

# 无机化学学报

2017 年

第 33 卷

第 4 期

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# CHINESE JOURNAL OF INORGANIC CHEMISTRY

Vol.33

No.4

Apr. 2017

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Self-Sorting of Binuclear Schiff-Base Complexes under Solvent-Free Grinding Conditions

HAN Wang-Kang, TIAN Lei, XU Zong-Li, ZHU Wei, LI Zhi-Hua, LI Tao, GU Zhi-Guo, LI Zai-Jun

DOI:10.11862/CJIC.2017.069

*Chinese J. Inorg. Chem.*, **2017**,**33**:550-559

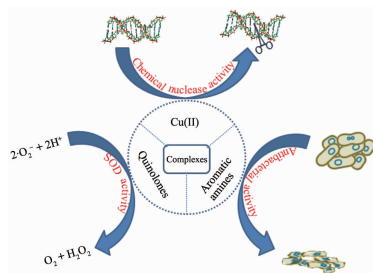
### Reviews

Recent Progress on Research in Mixed-Ligand Copper(II) Complexes Containing Quinolones and Aromatic Amines

QI Yong-Yu, LE Xue-Yi

DOI:10.11862/CJIC.2017.063

*Chinese J. Inorg. Chem.*, **2017**,**33**:529-542



The copper (II) complexes containing quinolones and aromatic amines used as chemical nucleases, SOD mimics and antibacterial agents.

Red Phosphors Doped by Eu Used in White LED

LI Shuo, GUO Ning, LIANG Qi-Meng, DENG Hong-Xiao

DOI:10.11862/CJIC.2017.044

*Chinese J. Inorg. Chem.*, **2017**,**33**:543-549



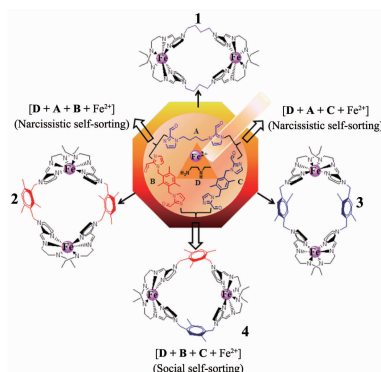
The red line emission phosphors doped by  $\text{Eu}^{3+}$ , the band red emission phosphors doped by  $\text{Eu}^{2+}$ , and emphatically the narrow band red emission phosphors doped by  $\text{Eu}^{2+}$  have been introduced. Moreover, the development of Eu doped red phosphors and the methods to improve the deficiency of the phosphor have been reviewed.

## Self-Sorting of Binuclear Schiff-Base Complexes under Solvent-Free Grinding Conditions

HAN Wang-Kang, TIAN Lei, XU Zong-Li, ZHU Wei, LI Zhi-Hua, LI Tao, GU Zhi-Guo, LI Zai-Jun

DOI:10.11862/CJIC.2017.069

*Chinese J. Inorg. Chem.*, **2017**,**33**:550-559



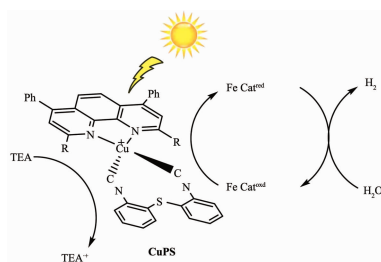
A series of binuclear iron(II) imidazole Schiff-base complexes were constructed by one-pot subcomponent assembly under solvent-free grinding conditions. Taking advantage of the facile approach, the assembling system was found to high-fidelity self-sorting, and a heteromer was obtained through social self-sorting.

