

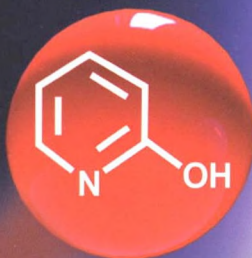
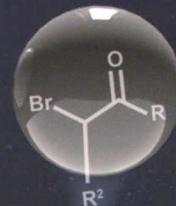
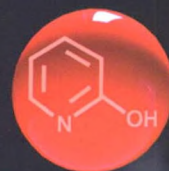
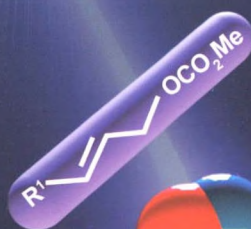
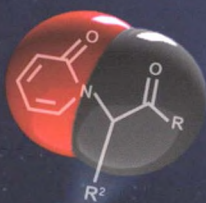
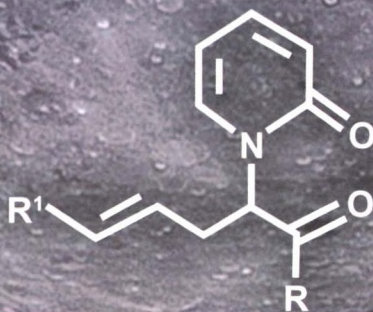
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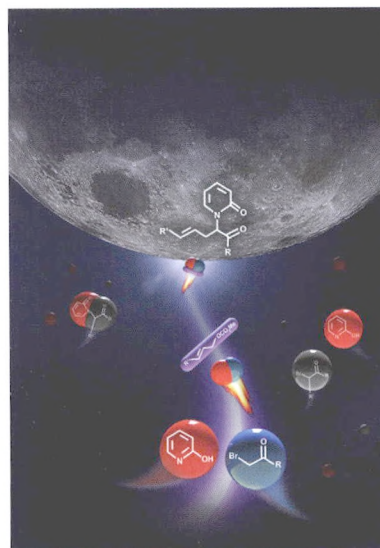
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On the cover: A Pd-catalyzed three-component chemospecific allylic substitution cascade has been developed for the synthesis of *N*-carbonylmethylene-2-pyridone derivatives in up to 98% yield. No *O*-alkylated by-product was observed. [Zhang, Wanbin *et al.* on page 993-998.]

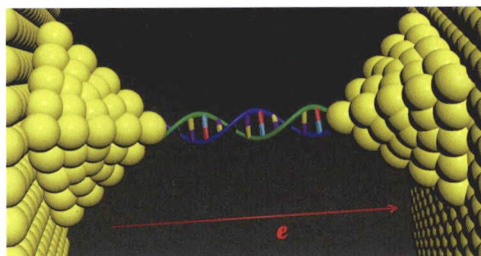


Review

Advances in Charge Transport through DNA Molecular Junction by Employing Electrodes Pair with Nanometer-sized Separation

Yang, Wei-Yu; Lei, Zhi-Chao; Hong, Wen-jing*; Huang, Fei-Zhou*

Acta Chim. Sinica **2019**, 77(10), 951-963

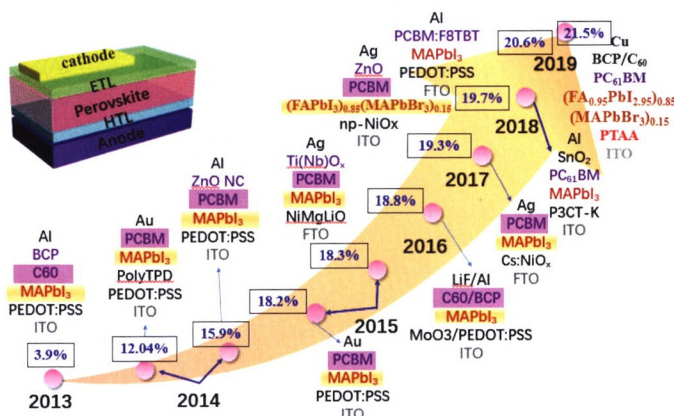


Recent progress in charge transport through DNA molecular junction is presented in this review. Several methods for fabricating electrodes pair with nanometer-sized separation are introduced and compared. And, a prospect on the future studies on this field is given.

