

ISSN 1001-8417

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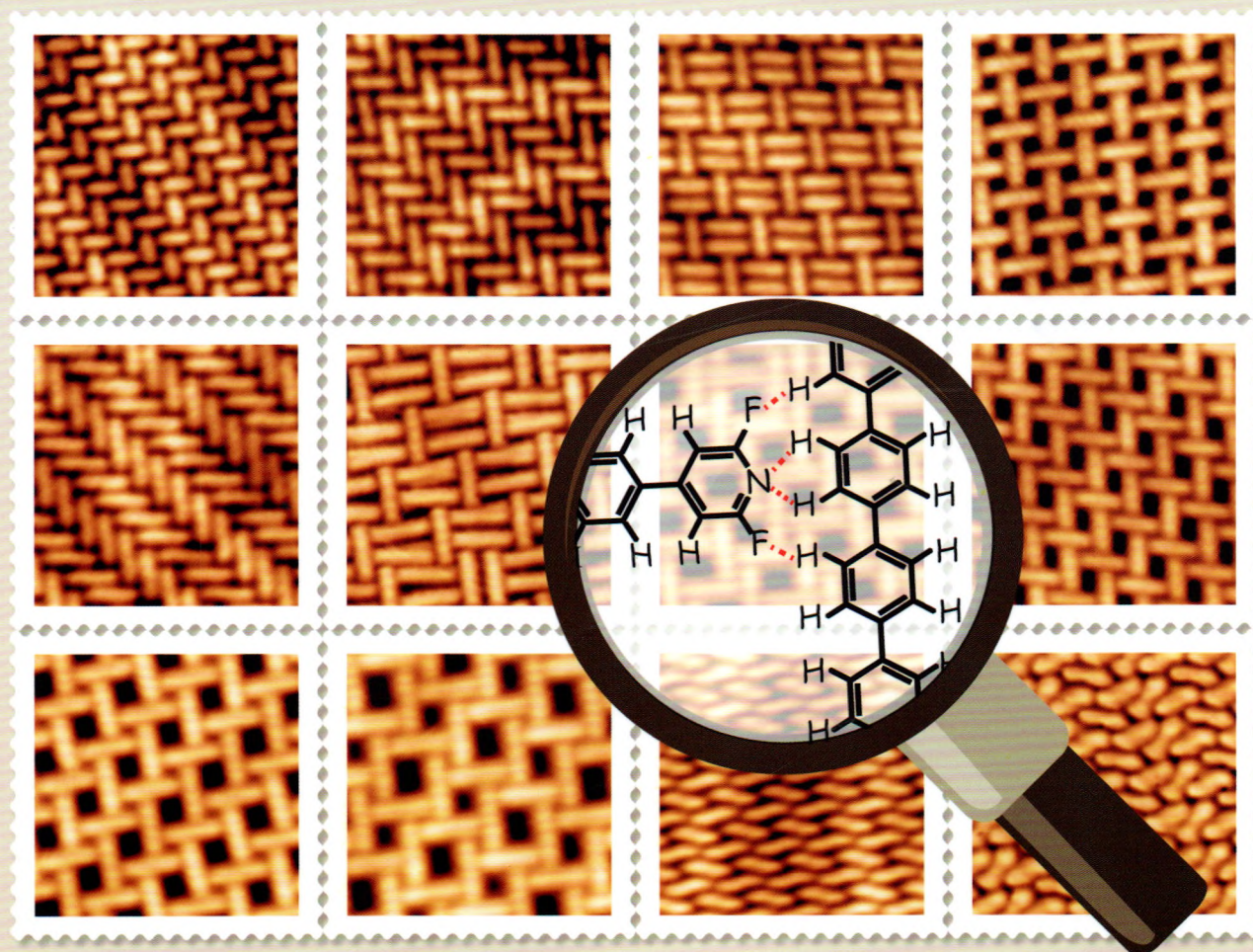


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Chinese Chemical Letters

| Volume 28 | Number 3 | MARCH 2017 |

Molecular Self-assemblies Tweaked by Weak C-H...F and C-H...N Hydrogen Bonds



Provided by Prof. WU Kai's Group, Peking University, China



REVIEW

Chang-Zhi Li et al.
Organic functional materials based
buffer layers for efficient perovskite
solar cells

ORIGINAL ARTICLE

Qiu-Ling Song et al.
Pd-catalyzed ortho-olefination of aromatic
acetyl esters

ISSN 1001-8417



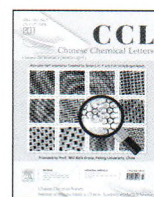
Chinese Chemical Society

万方数据 Institute of Materia Medica, Chinese Academy of Medical Sciences



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Chinese Chemical Letters

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Graphical Abstracts/Chin Chem Lett 28 (2017) iii–x

Reviews

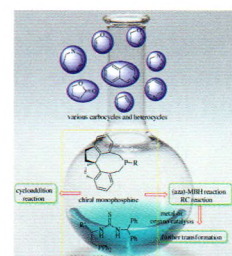
Phosphine-mediated enantioselective synthesis of carbocycles and heterocycles

Yu-Ning Gao, Min Shi

State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai 200032, China

This minireview summarizes chiral phosphine-catalyzed acycloaddition reactions and cycloaddition reactions to synthesize carbocycles and heterocycles.