## Aza-Isocyanide Heteroleptic Copper Complexes: Synthesis and Application in Photocatalytic Hydrogen Evolution From Water

XIA Liang-Min, CHEN Hao, WU Qing-An, WANG Xiao-Jing, LOU Wen-Ya, XU Bin, LUO Shu-Ping

DOI:10.11862/CJIC.2017.075

*Chinese J. Inorg. Chem.*, **2017**,**33**:560-568



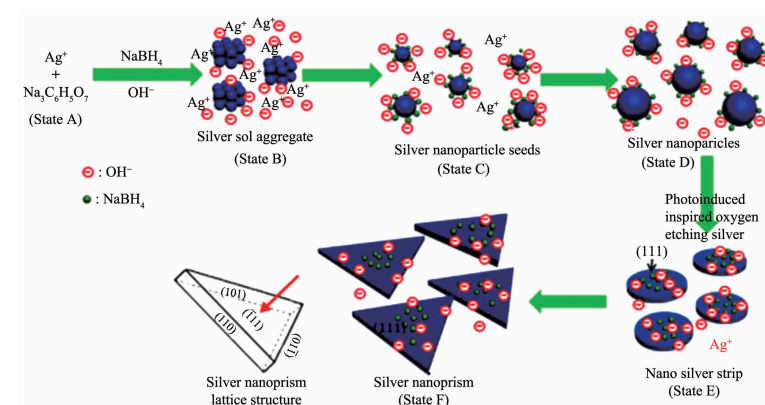
The heteroleptic copper complexes having isocyano ligands and 1, 10-phenanthroline derivatives as N ligands displayed efficient photosensitive activities for water reduction reaction (TON was up to 168).

## Triangular Silver Nanoprism: Morphology-Controlled Synthesis by a Photo-Mediated Method and Antimicrobial Property

LIN Jing, CHEN Jie-Xing, HE Qian-Yin, BAI Wen-Li, WANG Wei, YANG Wei, ZHENG Cheng, LIU Zi-Li, KE Guang-Yao, LI Xiao-Xin

DOI:10.11862/CJIC.2017.065

*Chinese J. Inorg. Chem.*, **2017**,**33**:569-575

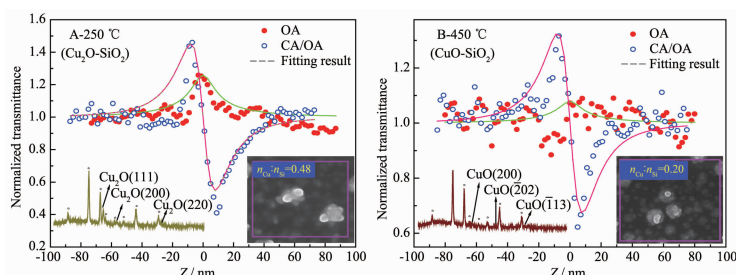


## Preparation and Optical Properties of CuO-SiO<sub>2</sub> and Cu<sub>2</sub>O-SiO<sub>2</sub> Films

GU Min, CHEN Ying-Long, WU Ya-Zhen

DOI:10.11862/CJIC.2017.077

*Chinese J. Inorg. Chem.*, **2017**,**33**:576-582



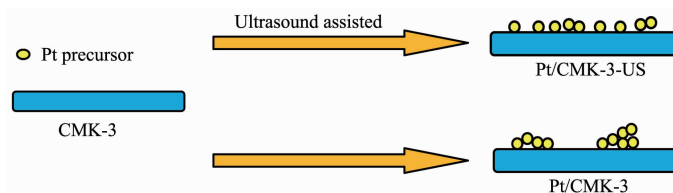
Cu<sub>2</sub>O-SiO<sub>2</sub> and CuO-SiO<sub>2</sub> composite films were transformed from films electrodeposited on ITO by heating. Their  $E_g$  and  $\chi^{(3)}$  were influenced by the content and particle size of Cu<sub>2</sub>O and CuO doped in SiO<sub>2</sub>, respectively.

# Ultrasound Assisted Synthesis of Highly Dispersed Pt/CMK-3-US as Catalyst for Hydrogenation of Naphthalene

LI Jian, WU Hai-Shun, YANG Li-Na,  
YANG Xiao-Rong, MA Bo

DOI:10.11862/CJIC.2017.072

Chinese J. Inorg. Chem., 2017,33:583-588



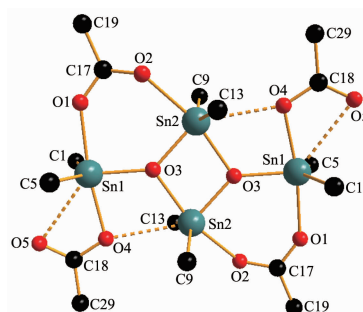
Pt/CMK-3-US were synthesized by ultrasound assisted impregnation method. Which method can improve the dispersion of Pt based on the maintenance of the pore structure and surface properties of CMK-3.