Research Progress of Inverted Perovskite Solar Cells

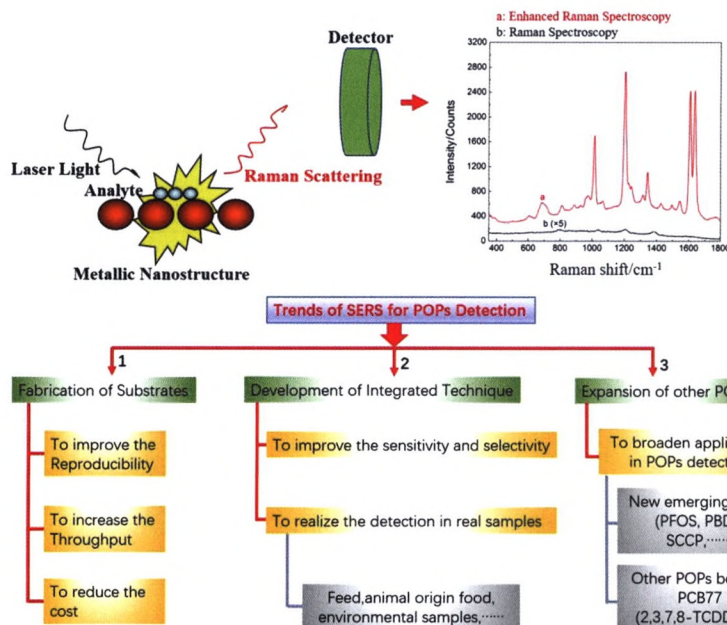
Yang, Ying; Zhu, Congtan; Lin, Feiyu; Chen, Tian; Pan, Dequn; Guo, Xueyi*

Acta Chim. Sinica **2019**, 77(10), 964-976



The development of inverted perovskite solar cells, the selection of carrier transport materials, interface optimization, and the development of flexible devices are systematically reviewed in this paper. It provides a way to obtain a high efficiency inverted perovskite solar cells by structure and material optimization. And it also give insights into the general rules for preparing large area and flexible devices.

Recent Progress on the Detection of Dioxins Based on Surface-enhanced Raman Spectroscopy



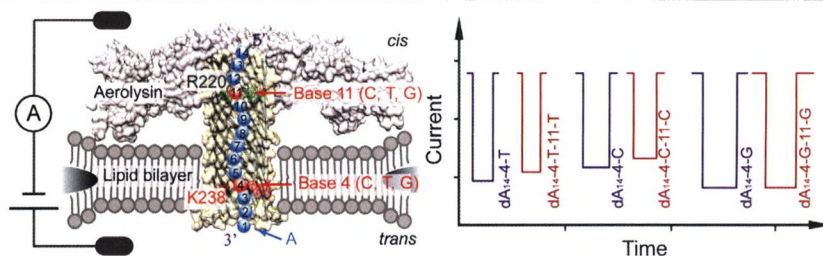
As a new type of rapid detection technology, surface-enhanced Raman Spectrum (SERS) has the characteristics of high sensitivity analysis. The research progress of the analysis of POPs based on SERS in recent years are summarized in this review, including the different types of enhanced substrates, several key technical points of SERS, and the development trends of SERS for POPs detection in the future.

Cheng, Jie; Wang, Peilong*; Su, Xiaou*

Acta Chim. Sinica **2019**, 77(10), 977-983

Communication

Unveiling the Synergistic Effect from Key Sensing Regions in Aerolysin-Based Single Oligonucleotide Detection

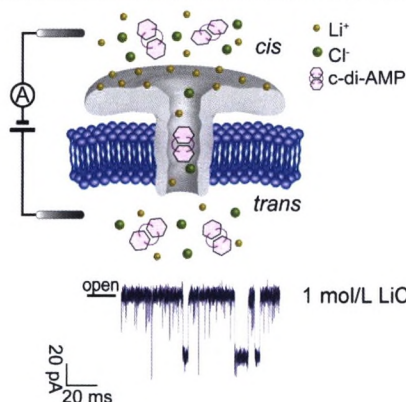


Li, Mengyin; Ying, Yilun; Long, Yi-Tao*

Acta Chim. Sinica **2019**, 77(10), 984-988

The R1 region of Aerolysin nanopore (near R220) owns high sensing ability to discriminate single base variation of oligonucleotide in this region no matter R2 region (near K238) is placed by base A, T or C.

