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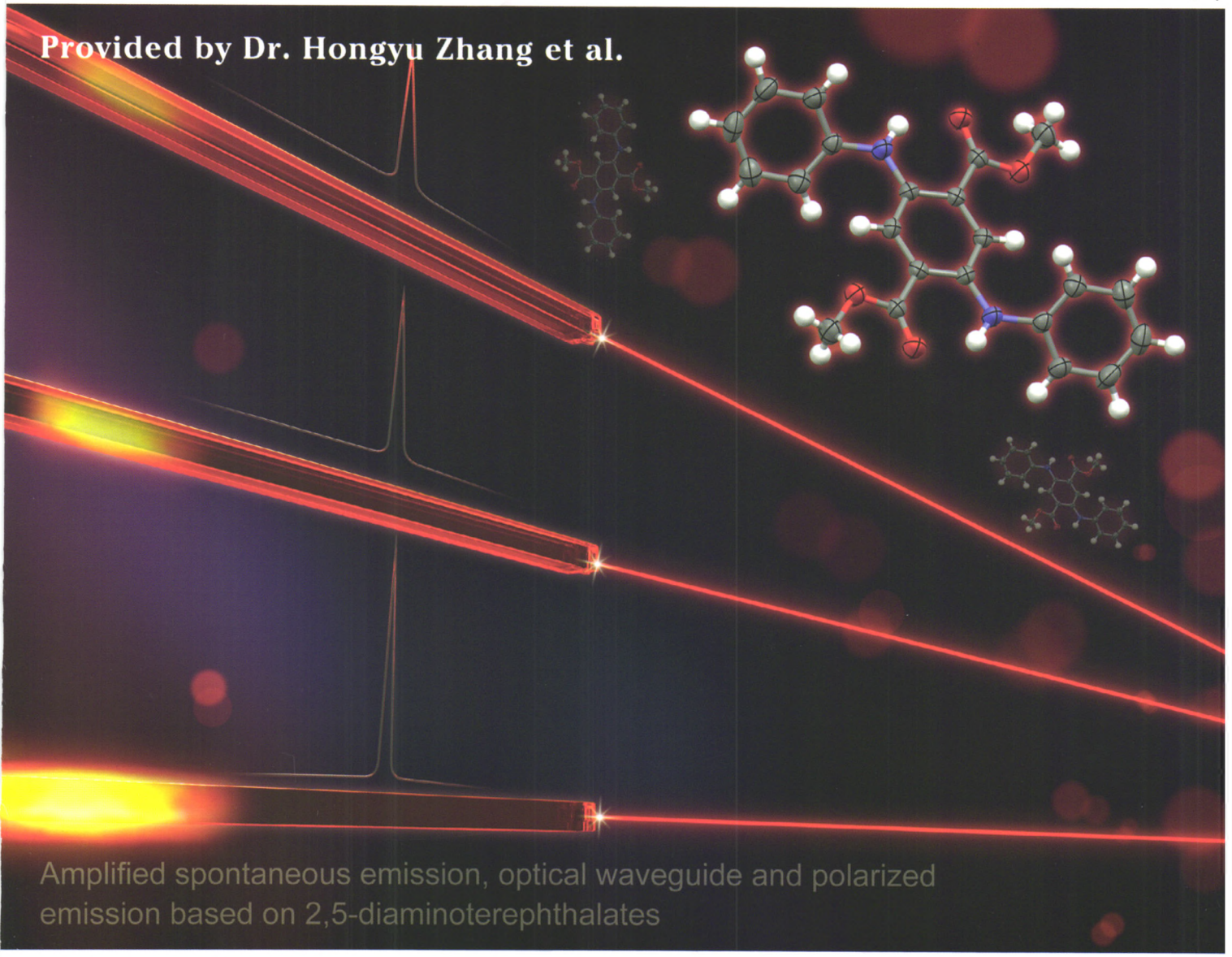

REVIEW
Jinkai Yuan
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REVIEW
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Graphical Abstracts/Chin Chem Lett 28 (2017) iii-viii