# Microwave-Solvothermal Syntheses, Crystal Structures and *in Vitro* Antitumor Activities of Two Bis[oxo-bis (aromatic carboxylato dibutyltin)]

FENG Yong-Lan, KUANG Dai-Zhi,  
ZHANG Fu-Xing, YU Jiang-Xi,  
JIANG Wu-Jiu, ZHU Xiao-Ming

DOI:10.11862/CJIC.2017.071

Chinese J. Inorg. Chem., 2017,33:589-594



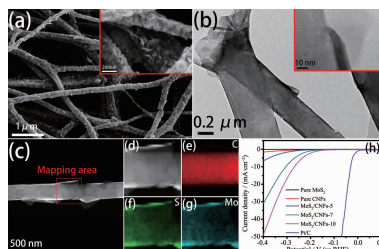
Two di-*n*-butyltin compounds with  $\mu_3$ -O bridging the framework were prepared under microwave solvothermal, and exhibited a strong anti-tumor activity *in vitro* against five human tumor cell lines, HT-29, HepG2, MCF-7, KB and A549.

# Synthesis and Hydrogen Evolution Performance of Molybdenum Disulfide Nanosheets/Carbon Nanofibers Hybrid Materials

WAN Meng, YU Dan-Ni, ZHU Han,  
ZHANG Ming, DU Ming-Liang

DOI:10.11862/CJIC.2017.081

Chinese J. Inorg. Chem., 2017,33:595-600



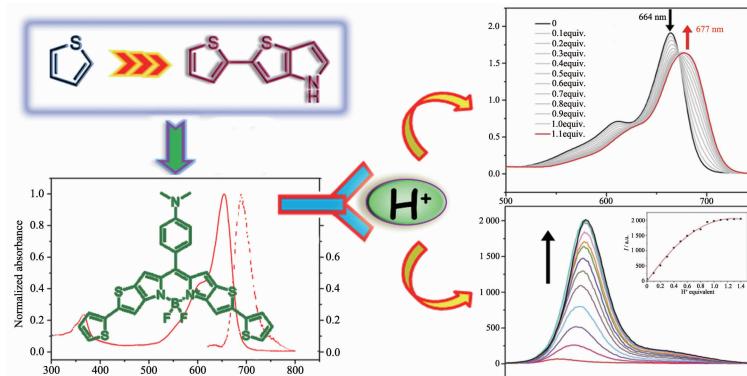
The design of hierarchical structure based on two dimensional MoS<sub>2</sub> crystals and carbon nanofibers with thermo-dependent morphologies and related electrocatalytic activity towards hydrogen evolution reaction have been demonstrated. The best MoS<sub>2</sub>/CNFs catalysts obtain the electrocatalytic activity with onset potential of 220 mV and Tafel slope of 110 mV · dec<sup>-1</sup>.

# Synthesis and Spectroscopic Properties of Bithiophene-Fused BODIPY

YANG Yong-Chao, GAI Li-Zhi, ZHANG Dan,  
YAN Jing, ZHAO Hao-Li-Bao, SHEN Zhen

DOI:10.11862/CJIC.2017.066

Chinese J. Inorg. Chem., 2017,33:601-606



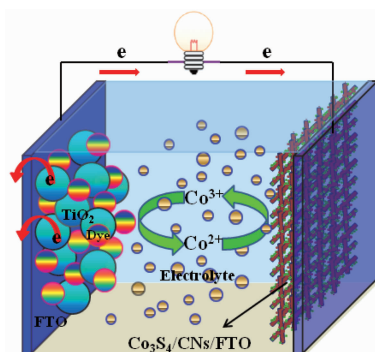
A NIR fluorescence probe for pH value has been designed based on bithiophene-fused BODIPY dye bearing electron-donating aniline moiety at *meso*-position.