Detection of Single c-di-AMP by an Aerolysin Nanopore

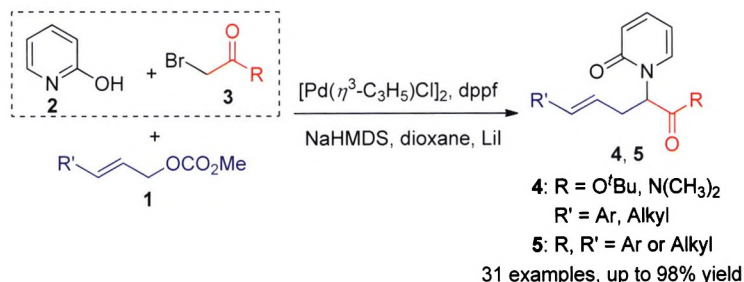


Niu, Hongyan; Hu, Zhengli; Ying, Yilun*; Long, Yi-Tao

Acta Chim. Sinica **2019**, 77(10), 989-992

An ultrasensitive aerolysin-based single molecule sensor was developed for the detection of single c-di-AMP which is a ubiquitous second messenger in prokaryotic cells. 1.0 mol/L LiCl was used as electrolyte solution to facilitate the aerolysin capturing of single c-di-AMP molecule. The results showed that the number of translocation events in per minute in LiCl is 30 times larger than in KCl at 90 mV. Therefore, our study provides a label-free and low-cost method to rapid detection of single c-di-AMP molecule.

Pd-Catalyzed Three-Component Chemospecific Allylic Substitution Cascade for the Synthesis of *N*-Carbonylmethylene-2-Pyridones



Three-component in one-pot; Large scope substrates with high yields

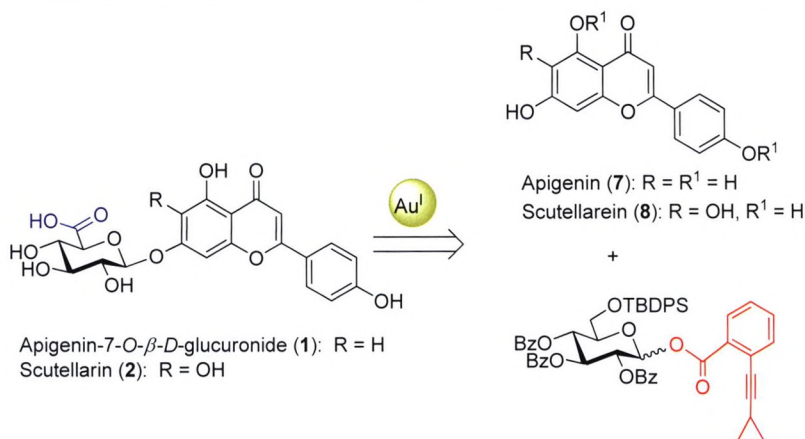
A Pd-catalyzed three-component chemospecific allylic substitution for the construction of *N*-carbonylmethylene-2-pyridones was developed with the desired products being obtained in up to 98% yield. No *O*-alkylated by-products were observed. The reaction was performed on a gram scale and the corresponding alkylated products were conveniently converted to pyridone-containing unnatural amino acids. This methodology allows for the highly chemoselective synthesis of biologically important *N*-carbonylmethylene-2-pyridones.