Reviews

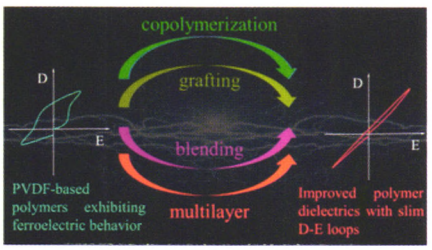
Dielectric phenomena and electrical energy storage of poly(vinylidene fluoride) based high-*k* polymers

Chinese Chemical Letters 28 (2017) 2027

Yingke Zhu[a], Pingkai Jiang[a], Zhicheng Zhang[b,*], Xingyi Huang[a,*]

[a]*Department of Polymer Science and Engineering, Shanghai Key Laboratory of Electrical Insulation and Thermal Aging, Shanghai Jiao Tong University, Shanghai 200240, China*
[b]*Department of Applied Chemistry, School of Science, Xi'an Jiaotong University, Xi'an 710049, China*

Since the discovery of relaxor ferroelectric behavior was firstly reported in irradiated poly(vinylidene fluoride-trifluoroethylene) (P(VDF-TrFE)) copolymer, many strategies have been developed to enhance the electrical energy storage capability, including copolymerization, grafting, blending and fabricating of multilayer. This review article mainly summarizes the recent progresses on these strategies and aims to motivate the development of novel PVDF-based polymers for electrical energy storage and dielectric applications.



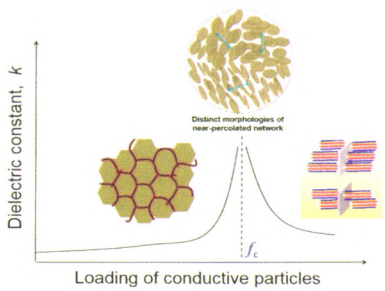
Percolation of carbon nanomaterials for high-*k* polymer nanocomposites

Chinese Chemical Letters 28 (2017) 2036

Jinkai Yuan

Centre de Recherche Paul Pascal, CNRS, Université de Bordeaux, Pessac 33600, France

This review summarized the recent progress towards high-*k* polymer composites bases on the near-percolated networks of carbon nanomaterials by focusing on the effects of distinct network morphologies on the dielectric properties. It is expected to give guidance on designing new near-percolated networks in polymer matrices towards next-generation polymer dielectrics.



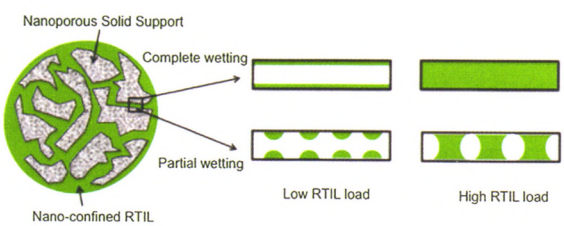
Understanding the wettability of nanometer-thick room temperature ionic liquids (RTILs) on solid surfaces

Chinese Chemical Letters 28 (2017) 2045

Xiao Gong[a,b], Lei Li[a,*]

[a]*Department of Chemical & Petroleum Engineering, Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA 15261, USA*
[b]*State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology, Wuhan 430070, China*

Since many important applications of room temperature ionic liquids (RTILs) such as lubrication, energy storage and catalysis involve RTILs confined to solid surfaces, it is very critical to understand the wettability of nanometer-thick RTILs on solid surfaces.



doi:10.1016/S1001-8417(17)30464-3

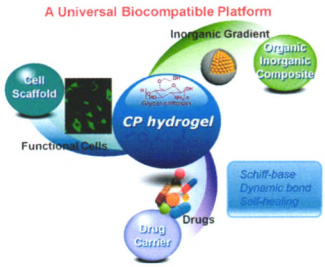
Chitosan-based self-healing hydrogel for bioapplications

Chinese Chemical Letters 28 (2017) 2053

Yongsan Li[a,b], Xing Wang[b,*], Yen Wei[a], Lei Tao[a,*]

[a]*The Key Laboratory of Bioorganic Phosphorus Chemistry & Chemical Biology (Ministry of Education), Department of Chemistry, Tsinghua University, Beijing 100084, China*
[b]*Beijing Laboratory of Biomedical Materials, Beijing University of Chemical Technology, Beijing 100029, China*

A chitosan-based biocompatible self-healing hydrogel has been facilely prepared and used for bioapplications.