Chinese Chemical Letters 28 (2017) 493



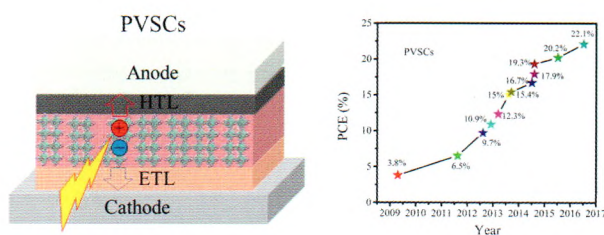
Organic functional materials based buffer layers for efficient perovskite solar cells

Fateh Ullah, Hongzheng Chen, Chang-Zhi Li

MOE Key Laboratory of Macromolecular Synthesis and Functionalization, State Key Laboratory of Silicon Materials, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China

This review highlights the recent development of organic π -functional materials as buffer layers in constructing efficient perovskite solar cells (PVSCs).

Chinese Chemical Letters 28 (2017) 503

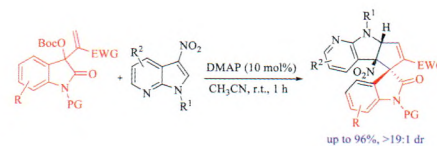


Original Articles

Construction of polycyclic spirooxindoles through [3+2] annulations of Morita–Baylis–Hillman carbonates and 3-nitro-7-azaindoles

Kai-Kai Wang^{a,c}, Wei Du^b, Jin Zhu^a, Ying-Chun Chen^b^aChengdu Institute of Organic Chemistry, Chinese Academy of Sciences, Chengdu 610041, China^bKey Laboratory of Drug-Targeting and Drug Delivery System of the Ministry of Education, West China School of Pharmacy, Sichuan University, Chengdu 610041, China^cUniversity of Chinese Academy of Sciences, Beijing 100049, China

An array of polycyclic spirooxindoles containing fused azaindoline frameworks and vicinal quaternary centers have been constructed in excellent yields and diastereoselectivity through a DMAP-catalysed dearomatic [3+2] annulation reaction.



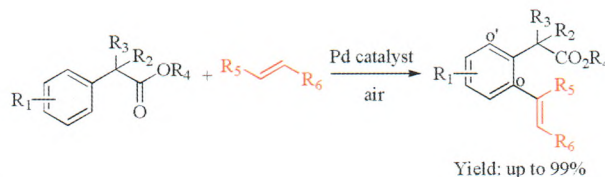
Chinese Chemical Letters 28 (2017) 512

Chinese Chemical Letters 28 (2017) 517

Pd-catalyzed *ortho*-olefination of aromatic acetyl esters

Lei Xiang^{a,b}, Kai Yang^a, Qiu-Ling Song^a^aInstitute of Next Generation Matter Transformation, College of Chemical Engineering at Huaqiao University, Xiamen 361021, China^bInstitute of Pharmacy and Pharmacology, Learning Key Laboratory for Pharmacoprotoemics University of South China, Hengyang 421001, China

A Pd(II)-catalyzed *ortho*-olefination of aromatic acetyl esters is described which features with an excellent functional group tolerance, good yields, mild reaction conditions, good scalability as well as high chemo- and regio-selectivity.

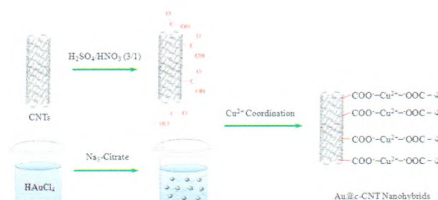


Chinese Chemical Letters 28 (2017) 521

A facile route to the hierarchical assembly of Au nanoparticles on carbon nanotubes through Cu²⁺ coordination for surface-enhanced Raman scattering

Zhi-Qiang Duan^a, Xin-Bao Gao^a, Tian-Peng Li^a, Kai Yao^{a,b}, Xu-Ming Xie^c^aShijiazhuang Mechanical Engineering College, Shijiazhuang 050003, China^bDepartment of Graduate Management, Equipment Academy, Beijing 101416, China^cKey Laboratory of Advanced Materials (MOE), Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

We report the hierarchical assembly of Au nanoparticles on carboxylized carbon nanotubes (c-CNTs) through Cu²⁺ coordination. The resulting Au@c-CNT nanohybrids exhibit a remarkable synergy in SERS compared to neat Au nanoparticles.