### Co<sub>3</sub>S<sub>4</sub> Supported by Carbon Nanofibers Composite: Preparation and Application in Counter Electrode for Dye-Sensitized Solar Cells

LI Ling, ZHANG Xue, LI Jing,  
WANG Xue-Jiao, ZHAN Lin-Zhong,  
XIAO Jun-Ying, LIU Shuang

DOI:10.11862/CJIC.2017.084

Chinese J. Inorg. Chem., **2017**,**33**:607-614



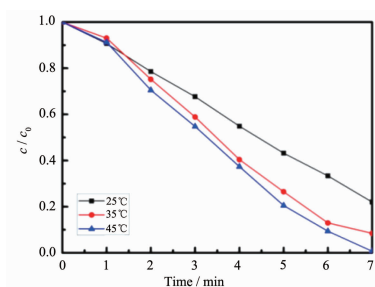
Co<sub>3</sub>S<sub>4</sub> supported by electrospun carbon nanofibers (Co<sub>3</sub>S<sub>4</sub>/ECs) composites with different weight of Co<sub>3</sub>S<sub>4</sub> on the surface of carbon nanofibers were synthesized by hydrothermal synthesis method and used as counter electrode for DSCs to study its photoelectric property.

### Preparation and Catalytic Properties of Au@ZrO<sub>2</sub> Hollow Microspheres

XIANG Ying-Qiao, LI Tian-Tian,  
XU Qing-Hong

DOI:10.11862/CJIC.2017.078

Chinese J. Inorg. Chem., **2017**,**33**:615-622



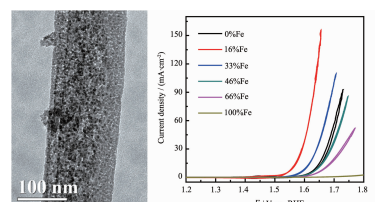
Using SiO<sub>2</sub> microspheres as hard template, Au@ZrO<sub>2</sub> hollow microspheres were prepared by deposition-precipitation method. *p*-Nitroaniline can be completely reduced to *p*-phenylenediamine in 7 minutes at 45 °C under the existence of the microspheres.

### Porous Cobalt-Iron Binary Metal Oxides Nanorods as Efficient Oxygen Evolving Catalysts for Water Splitting

GAO Xu-Sheng, LIU Guang, SHI Qin-Fang,  
WANG Kai-Fang, XU Li-Juan, HE Dong-Ying,  
LI Jin-Ping

DOI:10.11862/CJIC.2017.080

Chinese J. Inorg. Chem., **2017**,**33**:623-629



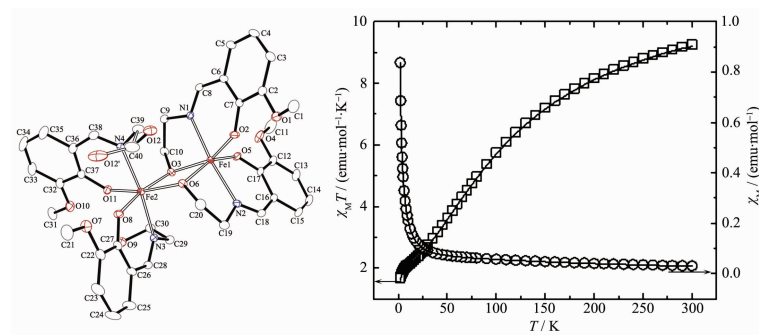
Mesoporous Cobalt-Iron binary oxides nanorods with tailoring of Fe-doping contents realize efficient water oxidation activity in alkaline medium.