Yao, Kun; Liu Hao; Yuan, Qianjia; Liu, Yangang; Liu, Delong*; Zhang, Wanbin*

Acta Chim. Sinica **2019**, 77(10), 993-998

Article

Efficient Synthesis of Representative Flavone-7-*O*-Glycosides

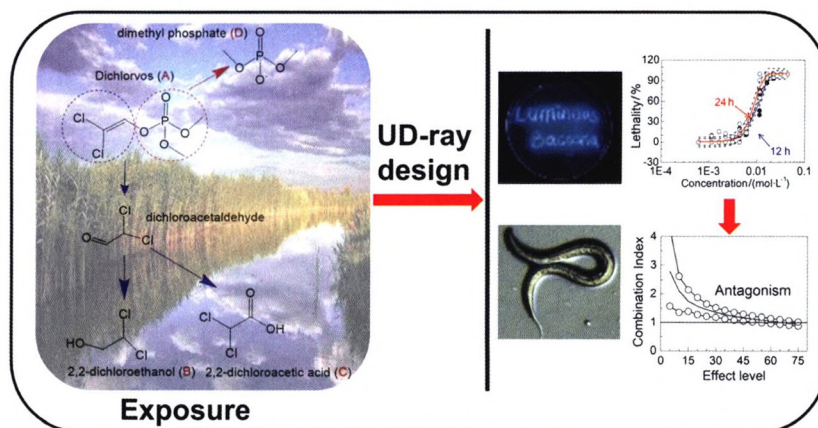


Shao, Wenbo; An, Quanlin; Cao, Xin*; Yu, Biao*

Acta Chim. Sinica **2019**, 77(10), 999-1007

Efficient synthesis of flavone-7-*O*-glucuronides was achieved via Au(I)-catalyzed glycosylation with glucopyranosyl *ortho*-alkynylbenzoates followed by a late-stage oxidation.

Combined Toxicity of Dichlorvos and Its Metabolites to *Vibrio qinghaiensis* sp.-Q67 and *Caenorhabditis elegans*



The combined toxicities of dichlorvos and its metabolites to *Vibrio qinghaiensis* sp.-Q67 are concentration additive at low concentration levels and antagonistic at high concentration levels at short and long exposure times. For *Caenorhabditis elegans*, mixtures of dichlorvos and its metabolites exhibit concentration additive in general at two exposure times.

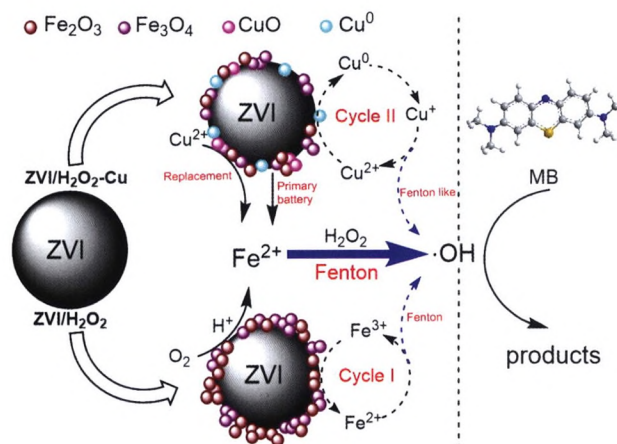
Zheng, Qiao-Feng; Ju, Zhen; Liu, Shu-Shen*

Acta Chim. Sinica **2019**, 77(10), 1008-1016

Synergistic Removal of Co-contamination by Heterogeneous Fenton System: Chemical Conversion, pH Effect and Mechanism Analysis

Yang, Bo; Zhang, Yongli*

Acta Chim. Sinica **2019**, 77(10), 1017-1023

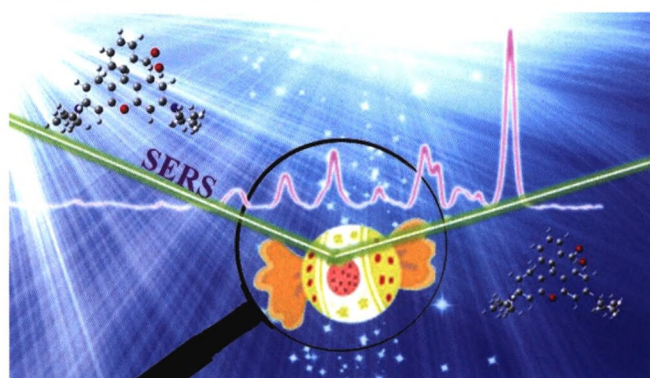


The chemical changes of ZVI micro-surface in the process of removing target pollutants were compared between ZVI/H₂O₂ and ZVI/H₂O₂-Cu and the material transformation of ZVI and Cu²⁺ was also analyzed. The mechanism of ZVI/H₂O₂ synergistically removing Cu²⁺ and strengthening MB degradation was systematically explained.