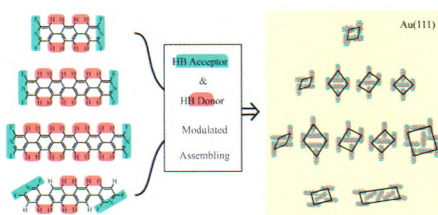


Chinese Chemical Letters 28 (2017) 525

Pinning-down molecules in their self-assemblies with multiple weak hydrogen bonds of C—H...F and C—H...N

Xin Jin^a, Jacob R. Cramer^b, Qi-Wei Chen^a, Hai-Lin Liang^a, Jian Shang^a, Xiang Shao^c, Wei Chen^{d,e}, Guo-Qin Xu^{d,e}, Kurt V. Gothelf^b, Kai Wu^{a,e}^aBNLMS, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, China^bDanish-Chinese Centre for Self-Assembly and Function of Molecular Nanostructures on Surfaces at iNANO, Department of Chemistry, Aarhus University, 8000 Aarhus C, Denmark^cDepartment of Chemical Physics, School of Chemistry and Materials Science, University of Science and Technology of China, Hefei 230026, China^dDepartment of Chemistry, National University of Singapore, 117543, Singapore^eSPURC, 1 CREATE Way, #15-01, CREATE Tower, 138602, Singapore

A series of fluorinated pyridyl molecules containing H—C—C—C—H and F—C—N—C—F moieties form grouped weak hydrogen bonds of C—H...F and C—H...N that dictate the patterns and orientations of their self-assemblies on Au(111).

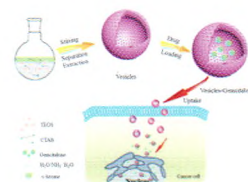


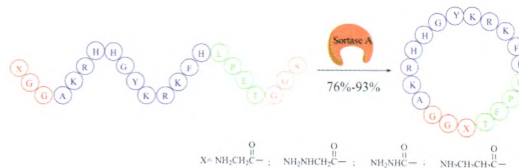
Chinese Chemical Letters 28 (2017) 531

Enhancement of gemcitabine against pancreatic cancer by loading in mesoporous silica vesicles

Jun-Tao Dai^a, Yu Zhang^b, Heng-Chao Li^a, Yong-Hui Deng^{b,c}, Ahmed A. Elzatahry^d, Abdulaziz Alghamdi^e, De-Liang Fu^a, Yong-Jian Jiang^a, Dong-Yuan Zhao^b^aDepartment of Pancreatic Surgery, Huashan Hospital, Fudan University, Shanghai 200040, China^bDepartment of Chemistry, State Key Laboratory of Molecular Engineering of Polymers, and Shanghai Key Laboratory of Molecular Catalysis and Innovative Materials, Collaborative Innovation Center of Chemistry for Energy Materials (iChEM), Fudan University, Shanghai 200433, China^cState Key Lab of Transducer Technology, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Shanghai 200050, China^dMaterials Science and Technology Program, College of Arts and Sciences, Qatar Department of Chemistry, Qatar University, PO Box 2713, Doha, Qatar^eCollege of Science, King Saud University, Riyadh 11451, Saudi Arabia

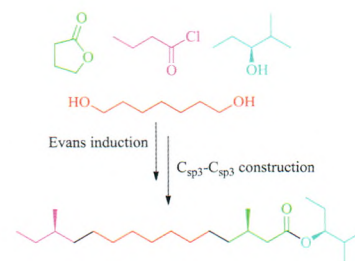
Mesoporous silica vesicles might represent a promising novel drug delivery platform for the treatment of pancreatic cancer.





Chinese Chemical Letters 28 (2017) 558

Stereoselective synthesis of the Paulownia bagworm sex pheromone

Zhi-Feng Sun^{a,b}, Lu-Nan Zhou^a, Tao Zhang^a, Zhen-Ting Du^a^aShaanxi Key Laboratory of Natural Products & Chemical Biology, College of Science, Northwest A&F University, Yangling 712100, China^bCollege of Chemical and Environment Science, Shaanxi University of Technology, Hanzhong, 723001, ChinaThe synthesis of the Paulownia bagworm sex pheromone has been achieved through a C5 + C7 + C5 strategy, using Evans induction and Csp³–Csp³ bond construction.

