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Cover



Photocatalytic Hydrogen Evolution from Water Splitting Using Semiconductors: Advance, Challenge and Prospects

XIE Ying-Peng, WANG Guo-Sheng, ZHANG En-Lei, ZHANG Xiang

DOI:10.11862/CJIC.2017.030

Chinese J. Inorg. Chem., **2017**,**33**:177-209

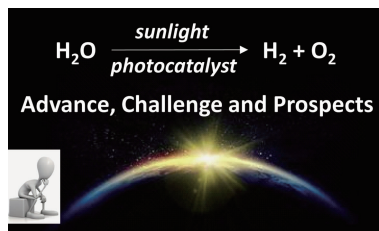
Reviews

Photocatalytic Hydrogen Evolution from Water Splitting Using Semiconductors: Advance, Challenge and Prospects

XIE Ying-Peng, WANG Guo-Sheng,
ZHANG En-Lei, ZHANG Xiang

DOI:10.11862/CJIC.2017.030

Chinese J. Inorg. Chem., **2017**,**33**:177-209



The principles, advances and challenges of photocatalytic water splitting were introduced, reviewed and discussed.

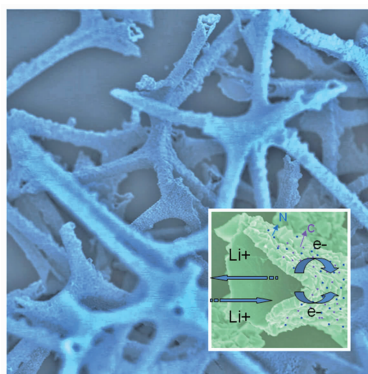
Articles

Synthesis and Electrochemical Properties of Manganese Oxides/Carbon-Nitrogen Three-Dimensional Networks Composite as an Anode Material for Lithium Ion Batteries

YANG Rong, LIU Xu-Wang, PENG Lu-Ming

DOI:10.11862/CJIC.2017.025

Chinese J. Inorg. Chem., **2017**,**33**:210-218



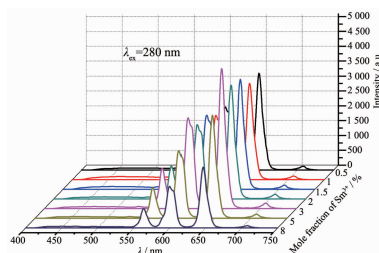
A manganese oxides/CN three-dimensional networks composite was conveniently prepared with a high capacity as an anode material for lithium ion batteries.

Controllable Morphology and Luminescence Properties of $\text{SrMoO}_4\text{:Sm}^{3+},\text{Na}^+$ Red Emitting Phosphors

WU Jin-Xiu, LI Mei, CUI Shong-Shong,
LIU Zhao-Gang, HU Yan-Hong,
WANG Mi-Tang

DOI:10.11862/CJIC.2017.036

Chinese J. Inorg. Chem., **2017**,**33**:219-226



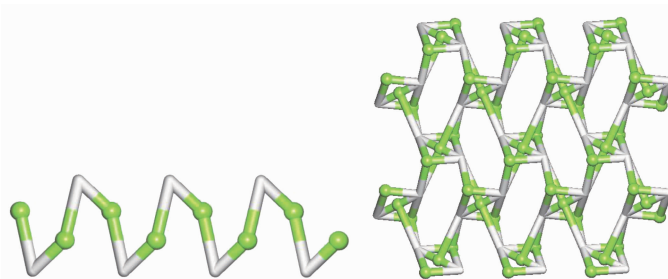
By sol-gel method was synthesized red phosphors $\text{SrMoO}_4\text{:Sm}^{3+},\text{Na}^+$ of tetragonal structure. The emission spectra of the samples are composed of four peaks, 563, 600, 647 and 707 nm belonging to the $^5G_{5/2} \rightarrow ^6H_J$ ($J=5/2, 7/2, 9/2, 11/2$) under the near UV excitation of 403 nm. When the doping molar fraction of Sm^{3+} is 1%~3%, the emission intensity is the maximum. The energy transfer type between Sm^{3+} ions was determined to be the exchange interaction and the critical energy transfer distance (D_c) was calculated to be 1.77~2.56 nm.