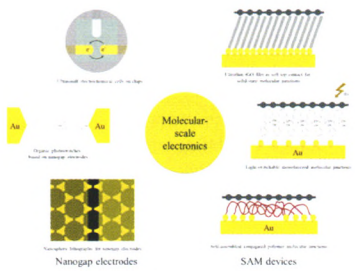
Molecular-scale electronics: From device fabrication to functionality

Chinese Chemical Letters 28 (2017) 2058

Xu Zhang, Tao Li*

School of Chemistry Chemical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

Device fabrication and functionality are two crucial aspects in molecular-scale electronics. Recent advancesin this field, including fabrication and application of nanogap electrodes, self-assembled monolayers and their functional devicesarehighlighted in this review paper.



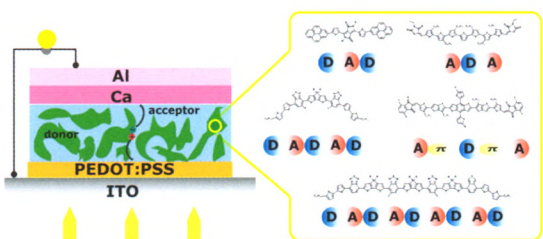
D-A structural protean small molecule donor materials for solution-processed organic solar cells

Chinese Chemical Letters 28 (2017) 2065

Qiong Wu[a,b], Dan Deng[a,*], Kun Lu[a,*], Zhi-Xiang Wei[a]

[a]*CAS Key Laboratory of Nanosystem and Hierarchical Fabrication CAS Center for Excellence in Nanoscience National Center for Nanoscience and Technology, Beijing 100190, China*
[b]*University of Chinese Academy of Sciences, Beijing 100049, China*

This review summarizes the high performance small molecule donors of organic solar cells in various classes of typical donor-acceptor (D-A) structures and discusses their relationships briefly.



Unleashing chemical power from protein sequence space toward genetically encoded "click" chemistry

Chinese Chemical Letters 28 (2017) 2078

Fei Sun[a,*], Wen-Bin Zhang[b,*]

[a]*Department of Chemical and Biological Engineering, The Hong Kong University of Science and Technology, Hong Kong SAR, China*
[b]*Key Laboratory of Polymer Chemistry & Physics of Ministry of Education, Center for Soft Matter Science and Engineering, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, China*

We propose the concept of genetically encoded "click" chemistry (GECC) to describe the "perfect" peptide-protein reactive partners and use SpyTag/SpyCatcher chemistry as a prototype to illustrate their structural plasticity, robust interaction, and versatile applications.

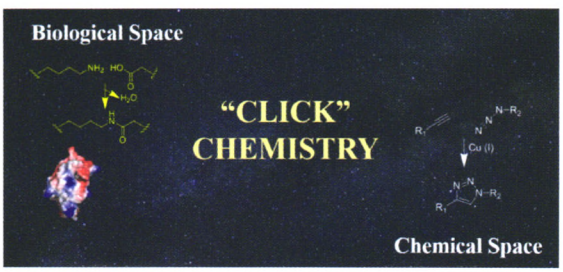


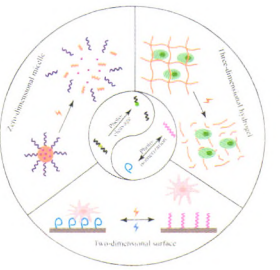
Photo-responsive polymer materials for biological applications

Chinese Chemical Letters 28 (2017) 2085

Yuwei Hao[a,c], Jingxin Meng[b,*], Shutao Wang[b,c,*]

[a]*Beijing National Laboratory for Molecular Sciences, Key Laboratory of Green Printing, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China*
[b]*CAS Key Laboratory of Bio-inspired Materials and Interfacial Science, CAS Center for Excellence in Nanoscience, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing 100190, China*
[c]*University of Chinese Academy of Sciences, Beijing 100049, China*

In this review, we briefly summarized the remarkable progress of photo-responsive polymer materials from zero-dimensional micelles, twodimensional surfaces to three-dimensional hydrogels with irreversible or reversible moieties. Based on the photo-responsiveness, polymer have been designed, synthesized and applied for various biological fields including drug delivery and cell manipulation.