Trace Detection of Rhodamine B in Infant Candy by g-C₃N₄/Ag Nanocomposite as Surface-enhanced Raman Scattering Substrate

Ma, Chao; Wu, Jiawei; Zhu, Lin; Han, Xiaoxia; Ruan, Weidong; Song, Wei*; Wang, Xu*; Zhao, Bing

Acta Chim. Sinica **2019**, 77(10), 1024-1030

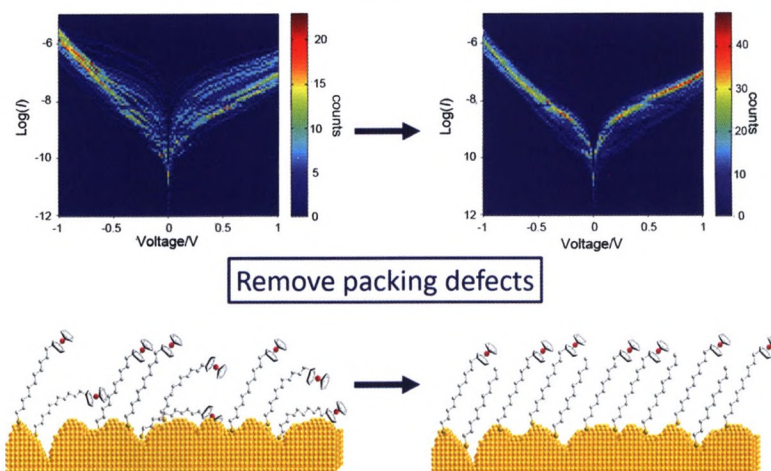


Surface-enhanced Raman scattering (SERS) technique is used to rapidly and non-destructively detect the banned RhB that is usually added in food. g-C₃N₄/Ag composites SERS substrate have been successfully prepared via a simple method, which can be used for rapid adsorption and trace detection of RhB. The influence of pH on the surface plasmon resonance (SPR) of the substrate and the pH of the probe molecule were investigated in detail. The detection limit of RhB is as low as 0.39 nmol/L.

Tuning Rectification Properties of Molecular Electronic Devices by Mixed Monolayer

Wang, Ziyang; Khalid, Hira; Li, Baili; Li, Yao; Yu, Xi*; Hu, Wenping

Acta Chim. Sinica **2019**, 77(10), 1031-1035

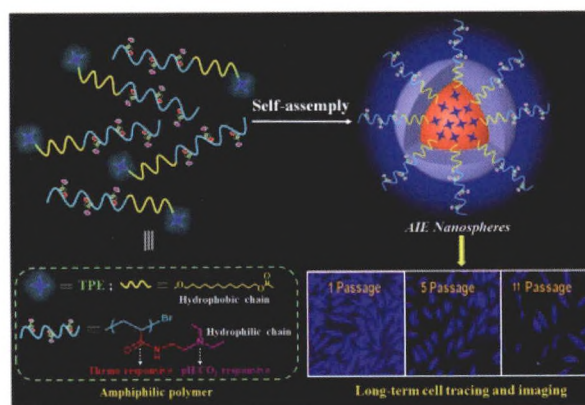


Organic rectifiers (FcC11-SH) are disordered on a rough substrate and thus exhibit poor device performance. The addition of diluent (C11-SH) can remove the packing defects and improves rectification ratio.