Syntheses, Crystal Structures and Magnetic Properties of 1D and 2D Cobalt (II) Coordination Polymers Constructed from Semirigid Tricarboxylic Acid (English)

GU Wen-Jun, GU Jin-Zhong

DOI:10.11862/CJIC.2017.035

Chinese J. Inorg. Chem., **2017**,**33**:227-236



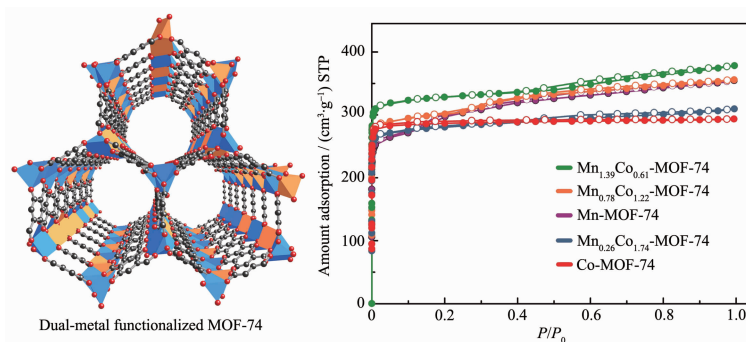
1D chain coordination polymer $[\text{Co}(\mu_2\text{-Hcpa})(\text{phen})(\text{H}_2\text{O})]_n$ (**1**) and 2D sheet coordination polymer $[\text{Co}_3(\mu_3\text{-cpta})_2(2,2'\text{-bipy})_2]_n$ (**2**) have been constructed and the structures and magnetic properties of the compounds were investigated.

Synthesis of Dual-Metal Functionalized MOF-74 and its Adsorption Properties

LI Zhi-Hua, LIU Hong, SONG Ling-Yong,
HUANG Tian-Hui

DOI:10.11862/CJIC.2017.042

Chinese J. Inorg. Chem., **2017**,**33**:237-242



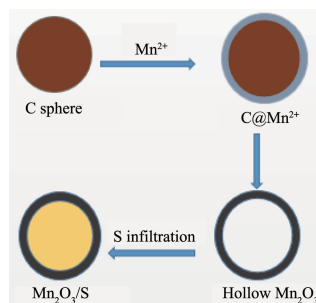
By incorporating Co(II) and Mn(II) into single framework of MOF-74, and possibly introducing more structural defects in the crystals, the dual-metal functionalized materials show enhanced porosity compared to the single-metal MOF-74.

Immobilizing Sulfur in Mn_2O_3 Hollow Spheres for Lithium-Sulfur Batteries (English)

WANG Ying, MI Kan, XIONG Sheng-Lin

DOI:10.11862/CJIC.2017.048

Chinese J. Inorg. Chem., **2017**,**33**:243-248



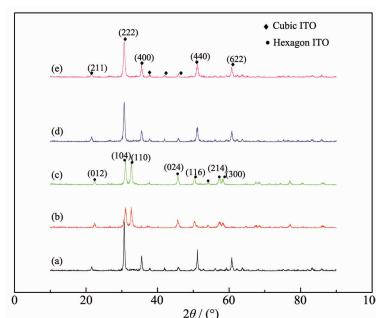
Hollow Mn_2O_3 spheres were prepared by two-step simple methods and used as holder for Li-S batteries. The $\text{Mn}_2\text{O}_3\text{-S}$ composites showed good electrochemical performance, which provides that Mn_2O_3 hollow spheres could be a promising host for Li-S batteries.