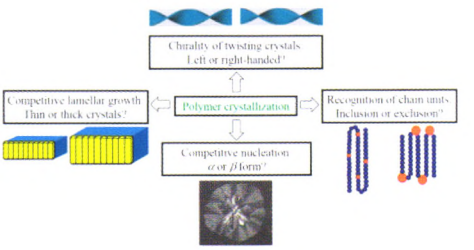
Insights from polymer crystallization: Chirality, recognition and competition

Chinese Chemical Letters 28 (2017) 2092

Jun Xu*, Shujing Zhang, Baohua Guo

Advanced Materials Laboratory of Ministry of Education, Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

Polymer crystallization process far from equilibrium is in practically minimization of the system free energy in local space and finite time, leading to formation of twisted crystals, metastable polymorphism and lamellar crystals with finite thickness. Though each molecule is blind to others, the peculiar ordered configurations with stronger long-range interactions are chosen from the enormous random trials.



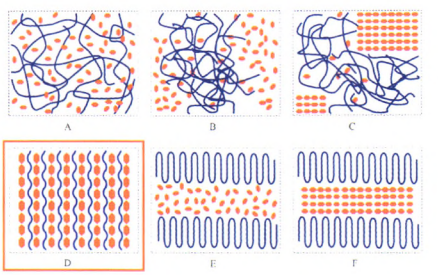
Drug-polymer inclusion complex as a new pharmaceutical solid form

Chinese Chemical Letters 28 (2017) 2099

Xiaotong Yang, Zhi Zhong, Jun Xu, Yanbin Huang*

Key Laboratory of Advanced Materials (MOE), Department of Chemical Engineering, Tsinghua University, Beijing 100084, China

Drug-polymer crystalline inclusion complex is a new structure for the drug-polymer 2-component system, and also is a new drug solid form providing more options to optimize the drug pharmaceutical profile.



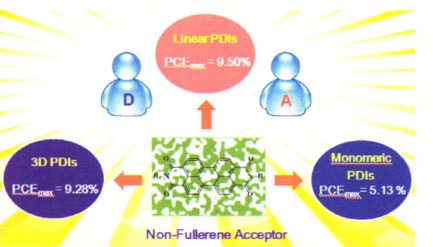
Recent development of perylene diimide-based small molecular non-fullerene acceptors in organic solar cells

Chinese Chemical Letters 28 (2017) 2105

Yuwei Duan, Xiaopeng Xu, Ying Li, Qiang Peng*

Key Laboratory of Green Chemistry and Technology of Ministry of Education, College of Chemistry, and State Key Laboratory of Polymer Materials Engineering, Sichuan University, Chengdu 610064, China

This review summarizes the recent progress of perylene diimide (PDI) derivatives used as the acceptor materials in non-fullerene organic solar cells. The resulting structure-property correlations and design strategies of this type of acceptors are discussed and commented, which will help to constructing high-performance PDI-based acceptor materials in the future. The problems at present and the effort direction are also pointed out in this review.



Communications

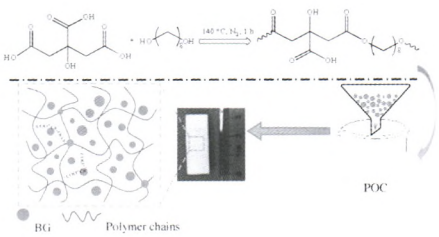
Poly(1,8-octanediol citrate)/bioactive glass composite with improved mechanical performance and bioactivity for bone regeneration

Chinese Chemical Letters 28 (2017) 2116

Hui-Hui Ren[a,b,1], Hui-Yu Zhao[c,1], Yang Cui[a,b], Xiang Ao[c], Ai-Ling Li[a], Zhong-Min Zhang[c,*], Dong Qiu[a,b,**]

[a]*Beijing National Laboratory for Molecular Sciences, State Key Laboratory of Polymer Physics and Chemistry, CAS Research/Education Center for Excellence in Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China*
[b]*University of Chinese Academy of Sciences, Beijing 100190, China*
[c]*Department of Orthopedics, The Third Affiliated Hospital of Southern Medical University, Guangzhou 510665, China*

A series of POC/bioactive glasses (BG) composites were developed using a phytic acid-derived bioactive glass. These composites exhibited improved mechanical performance and excellent biological properties, which make them promising for potential application in bone regeneration.