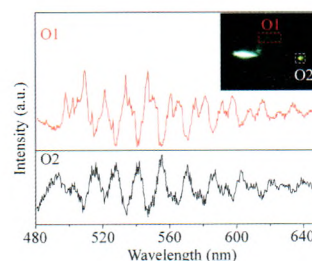
Chinese Chemical Letters 28 (2017) 563

One-step synthesis of organic microwire-disk interconnected structure for miniaturized channel filters

Qiu-Hong Cui, Lan Peng, Zhi-Dong Lou, Yu-Feng Hu, Feng Teng

Key Laboratory of Luminescence and Optical Information, Ministry of Education, School of Science, Beijing Jiaotong University, Beijing 100044, China

The microwire-disk interconnected structure have been fabricated via one-step assembly, which can be utilized as a channel drop filter.

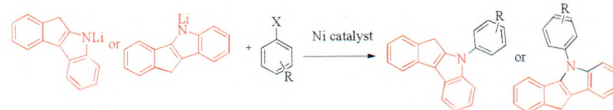


Chinese Chemical Letters 28 (2017) 569

Nickel-catalyzed C-N crossing coupling reaction: The synthetic method for N-aryl substituted indenoindole

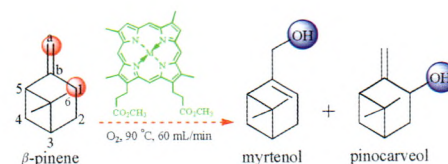
Xin-Le Li^a, Xiao-Mei Lang^a, Lian-Ming Yang^b, Sheng-Yuan Zhou^a, Hong-Fan Hu^a, Shan Xue^a, Xin Sun^a, Shi-Xuan Xin^a^aPolyolefin Research Department, Petrochina Petrochemical Research Institute, Beijing 102206, China^bBeijing National Laboratory for Molecular Sciences (BNLMS), Key Laboratory of Green Printing, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

A nickel-based catalyst was employed for the first time in the crossing-coupling of indenoindoles with bromo-/iodoarenes. A simple and practical method was provided for the synthesis of N-aryl substituted indenoindole and the mechanism of this reaction was discussed.



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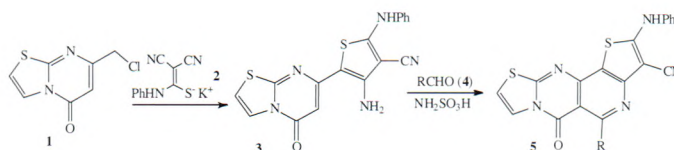
Solvent and additive-free selective aerobic allylic hydroxylation of β -pinene catalyzed by metalloporphyrins

Shi-Chao Xu^{a,b,c,d,e,f}, Shou-Ji Zhu^{a,b,c,d}, Liang-Wu Bi^{a,b,c,d,e,f}, Yu-Xiang Chen^{a,b,c,d,e}, Jing Wang^{a,b,c,d}, Yan-Ju Lu^{a,b,c,d,e}, Yan Gu^{a,b,c,d}, Zhen-Dong Zhao^{a,b,c,d,e,f}^aInstitute of Chemical Industry of Forest Products, Chinese Academy of Forestry, Nanjing 210042, China^bKey Lab. of Biomass Energy and Material, Jiangsu Province, Nanjing 210042, China^cNational Engineering Lab. for Biomass Chemical Utilization, Nanjing 210042, China^dKey and Open Lab. on Forest Chemical Engineering, State Forestry Administration, Nanjing 210042, China^eInstitute of Forestry New Technology, Chinese Academy of Forestry, Beijing, 100091, China^f2011 Collaborative Innovation Center of Jiangxi Typical Trees Cultivation and Utilization in Jiangxi Agricultural University, Nanchang, 330045, ChinaAn efficient MPs catalyzed aerobic oxidation method of β -pinene was established. Allylic hydroxylation products could be obtained in high selectivity.

An efficient method for the synthesis of thieno[3',2':2,3]pyrido[4,5-d]-thiazolo[3,2-a]pyrimidinones

Dao-Lin Wang, Dong Wang, Jin-Juan Xing, Jian-Hua Qian

College of Chemistry and Chemical Engineering, Liaoning Key Laboratory of Synthesis and Application of Functional Compound, Bohai University, Jinzhou 121003, China



An efficient method for the preparation of thieno[3',2':2,3]pyrido[4,5-d]thiazolo[3,2-a]pyrimidin-5-ones **5** is described. The key intermediate, 7-(3-amino-4-cyano-5-phenylaminothieno-2-yl)-5H-thiazolo[3,2-a]pyrimidin-5-one (**3**), was synthesized from 7-chloro methyl-5H-thiazolo[3,2-a]pyrimidin-5-one (**1**) with potassium-(2,2-dicyano-1-phenylaminoethen-1-yl)thiolate (**2**) by Thorpe–Ziegler isomerization. Subsequent reaction of the intermediate amine with aromatic aldehydes via Pictet–Spengler reaction provided thieno-pyridine fused thiazolo[3,2-a]pyrimidines under *p*-TsOH as catalyst in good yields.