Hexagonal-Type ITO Nanopowders: Coprecipitation Synthesis and Photoelectric Property

ZHANG Yi-Qing, LIU Jia-Xiang

DOI:10.11862/CJIC.2017.041

Chinese J. Inorg. Chem., **2017**,**33**:249-254



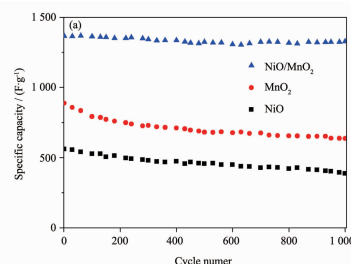
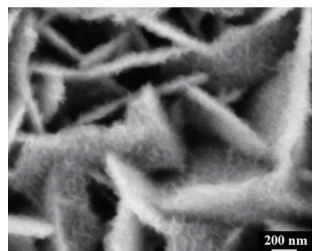
ITO crystal structure is cubic phase without adding $(\text{NH}_4)_2\text{SO}_4$. It turns into hexagonal phase when the molar ratios of $(\text{NH}_4)_2\text{SO}_4$ to In are 1/3.45 and 1/1.73. Continuously being added $(\text{NH}_4)_2\text{SO}_4$, it transforms into cubic structure.

Preparation and Supercapacitance Performances of Hierarchical NiO/MnO₂ Nanosheet Array

YANG Jin-Lin, LIN Jin-Xin, GUO Shao-Yi

DOI:10.11862/CJIC.2017.029

Chinese J. Inorg. Chem., **2017**,**33**:255-261



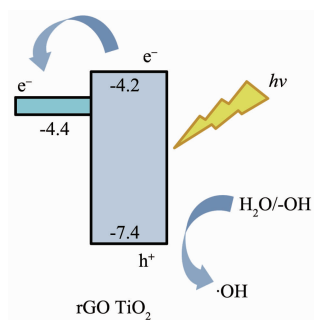
Hierarchical NiO/MnO₂ nanosheet array were prepared via chemical bath deposition and hydrothermal method, and they show improved pseudocapacitance performances, including higher specific capacity, better rate and cycle performance.

Reduced Graphene Oxide Modified Y-Branched TiO₂ Nanotubes Photoelectrode: Preparation and Photoelectrocatalytic Oxidation of Ammonia

LU Chan, WU Ke-Qi, FU Lin-Feng, GUO Xi-Shan, ZHU Song-Ming

DOI:10.11862/CJIC.2017.024

Chinese J. Inorg. Chem., **2017**,**33**:262-268



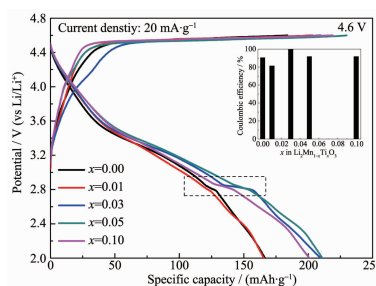
The rGO/Y-TiO₂NTs have better light absorption and electron transfer ability, and exhibit excellent degradation efficiency of ammonia in water.

Syntheses and Electrochemical Characterization of Li-Rich Li₂Mn_{1-x}Ti_xO₃ Layered Materials Used for Lithium Ion Batteries

XIONG Li-Long, XIAO Xiang, XU You-Long, WANG Ji-Sheng

DOI:10.11862/CJIC.2017.004

Chinese J. Inorg. Chem., **2017**,**33**:269-275



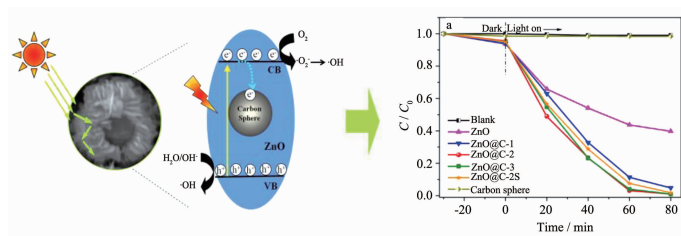
Modified Li₂MnO₃ cathode material exhibiting better performance in discharge capacity, capacity retention and rate capability is mainly due to the enhanced stability of crystal structure, improved conductivity and reduced charge transfer resistance induced by Ti doping.