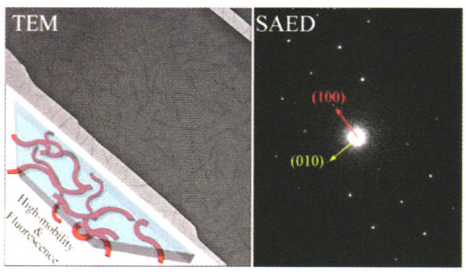
Long-range ordering of composites for organic electronics: TIPS-pentacene single crystals with incorporated nano-fibers

Chinese Chemical Letters 28 (2017) 2121

Huanbin Li[a], Guobiao Xue[a], Jiake Wu[a], Wenqiang Zhang[b], Zhuoting Huang[a], Zengqi Xie[b], Huolin L. Xin[c], Gang Wu[a], Hongzheng Chen[a], Hanying Li[a,*]

[a]*State Key Laboratory of Silicon Materials, MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China*
[b]*Institute of Polymer Optoelectronic Materials and Devices, State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou 510640, China*
[c]*Center for Functional Nanomaterials, Brookhaven National Laboratory Upton, NY 11973, USA*

Fluorescent nanofibers are incorporated into high-mobility single-crystals without substantially disrupting crystalline lattice, demonstrating a strategy to multifunctionalize semiconducting single-crystals.



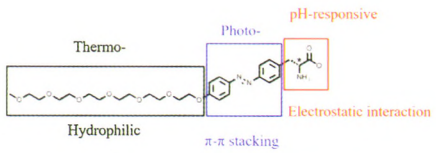
An amino acid-based gelator for injectable and multi-responsive hydrogel

Chinese Chemical Letters 28 (2017) 2125

Wei Xiong, Hantao Zhou, Chong Zhang, Hua Lu*

Beijing National Laboratory for Molecular Sciences, Center for Soft Matter Science and Engineering, Key Laboratory of Polymer Chemistry and Physics of Ministry of Education, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, China

A novel multi-responsive amino acid-based gelator is developed.



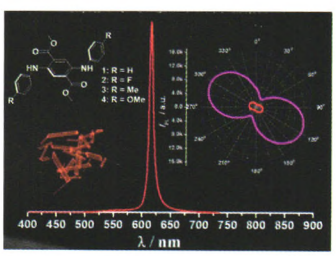
Amplified spontaneous emission, optical waveguide and polarized emission based on 2,5-diaminoterephthalates

Chinese Chemical Letters 28 (2017) 2129

Baolei Tang, Zuolun Zhang*, Huapeng Liu, Hongyu Zhang*

State Key Laboratory of Supramolecular Structure and Materials, College of Chemistry, Jilin University, Changchun 130012, China

A series of brightly emissive 2,5-diaminoterephthalates have been found to exhibit good amplified spontaneous emission, optical waveguide and polarized emission properties.



D-A structured high efficiency solid luminogens with tunable emissions: Molecular design and photophysical properties

Chinese Chemical Letters 28 (2017) 2133

Yunzhong Wang[a,1], Zihan He[a,1], Gan Chen[a], Tong Shan[b], Wangzhang Yuan[a,*], Ping Lu[b,*], Yongming Zhang[a,*]

[a]School of Chemistry and Chemical Engineering, Shanghai Key Lab of Electrical Insulation and Thermal Aging, Shanghai Electrochemical Energy Devices Research Center, Shanghai Jiao Tong University, Shanghai 200240, China
[b]State Key Laboratory of Supramolecular Structure and Materials, Jilin University, Changchun 130012, China

The combination of an electron-accepting unit with aggregation-induced emission features and varying electron-donating arylamines yields high efficiency solid luminogens with tunable emissions from green to red.