### Syntheses, Crystal Structures and Magnetic Properties of Fe(III), Co(III) and Mixed Valence Mn(II)/Mn(III) Complexes Based on a Schiff Base Ligand Derived From Salicylaldehyde

GAO Xi-Feng, LIU Jing-Song, YANG Pei-Pei,  
LIU Yan-Ming, ZHANG Xi-Qi, ZHU Jian-Hua

DOI:10.11862/CJIC.2017.074

Chinese J. Inorg. Chem., **2017**,**33**:630-636

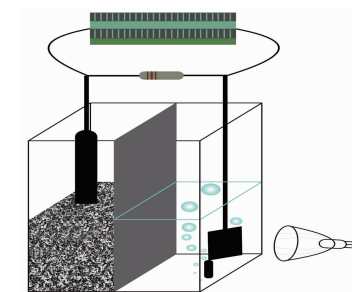


### Reduction of Nitrate by g-C<sub>3</sub>N<sub>4</sub>-TiO<sub>2</sub> Photocatalyst on Electrode Coupled with Electricity Generating Bio-anode

LI Liang, LIU Li-Fen, YANG Feng-Lin

DOI:10.11862/CJIC.2017.082

Chinese J. Inorg. Chem., **2017**,**33**:637-643



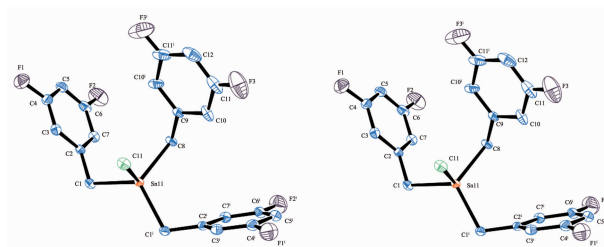
Photocatalysis supported by microbial electricity generation could greatly improve the reduction efficiency of nitrate. The result shows that this research could achieve synchronous implementation of biodegradation of sewage, electricity production and nitrate reduction with lower cost and better treatment effect.



Syntheses, Crystal Structures and Quantum Chemistry of Tri (3,5-difluorobenzyl)tin Chloride and Tetra(*o*-chlorobenzyl)tin

ZHANG Fu-Xing, TAO Jing, TANG Dan-Dan, LUO Jing, TANG Peng, KUANG Dai-Zhi, FENG Yong-Lan, ZHU Xiao-Ming

DOI:10.11862/CJIC.2017.073  
Chinese J. Inorg. Chem., **2017**,**33**:644-650

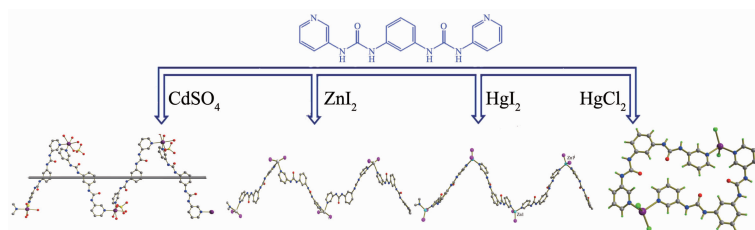


The tin atoms in tri(3,5-difluorobenzyl)tin chloride (**1**) and tetra(*o*-chlorobenzyl)tin(**2**) have a distorted tetrahedral geometry.

Syntheses and Crystal Structures of Cd(II), Zn(II) and Hg(II) Complexes Based on Bis(pyridylurea) Ligand

DONG Yi-Tian, TU Bo, XU Hong, HUANG Ya-Li, ZHANG Qi-Long, HU Zong-Chao, ZHU Bi-Xue

DOI:10.11862/CJIC.2017.088  
Chinese J. Inorg. Chem., **2017**,**33**:651-658

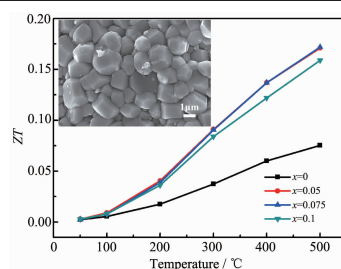


The urea-based pyridyl ligand **L** (1,1'-(1,3-phenylene)bis(3-(pyridin-3-yl)urea)) were designed to promote non-discrete complex formation on reaction with CdSO<sub>4</sub>·8H<sub>2</sub>O, ZnI<sub>2</sub>, HgI<sub>2</sub>, HgCl<sub>2</sub>, and yielded three coordination polymers (CPs) and a complex with 32-membered ring structure, which exhibit a variety of structures.