Preparation and Sunlight Photocatalytic Performance of Flower-like ZnO@carbon Sphere Core-Shell Structure

ZHAO Xiao-Hua, SU Shuai, WU Guang-Li,
LOU Xiang-Dong, QIN Zhe, ZHOU Jian-Guo

DOI:10.11862/CJIC.2017.021

Chinese J. Inorg. Chem., **2017**,**33**:276-284



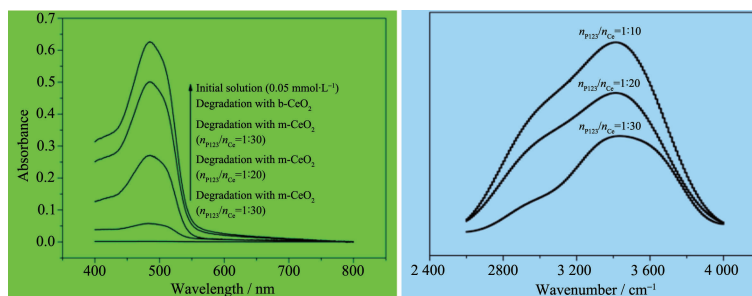
Flower-like ZnO@carbon sphere core-shell structure composites were prepared by a sample hydrothermal method. The carbon spheres introduction could effectively improve absorption of ZnO in the visible light region, inhibit the recombination of photogenerated electrons and holes and improve the photocatalytic performance of ZnO under simulated sunlight irradiation.

Effect of Heating Model and Raw Material Ratios on the Structure and Photocatalytic Properties of Mesoporous CeO₂

WANG Hui, DENG Huang-Xiu, HAO Shi-You

DOI:10.11862/CJIC.2017.040

Chinese J. Inorg. Chem., **2017**,**33**:285-291



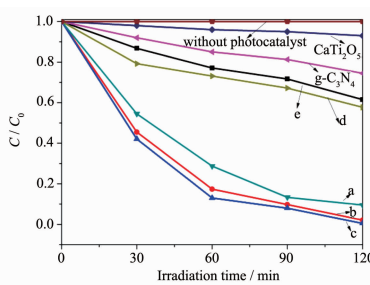
Mesoporous CeO₂ materials with good structural properties and high loading of surface hydroxyl groups were synthesized by optimizing the heating models, heating temperature and the ratios of raw material and an efficient photocatalytic degradation of acid orange 7 over the optimized mesoporous CeO₂ has been observed.

C₃N₄/CaTi₂O₅ Composite: Synthesis and Photocatalytic Properties

DONG Wei-Xia, BAO Qi-Fu, GU Xing-Yong,
PENG Gang, ZHAO Xue-Guo

DOI:10.11862/CJIC.2017.037

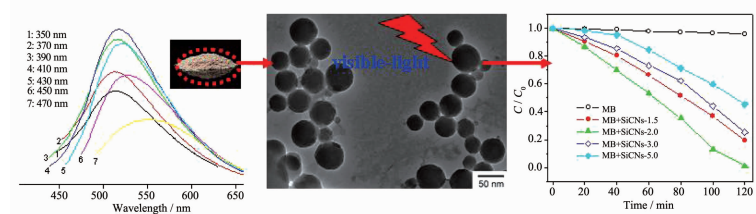
Chinese J. Inorg. Chem., **2017**,**33**:292-298



The C₃N₄/CaTi₂O₅ heterojunction photocatalysts were successfully prepared via a simple solid reaction method for the first time. C₃N₄/CaTi₂O₅ photocatalyst exhibited superior visible-light-driven photocatalytic activity for rhodamine B photocatalytic oxidation, which may be attributed predominantly to the efficient separation of photo induced electrons and holes.

Organosilane-Functionalized Carbon Nanospheres: Synthesis and Visible Light Photocatalytic Activity

WANG Gui-Yan, XIA Li, YU Jun



The citric acid and (3-aminopropyl) triethoxysilane were used as starting materials to prepare photoluminescent carbon nanospheres.

The visible-light photocatalytic property of carbon nanospheres was evaluated.