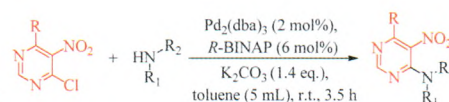
Palladium-catalyzed amination of chloro-substituted 5-nitropyrimidines with amines

Meng-Meng Liu^{a,b}, Qiong Mei^{a,b}, Yi-Xiao Zhang^{a,b}, Peng Bai^{a,b}, Xiang-Hai Guo^{a,b}

^aDepartment of Pharmaceutical Engineering, School of Chemical Engineering and Technology, Tianjin University, Tianjin 300350, China

^bKey Laboratory of Systems Bioengineering (Ministry of Education), Tianjin University, Tianjin 300350, China

Chloro-substituted 5-nitropyrimidines are synthesized using a palladium-catalyst method and has proved the generality of this reaction system. A series of mono-substituted and di-substituted 5-nitropyrimidines are synthesized with a high yield, which can act as the important intermediates of pharmaceutical nucleosides and purines.

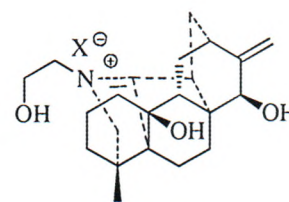


A minor arcutine-type C₂₀-diterpenoid alkaloid iminium constituent of “fu zi”

Xian-Hua Meng, Zhi-Bo Jiang, Qing-Lan Guo, Jian-Gong Shi

State Key Laboratory of Bioactive Substance and Function of Natural Medicines, Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100050, China

A rare arcutine-type C₂₀-diterpenoid alkaloid was characterized as a minor constituent of “fu zi” (the lateral roots of *Aconitum carmichaelii*). The C₂₀-diterpenoid alkaloid is an iminium named aconicarmicharcutinium A and obtained as hydroxide (**1**) and trifluoroacetate (**1a**) forms. Structures of **1** and **1a** were elucidated by comprehensive analysis of spectroscopic data including ¹⁹F and 2D NMR experiments. Compounds **1** and **1a** represent the first examples of the arcutine-type C₂₀-diterpenoid alkaloid iminium.



1 X = OH
1a X = TFA

Fimbriatols K–M, highly functionalized *ent*-kaurane diterpenoids from traditional Chinese plant *Flickingeria fimbriata* (B1.) Hawkes

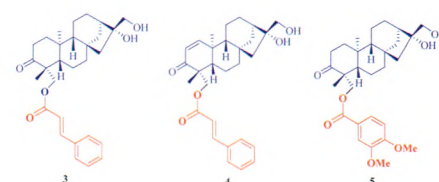
Gang Ding^a, Jing Wang^{a,b}, Jiao-Dong Fei^{a,b}, Rong-Tao Li^c, Hong-Mei Jia^a, Tao Zhang^a, Chang-Yuan Yu^b, Zhong-Mei Zou^a

^aInstitute of Medicinal Plant Development, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100193, China

^bBeijing University of Chemical Technology, Beijing 100029, China

^cHainan Branch of Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100193, China

Three new *ent*-kaurane diterpenoids fimbriatols K–M (**3–5**) with highly substituted functionalities were isolated from the extract of *Flickingeria fimbriata* (B1.) Hawkes. Compounds **3** and **4** contain a cinnamic carboxyl group, whereas compound **5** possesses a benzoic carboxyl group representing the first report in more than known 600 *ent*-kaurane diterpenoids.



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Sesquiterpenoid and C₁₄-polyacetylene glycosides from the rhizomes of *Atractylodes lancea*

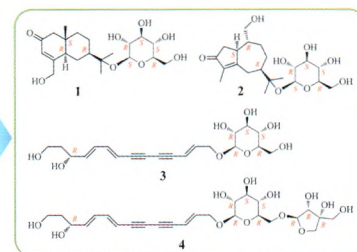
Kuo Xu, Zi-Ming Feng, Jian-Shuang Jiang, Ya-Nan Yang, Pei-Cheng Zhang

State Key Laboratory of Bioactive Substance and Function of Natural Medicines, Institute of Materia Medica, Peking Union Medical College and Chinese Academy of Medical Sciences, Beijing 100050, China

Two new sesquiterpenoid glycosides with a eudesmane (**1**) and a guaiane carbon skeleton (**2**), respectively, and two new C₁₄-polyacetylene glycosides (**3**, **4**) were isolated from *Atractylodes lancea*. Their anti-inflammatory effects were evaluated by the LPS-induced NO production in microglia BV2 cells.