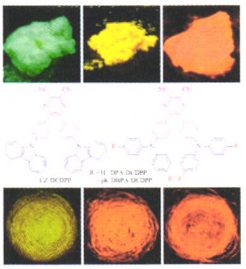


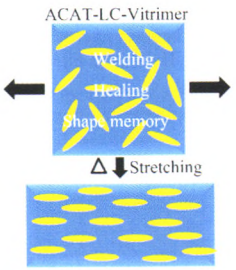
Photo-responsive liquid crystalline vitrimer containing oligoanilines

Chinese Chemical Letters 28 (2017) 2139

Qiaomei Chen, Yen Wei*, Yan Ji*

MOE Key Laboratory of Bioorganic Phosphorus Chemistry & Chemical Biology, Department of Chemistry, Tsinghua University, Beijing 100084, China

The ACAT-LC-vitrimer not only can perform three light-controlled functions (welding, healing and shape memory), but also can be prepared into aligned monodomain LC actuators with strains of about 40%–45% by simply stretching the cured material at temperature above the topology- freezing transition temperature.



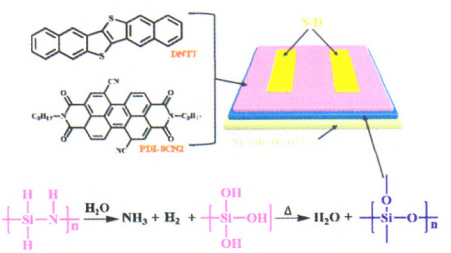
Solution-processable precursor route for fabricating ultrathin silica film for high performance and low voltage organic transistors

Chinese Chemical Letters 28 (2017) 2143

Shujing Guo[a,b], Zhongwu Wang[b], Zeyang Xu[b], Shuguang Wang[b], Kunjie Wu[b], Shufeng Chen[a,*], Zongbo Zhang[c,*], Caihong Xu[c], Wenfeng Qiu[b,*], Liqiang Li[b,*]

[a]Inner Mongolia University of College of Chemistry and Chemical Engineering, Hohhot 010021, China
[b]Advanced Nano-materials Division, Key Laboratory of Nano-Devices and Applications, Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou 215123, China
[c]Laboratory of High-Tech Materials, Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

In this paper, we introduce a simple solution spin-coating method to fabricate silica thin film from precursor route in the condition of low temperature and atmospheric environment, which possesses a low leakage current, high capacitance, and low surface roughness. With silica film (~ 50 nm), high performance and low voltage (< 4 V) p-/n-type organic transistors are fabricated. This method shows great potential for industrialization owing to its characteristic of low consumption and energy saving, time-saving and easy to operate.



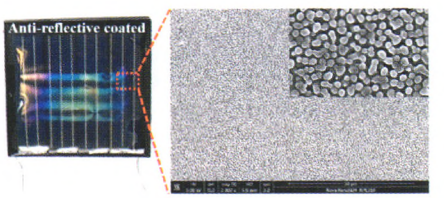
Facile and robust strategy to antireflective photo-curing coating through self-wrinkling

Chinese Chemical Letters 28 (2017) 2147

Honghao Hou[1], Yanchang Gan[1], Xuesong Jiang*, Jie Yin*

School of Chemistry & Chemical Engineering, State Key Laboratory for Metal Matrix Composite Materials, Shanghai Jiao Tong University, Shanghai 200240, China

A facile and bio-inspired strategy for obtaining antireflective coating is presented through polymerization-induced self-wrinkling with a high transmittance over 90% and low reflection below 5%~8%, and successful application for an efficiency encapsulation of the thin film solar cells results in appreciable photovoltaic performance improvement of more than 4%~8%.



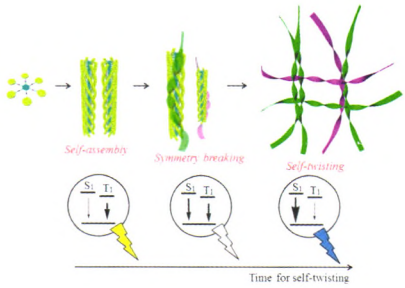
Self-twisting for macrochirality from an achiral asterisk molecule with fluorescence-phosphorescence dual emission

Chinese Chemical Letters 28 (2017) 2151

Hongwei Wu[a,b], Bin Wu[a], Xiyuan Yu[a], Pei Zhao[a], Wenbo Chen[c], Liangliang Zhu[a,*]

[a]*State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, Shanghai 200433, China*
[b]*Shanghai Key Lab of Polymer and Electrical Insulation, School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China*
[c]*Shanghai Key Laboratory of Materials Protection and Advanced Materials in Electric Power, Shanghai University of Electric Power, Shanghai 200090, China*

A self-progressing chiral self-assembly form an achiral and C_6-symmetric molecule, resulting in a chiral amplification with prolonging the time. The system shows three distinct luminescent colors with the change of time in the same solution system.