Effects of Bi Doping on Thermoelectric Properties of La<sub>0.1</sub>Sr<sub>0.9</sub>TiO<sub>3</sub> Ceramics

WANG Ting-Ting, SUN Qiu, SONG Ying

DOI:10.11862/CJIC.2017.083  
Chinese J. Inorg. Chem., **2017**,**33**:659-663

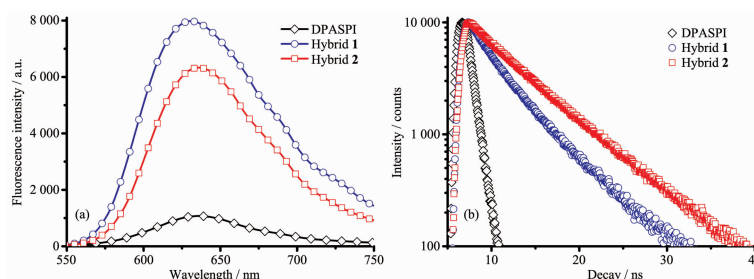


Bi doping is helpful for the sintering of La<sub>0.1</sub>Sr<sub>0.9</sub>TiO<sub>3</sub> ceramics and make the grain fully developed, regularly shaped and combined closely. A remarkable *ZT* of 0.172 at 500 °C was obtained for the sample with *x* = 0.075, which was increased by 130% compared with that of the sample without Bi.

Two Solid Fluorescent Organic-Inorganic Hybrids: Synthesis, Crystal Structures and Strong Red Fluorescence Emissions (English)

TIAN Yue, LI Fei, ZHANG Guo-Cui, ZHOU Hong-Ping, WU Jie-Ying, TIAN Yu-Peng

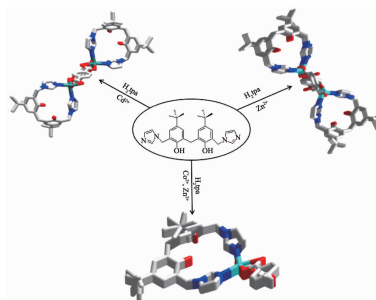
DOI:10.11862/CJIC.2017.060  
Chinese J. Inorg. Chem., **2017**,**33**:664-672



Syntheses and Characterization of Metal Hybrid Calix[4]arene Coordination Polymers (English)

ZHANG Xia, XUE Jun-Ru, HE Zhan, ZHANG Shu-Fang, LIANG Yue, QIN Da-Bin, JING Lin-Hai

DOI:10.11862/CJIC.2017.070  
Chinese J. Inorg. Chem., **2017**,**33**:673-678



Four 1D coordination polymers, contained metal hybrid calix[4]arene, were obtained based on rigid imidazole ligand and different organic acids. Four complexes have good thermal stability.

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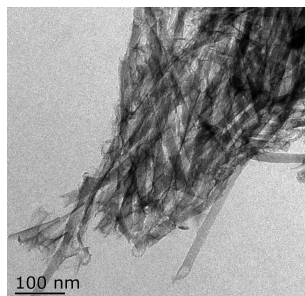
## HNTs-Templated Preparation of Carbon Nanorods by Hydrothermal Nanocasting Method (English)

LIU Zan, LIU Ying-Ying, CHENG Zhi-Lin

DOI:10.11862/CJIC.2017.032

*Chinese J. Inorg. Chem.*, **2017**,**33**:679-684

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The carbon nanorods with *ca.* 20 nm in diameter and 200 ~800 nm in length were prepared through HNTs-templated nanocasting method, and mainly possessed two types of mesopores at 3.9 nm and 13.5 nm, respectively.