Atractylodes lancea



Investigation of anticancer potencies of newly generated Schiff base imidazolylphenylheterocyclic-2-ylmethylenethiazole-2-amines

Nikhil M. Parekh^a, Bhupendra M. Mistry^b, Muthuraman Pandurangan^b, Surendra K. Shinde^c, Rahul V. Patel^d

^aDepartment of Mathematics, Science & Humanities, Shroff S. R. Rotary Institute of Chemical Technology, Valia 393 135, India

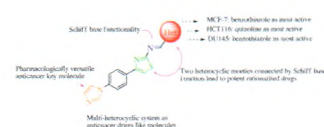
^bOrganic Research Laboratory, Department of Bioresources and Food Science, College of Life and Environmental Sciences, Konkuk University, Seoul 143 701, Republic of Korea

^cCollege of Life Science and Biotechnology, Department of Biological and Environmental Science, Dongguk University, 32, Ilsandong-gu, Goyang-si, Gyeonggi-do 410-820, Republic of Korea

^dDepartment of Food Science and Biotechnology, Dongguk University-Seoul, Ilsandong-gu, Goyang-si, Gyeonggi-do 410-820, Republic of Korea

Multi-heterocyclic anticancer drug-like molecules are designed, synthesized and studied against different cancer cell line as well as a non-cancer cell line.

Chinese Chemical Letters 28 (2017) 602



Morpholine hydrazone scaffold: Synthesis, anticancer activity and docking studies

Muhammad Taha^{a,b}, Syed Adnan Ali Shah^{a,c}, Muhammad Afifi^{a,c}, Manar Zulkeflee^c, Sadia Sultan^{a,c}, Abdul Wadood^d, Fazal Rahim^e, Nor Hadiani Ismail^{a,b}

^aAtta-ur-Rahman Institute for Natural Product Discovery (AuRIns), Universiti Teknologi MARA, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor D. E., Malaysia

^bFaculty of Applied Science, UiTM Shah Alam, 40450 Shah Alam, Selangor D.E., Malaysia

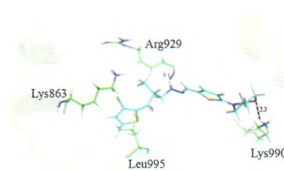
^cFaculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor D.E., Malaysia

^dDepartment of Biochemistry, Abdul Wali Khan University, Mardan 23200, Pakistan

^eDepartment of Chemistry, Hazara University, Mansehra 21300, Pakistan

The *in vitro* anticancer potential of morpholine hydrazones scaffold (**1-17**) was tested against human cancer cell lines like HepG2 and MCF-7. Analogs **13** had similar substantial cytotoxic effects towards HepG2 with IC₅₀ value 6.31 ± 1.03 μmol/L when compared with the standard Doxorubicin (IC₅₀ value 6.00 ± 0.80 μmol/L).

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Novel potentiometric application for the determination of amprolium HCl in its single and combined dosage form and in chicken liver

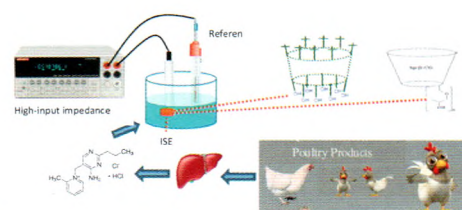
Mai A. Basha^a, Mohamed K. Abd El-Rahman^b, Lories I. Bebawy^a, Maissa Y. Salem^b

^aNational Organization of Drug Control and Research (NODCAR), Cairo 29, Egypt

^bAnalytical Chemistry Department, Faculty of Pharmacy, Cairo University, Cairo 11562, Egypt

We have developed novel potentiometric ion-selective electrodes for the determination of amprolium HCl in chicken liver and combined dosage form.

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A fluorescent aptasensing strategy for adenosine triphosphate detection using tris(bipyridine)ruthenium(II) complex containing six cyclodextrin units

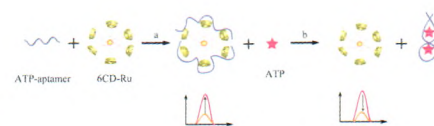
Xin Nie^a, Xin Ning^a, Ying-Ying Zhao^a, Li-Zhu Yang^b, Fan Zhang^a, Pin-Gang He^a

^aSchool of Chemistry and Molecular Engineering, East China Normal University, Shanghai 200241, China

^bSchool of Pharmaceutical Sciences, Wenzhou Medical University, Wenzhou 325035, China

A fluorescent aptasensing strategy based on a metalocyclodextrin–tris(bipyridine)ruthenium(II) complex containing six cyclodextrin units (6CD-Ru) with much enhanced fluorescent signal by ATP (adenosine triphosphate)-aptamer (ssDNA), was developed to detect ATP quantitatively, exhibiting high sensitivity and specificity.