DOI:10.11862/CJIC.2017.022

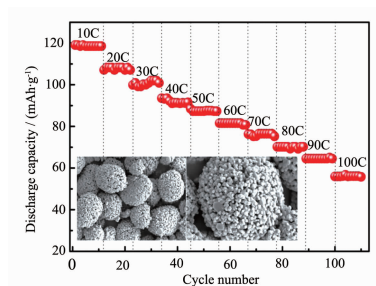
Chinese J. Inorg. Chem., **2017**,**33**:299-306

Controllable Preparation of Ultra-High Rate $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ Cathode Through Carbonate Co-precipitation Method for Li-Ion Batteries

ZHENG Zhuo, HUA Wei-Bo, WU Zhen-Guo, XIANG Wei, ZHONG Ben-He, GUO Xiao-Dong

DOI:10.11862/CJIC.2017.010

Chinese J. Inorg. Chem., **2017**,**33**:307-314



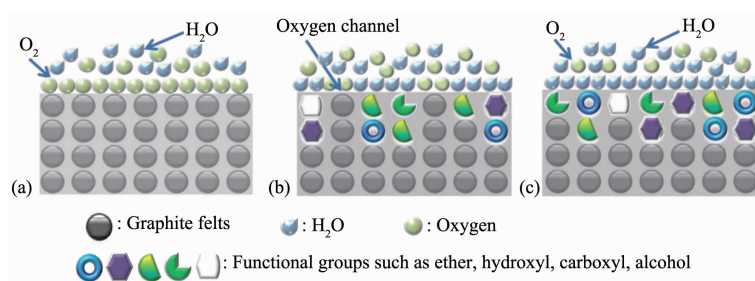
An uniform nanocrystal-assembled porous $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ microsphere with outstanding ultra-high rate capability (100C , $56\text{ mAh}\cdot\text{g}^{-1}$) can be controllably prepared by the carbonate co-precipitation method through tailoring the amount of the $\text{NH}_3\text{H}_2\text{O}$ in the synthetic route.

Electrochemical Performance of Graphite Felts Modified by Potentiostatic Oxidation for Oxygen Reduction Cathode (English)

HE Meng-Jiao, YAN Kang-Ping, WANG Gui-Xin, SUN Yu-Han, ZHONG Yi-Yei, LUO Chun-Hui

DOI:10.11862/CJIC.2017.018

Chinese J. Inorg. Chem., **2017**,**33**:315-322



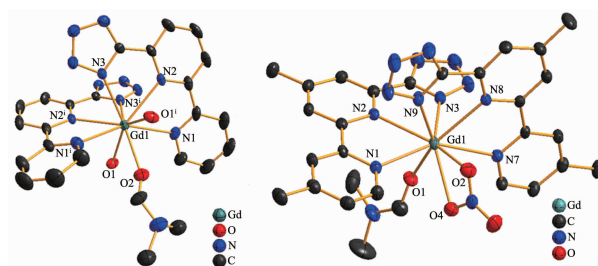
The partially hydrophilic surface formed by appropriate potentiostatic oxidation possesses the optimal electrochemical properties, which not only exhibits a good hydrophilicity, but also provides enough space for oxygen to pass through.

Effect of the Methylation on Mononuclear Gd(III) Bipyridyl Tetrazolate Complexes (English)

DI Bao-Sheng, LUO Yan-Sheng, ZENG Xue-Hua, HE Li-Hua, CHEN Jing-Lin, LIAO Jin-Sheng, LIU Sui-Jun, WEN He-Rui

DOI:10.11862/CJIC.2017.031

Chinese J. Inorg. Chem., **2017**,**33**:323-328



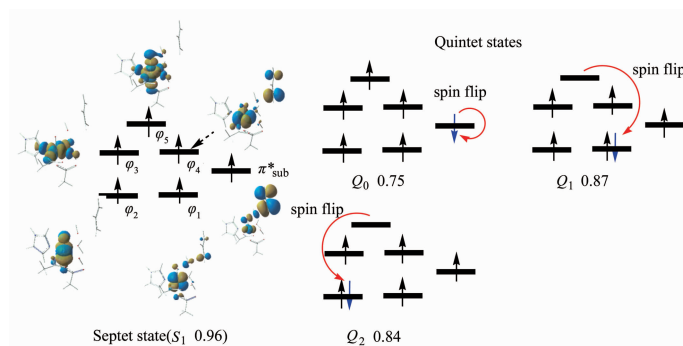
The methylation of the 2,2'-bipyridyl ring has a significant influence on the coordination environment around Gd(III) , showing that two mono-coordinated H_2O molecules are replaced by one bidentate chelating nitrate.