Preparation of Multi-stimulus Responsive Polymer Nanospheres Based on AIE Effect and Its Cell Tracing Application

Guan, Xiaolin*; Wang, Lin; Li, Zhifei; Liu, Meina; Wang, Kailong; Lin, Bin; Yang, Xueqing; Lai, Shoujun; Lei, Ziqiang

Acta Chim. Sinica **2019**, 77(10), 1036-1044

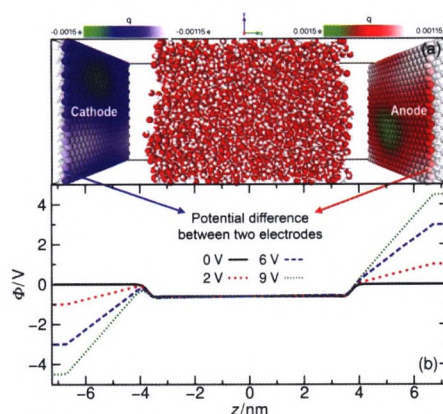


The amphiphilic polymer TPE-g-PDEAEAM has excellent AIE effect, stimulating response to temperature/pH/CO₂, self-assembly forms nano-microspheres of about 200 nm, and can effectively trace HeLa cells to 11 generations or more.

A Molecular Dynamics Simulation Study of the Effect of External Electric Field on the Water Surface Potential

Yang, Pengli; Wang, Zhenxing; Liang, Zun; Liang, Hongtao; Yang, Yang*

Acta Chim. Sinica **2019**, 77(10), 1045-1053

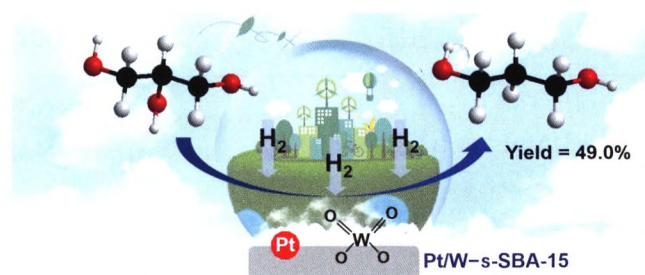


(a) Snapshot of a constant potential method molecular-dynamics simulation, in which a room temperature water slab plus two vapor slab are sandwiched between two platinum electrodes maintained at constant potential difference 2 V. The color code on the electrode atoms indicate instantaneous charges. In the liquid water region, the red spheres represent oxygen and the smaller white spheres represent hydrogen. (b) Electric potential profile from 4 different voltage difference simulations, calculated using the probe and average method.

Synthesis and Catalysis of Pt/W-s-SBA-15 Catalysts with Short Channel for Glycerol Hydrogenolysis to 1,3-Propanediol

Cheng, Shijie; Zeng, Yang; Pei, Yan; Fan, Kangnian; Qiao, Minghua*; Zong, Baoning*

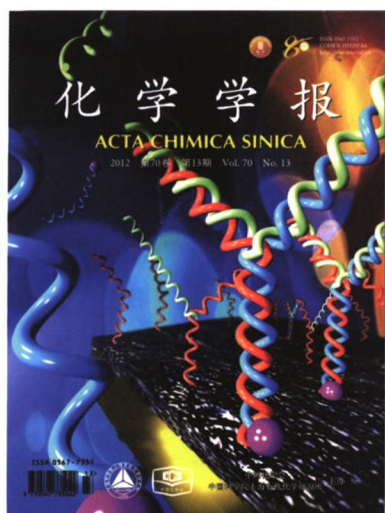
Acta Chim. Sinica **2019**, 77(10), 1054-1062



The mesoporous SBA-15 molecular sieves doped *in situ* by W with channels parallel to the short axis (W-s-SBA-15) were synthesized and used as the supports for the preparation of the Pt/W-s-SBA-15 catalysts. The effect of the loadings of Pt and W on the catalytic performance in glycerol hydrogenolysis to 1,3-propanediol (1,3-PDO) was investigated. The highest yield of 1,3-PDO of 49.0% was resulted on the 4Pt/W-s-SBA-15(1/480) catalyst.

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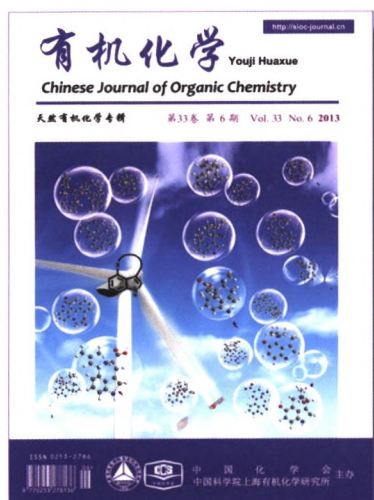
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