Chinese Chemical Letters 28 (2017) 619

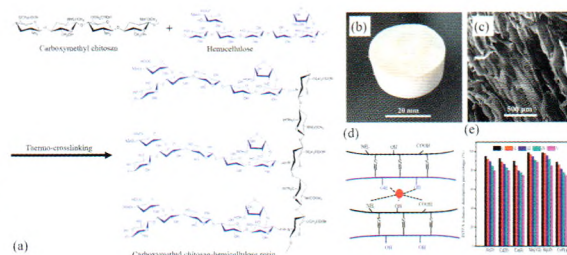


Fabrication of carboxymethyl chitosan–hemicellulose resin for adsorptive removal of heavy metals from wastewater

Shu-Ping Wu, Xiang-Zi Dai, Jia-Rui Kan, Fang-Di Shilong, Mai-Yong Zhu

Institute of Polymer Materials, School of Materials Science and Engineering, Jiangsu University, Zhenjiang 212013, China

Carboxymethyl chitosan–hemicellulose resin (CMCH) was fabricated via thermal cross-linking process and demonstrated to be recyclable and effective adsorbent for removal of heavy metal ions.



Chinese Chemical Letters 28 (2017) 625

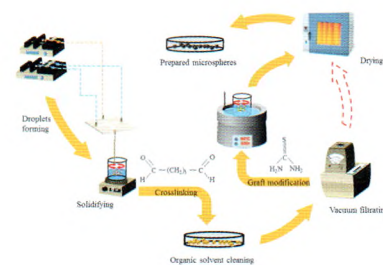
Microfluidic synthesis of thiourea modified chitosan microsphere of high specific surface area for heavy metal wastewater treatment

Yong Zhu, Zhi-Shan Bai, Hua-Lin Wang

State Environmental Protection Key Laboratory of Environmental Risk Assessment and Control on Chemical Process, East China University of Science and Technology, Shanghai 200237, China

The graph shows the flow chart of preparing thiourea modified chitosan microspheres through microfluidic platform. Through droplets forming, chemical crosslinking, pores creating, graft modifying and drying, chitosan microspheres with high specific surface area were obtained.

Chinese Chemical Letters 28 (2017) 633



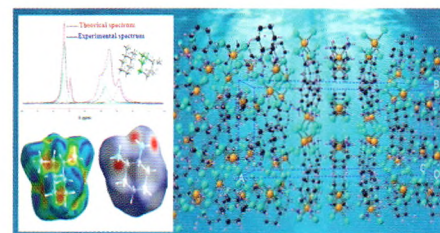
Structural elucidation, theoretical investigation using DFT calculations, thermal and dielectric analyses of new zinc(II) based inorganic–organic hybrid

Nejla Chihaoui, Besma Hamdi, Ridha Zouari

Faculty of Sciences of Sfax, Laboratory of Materials Science and Environment, Department of Chemistry, University of Sfax, BP1171, 3000 Sfax, Tunisia

This research work elucidates the structural, vibrational (FT-IR and Raman) and dielectric properties of a new zero dimensional compound $[1,2-C_6H_{10}(NH_3)_2]ZnCl_4$.

Chinese Chemical Letters 28 (2017) 642

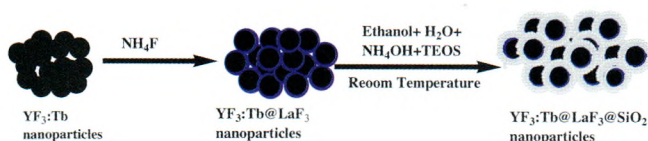


Impact of surface coating on morphological, optical and photoluminescence properties of $\text{YF}_3\text{:Tb}^{3+}$ nanoparticles

Anees A. Ansari

King Abdullah Institute for Nanotechnology, King Saud University, Riyadh 11451, Saudi Arabia

Facile polyol and sol-gel Stober methods were used for synthesis of $\text{YF}_3\text{:Tb}^{3+}$ (core), $\text{YF}_3\text{:Tb}^{3+}\text{@LaF}_3$ (core/shell) and $\text{YF}_3\text{:Tb}^{3+}\text{@LaF}_3\text{@SiO}_2$ (core/shell/ SiO_2) nanoparticles (NPs). We investigated the crystallinity, morphology, surface chemistry, optical absorption and luminescence properties of these core and core/shell nanoparticles.



