃ 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 Jun-Ping, CHEN Jian-Hua, HUANG Zai-Ying

DOI:10.11862/CJIC.2019.199
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


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 $\text{V}^{3+}/\text{V}^{2+}$ redox couple relative to graphite felt. These performance can be attributed to the well-deposited CdO nanoparticles, which play an important role as an electrocatalyst for the redox reaction of $\text{V}^{3+}/\text{V}^{2+}$.

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


Tri-hydroxyl gallium(III) corrole binds to CT-DNA via outside groove binding mode and exhibits good photomolecule 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


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


Zero dimensional dinuclear nickel(II) coordination compound $\text{[Ni}_2(\mu-\text{HL})_2(2,2'-\text{bipy})_2(\text{H}_2\text{O})_4\cdot6\text{H}_2\text{O} \ (1)$ and 1D nickel(II) coordination polymer $\text{[Ni}_2(\mu-\text{HL})_2(2,2'-\text{bipy})_2(\text{H}_2\text{O})_2\cdot4\text{H}_2\text{O}\cdot3\text{H}_2\text{O} \ (2)$ have been constructed and the structures and magnetic properties of the compounds were investigated.