Theoretical Investigation on the Multi-State Reaction Mechanism for the Propene Catalyzed by Non-Heme Ferric-Superoxo Species(English)

LÜ Ling-Ling, ZHU Yuan-Cheng,
ZUO Guo-Fang, YUAN Kun,
WANG Yong-Cheng

DOI:10.11862/CJIC.2017.028

Chinese J. Inorg. Chem., **2017**,**33**:329-339



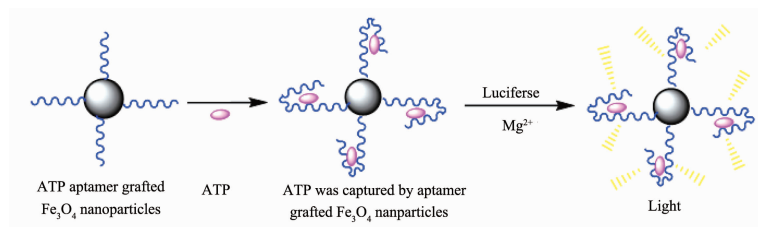
Electronic configurations of the SOC interactions of the septet state and quintet states in the vicinity of the S_1/Q_0 crossing region.

Nanoparticles Grafted by ATP Aptamer: Preparation and Application in Chemiluminescence Enzyme Analysis

YAN Xi-Luan, CHEN Xin, GAO Wen-Ju,
WEI Ting-Ting, LIN Yue-Min, AI Fan-Rong

DOI:10.11862/CJIC.2017.034

Chinese J. Inorg. Chem., **2017**,**33**:340-346

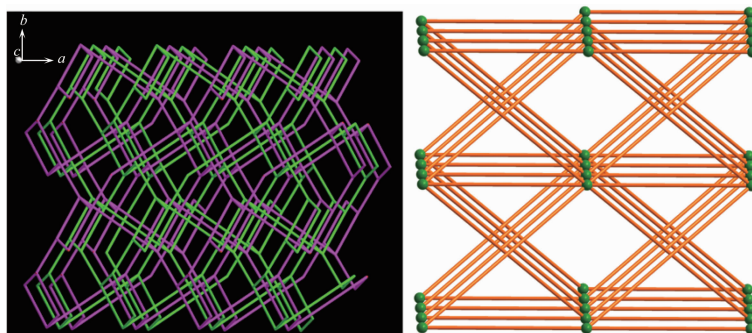


Syntheses, Structures and Photoluminescence Properties of Two Zn(II) Complexes Constructed from Mixed Carboxylate and N-Donor Ligands (English)

XIAO Bo-An, CHEN Shui-Sheng

DOI:10.11862/CJIC.2017.014

Chinese J. Inorg. Chem., **2017**,**33**:347-353



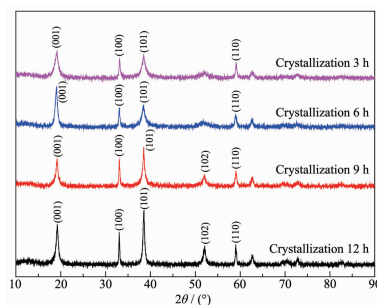
The Zn(II) coordination polymer $[Zn_2(L)_2(pbdb)]_n$ (**1**) is a 2-fold interpenetrating three-dimensional (3D) **dmc** net with point Schläfli symbol of $(4 \cdot 8^3)(4 \cdot 8^5)$, while $[Zn_2(L)_2(mbda)]_n$ (**2**) exhibits a uninodal 6-connected 3D architecture with $(4^{12} \cdot 6^3)$ -**pcu** topology based on the binuclear Zn(II) secondary building units (SBUs).

Influence of Crystal Growth Direction Selectivity on Morphology and Electrochemical Activity of Spherical Nickel Hydroxide (English)

TANG Jun-Jie, LIU Yan, TIAN Lei,
ZHANG Li-Li, WANG Dong-Xing,
ZHANG Ting-An

DOI:10.11862/CJIC.2017.049

Chinese J. Inorg. Chem., **2017**,**33**:354-360



The growths of (100) crystal plane and (101) crystal plane were continuing with the increase of the aging time, and the relative crystallinity reached a maximum value. The shapes of the diffraction peaks are sharp and high when the aging time is 12 h.