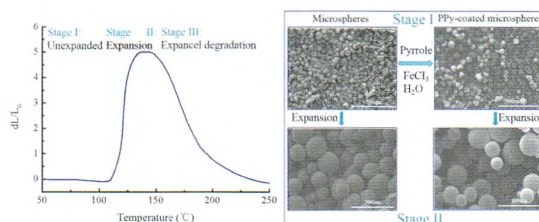
Preparation and characterization of conducting polymer-coated thermally expandable microspheres

Shu-Ying Chen^a, Zhi-Cheng Sun^a, Lu-Hai Li^a, Yong-Hao Xiao^a, Yan-Min Yu^b

^aBeijing Engineering Research Center of Printed Electronics, School of Printing and Packaging Engineering, Beijing Institute of Graphic Communication, Beijing 102600, China

^bCollege of Environmental & Energy Engineering, Beijing University of Technology, Beijing 100124, China

In this paper, the thermally expandable microspheres were prepared via suspension polymerization, meanwhile, polypyrrole-coated microspheres with core/shell structure were successfully prepared by *in situ* deposition from solution and the structure and property were characterized.



Hydrothermal synthesis of triangular CeCO_3OH particles and photoluminescence properties

Md. Hasan Zahir^{a,b}, Shamseldin A. Mohamed^a, Mohammad Mizanur Rahman^c, Ateeq Ur Rehman^d

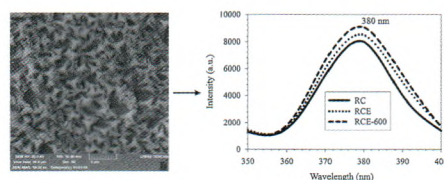
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Ru/CeO_2 [RC] and Ru/CeO_2 /ethylene glycol (EG) [RCE] nanoparticles were produced by hydrothermal reaction. The RC are phase pure CeO_2 ; triangular highly crystalline CeCO_3OH are formed from the solution containing EG under the same hydrothermal reaction conditions.

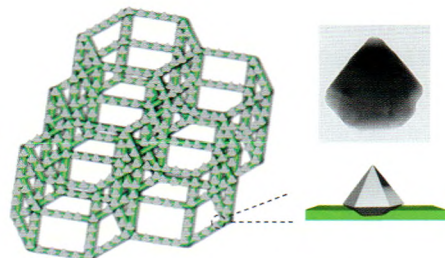


Fabrication of the ZnO/NiO p - n junction foam for the enhanced sensing performance

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P -Type NiO foam with rough nanostructured surface was prepared by the surface treatment of Ni foam, and then it was decorated with n -type ZnO nanopillar to construct a 3D p - n junction foam. The p - n junction foam was used for electrochemical detection of dopamine with the significantly improved sensing performance.



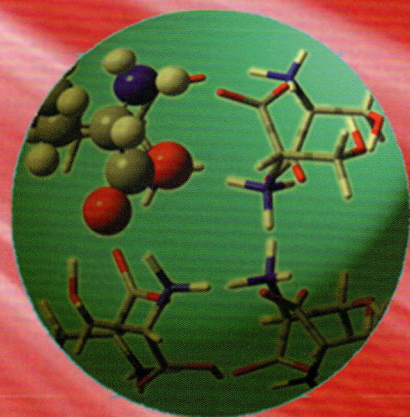
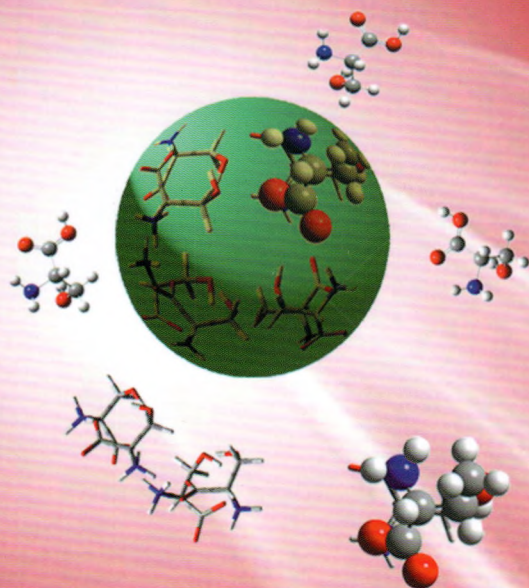
Responsible Institution: China Association for Science and Technology
Sponsor: Chinese Chemical Society
Institute of Materia Medica, Chinese Academy of Medical Sciences
Editor-in-Chief: Xu-Hong Qian
Editor: Editorial Board of Chinese Chemical Letters
Address: Institute of Materia Medica, Chinese Academy of Medical Sciences
1 Xian Nong Tan Street, Beijing 100050, China
Tel: 86-10-63165638
E-mail: cclbj@imm.ac.cn
Website: www.chinchemlett.com.cn
Online Submission: www.ees.elsevier.com/cclet
Publisher: Editorial Office of Chinese Chemical Letters
ELSEVIER B.V.

国内发行: 全国各地邮局

邮发代号: 2-915

定价: 50元/本; 600元/年

**Chiral differentiation of
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spectroscopy in the gas phase**



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