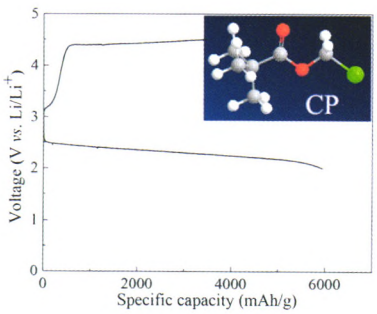
Chloromethyl pivalate based electrolyte for non-aqueous lithium oxygen batteries

Chinese Chemical Letters 28 (2017) 2155

Taoran Li[a], Chaolumen Wu[a], Huanhuan Yuan[a], Lei Li[a,b,*], Jun Yang[b]

[a]*School of Chemistry and Chemical Engineering, Shanghai Key Lab of Electrical Insulation and Thermal Aging, Shanghai Jiao Tong University, Shanghai 200240, China*
[b]*Shanghai Electrochemical Energy Devices Research Center, School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China*

A novel stable liquid electrolyte with chloromethyl pivalate used as solvent for Li-O_2 batteries was first reported, and the batteries showed high specific capacity and good cycling stability.



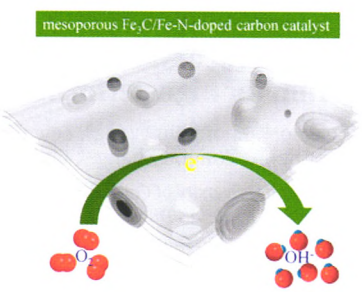
A facile template approach for the synthesis of mesoporous Fe_3C/Fe-N-doped carbon catalysts for efficient and durable oxygen reduction reaction

Chinese Chemical Letters 28 (2017) 2159

Shuai Li[1], Bo Li[1], Liang Ma, Jia Yang, Hangxun Xu[*]

CAS Key Laboratory of Soft Matter Chemistry, Department of Polymer Science and Engineering, University of Science and Technology of China, Hefei 230026, China

Layer-structured FeOCl was used as a novel inorganic template and the Fe doping source for the facile synthesis of three-dimensional polypyrrole structures which can be converted into mesoporous Fe_3C/Fe-N-doped carbon catalysts for efficient and robust oxygen reduction reaction.



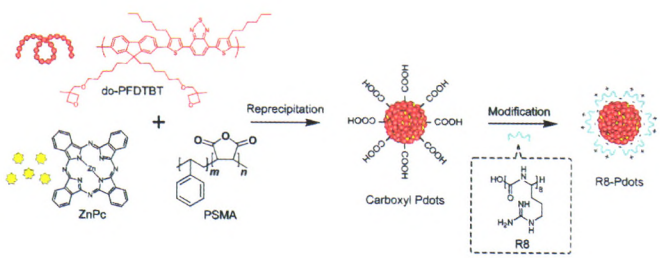
Semiconducting polymer dots with photosensitizer loading and peptide modification for enhanced cell penetration and photodynamic effect

Chinese Chemical Letters 28 (2017) 2164

Ying Tang[a,1], Zi-Hui Meng[b,1], Hong Xu[a,*], Chang-Feng Wu[c,*]

[a]*Department of Gastroenterology, The First Hospital of Jilin University, Changchun 130021, China*
[b]*Department of Hepatobiliary-Pancreatic Surgery, China-Japan Union Hospital of Jilin University, Changchun 130033, China*
[c]*Department of Biomedical Engineering, Southern University of Science and Technology, Shenzhen 510855, China*

We utilized semiconducting polymer do-PFDTBT, photosensitizer ZnPc and functional polymer PSMA to prepare carboxyl Pdots. The carboxyl Pdots were modified with cell penetrating peptides (R8) to prepare peptide coated-Pdots, which could enhance the cell penetration and photodynamic effect.



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