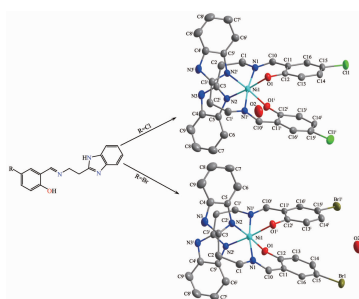
## Two Ni(II) Complexes of Schiff Base Ligands Containing Benzimidazole Ring: Syntheses, Crystal Structures and Antibacterial Properties (English)

ZHAO Hai-Yan, YANG Xiao-Dong, LI Na

DOI:10.11862/CJIC.2017.064

*Chinese J. Inorg. Chem.*, **2017**,**33**:685-691

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In the two complexes  $[\text{Ni}(\text{L}^1)_2] \cdot 2\text{H}_2\text{O}$  (**1**) and  $[\text{Ni}(\text{L}^2)_2] \cdot 2\text{H}_2\text{O}$  (**2**), each Ni(II) cation adopts a distorted octahedral arrangement with a  $\text{N}_4\text{O}_2$  donor set in trichelated fashion of the Schiff base ligands. The complexes have stronger antibacterial activities against *S. aureus* and *E. coli* than the corresponding Schiff bases.

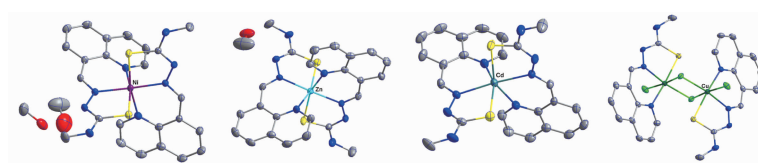
## Syntheses, Crystal Structures and DNA-Binding Properties of Ni(II)/Zn(II)/Cd(II)/Cu(II) Complexes with 4-Methyl-1-((quinolin-8-yl)methylene)-thiosemicarbazide(English)

MAO Pan-Dong, HAN Xue-Feng,  
LI Shan-Shan, SHI Lin-Ying,  
WANG Yuan, WU Wei-Na

DOI:10.11862/CJIC.2017.067

*Chinese J. Inorg. Chem.*, **2017**,**33**:692-698

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Four complexes  $[\text{NiL}_2] \cdot 2\text{CH}_3\text{OH}$ ,  $[\text{ZnL}_2] \cdot \text{CH}_3\text{OH}$ ,  $[\text{CdL}_2] \cdot \text{CH}_3\text{CH}_2\text{OH}$  and  $[\text{Cu}_2\text{L}_2\text{Cl}_2]$  with a thiosemicarbazone ligand bearing quinoline unit have been synthesized and characterized. All complexes, especially the Cu(II) dimer can bind to DNA and have potential pharmaceutical activity.

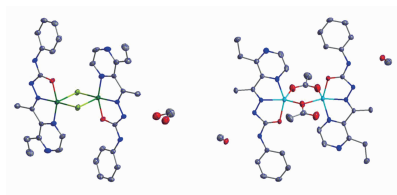
## Crystal Structures and Fluorescence Properties of Cu(II)/Zn(II) Complexes with a Semicarbazone Ligand Bearing Pyrazine Unit

WU Hao, CHEN Ze-Hua, YU Ya-Ping,  
ZHAO Ling-Ling, WU Wei-Na, WANG Yuan

DOI:10.11862/CJIC.2017.051

*Chinese J. Inorg. Chem.*, **2017**,**33**:699-704

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Two binuclear complexes  $[\text{Cu}_2(\text{L})_2\text{Br}_2] \cdot \text{CH}_3\text{OH}$  and  $[\text{Zn}_2(\text{L})_2(\text{CH}_3\text{COO})_2] \cdot 2\text{CH}_3\text{OH}$  have been synthesized and characterized. In methanol solution, both complexes exhibit the intra-ligand emission.

## Syntheses, Crystal Structures and Properties of Zinc(II) and Co(II) Complexes Constructed by 2,2'-Dithiosalicylic Acid, Bis(2-carboxyphenyl) Sulfide and N-Donor Ligands (English)

LIU Ji-Wei

DOI:10.11862/CJIC.2017.068

*Chinese J. Inorg. Chem.*, **2017**,**33**:705-712

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