

# 应用化学

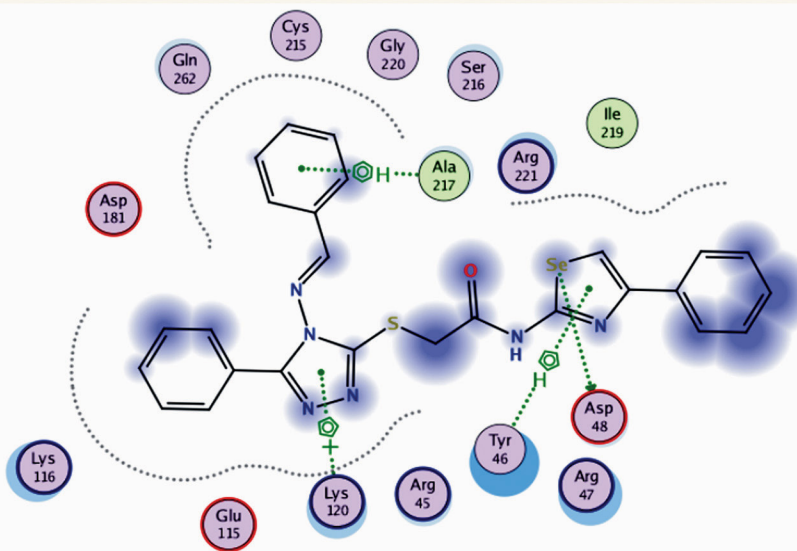
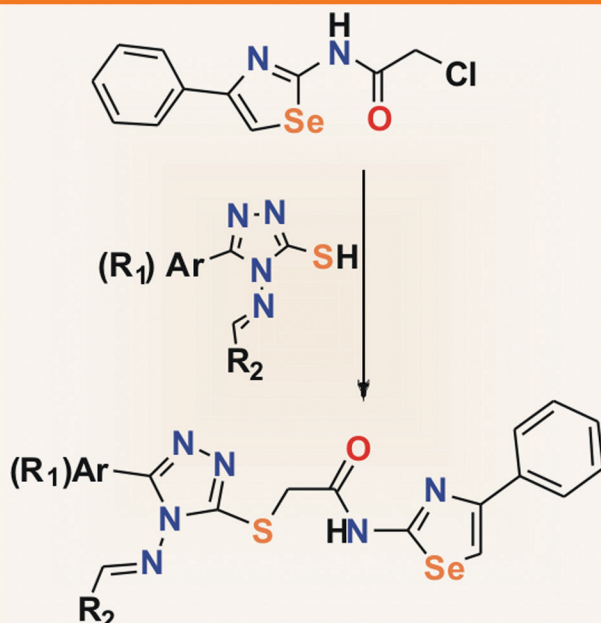
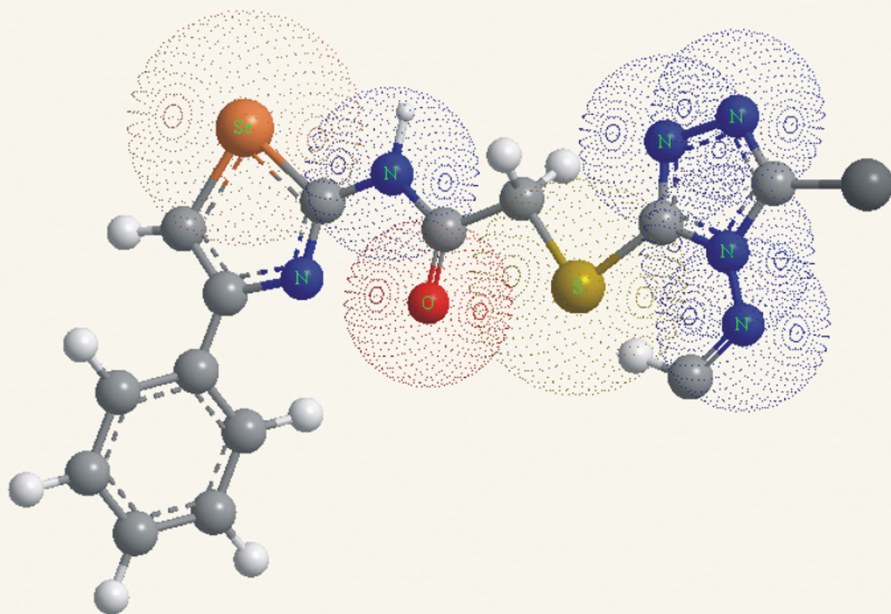
第36卷 第7期

2019

YINGYONG HUAXUE

Volume 36 Issue 7

CHINESE JOURNAL OF APPLIED CHEMISTRY



A novel potential PTP1B inhibitors containing 1,3-selenazole unit were synthesized. The result of inhibitory activities and molecular docking simulation show that excellent inhibitory activities are obtained and hydrogen bonds are performed between the molecule and the enzyme.



科学出版社  
万方数据



微信公众平台(yyhx1983)

中国科学院长春应用化学研究所  
中国化学学会  
科学出版社

主办  
出版

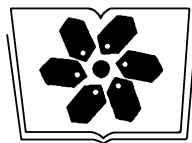


CHINESE  
CHEMICAL  
SOCIETY

# 应用化学

(YINGYONG HUAXUE)

第 36 卷 第 7 期 2019 年 7 月



中国科学院科学出版基金资助出版

## 目 次

中文核心期刊

### · 封面图片 ·

4-苯基-1,3-硒唑衍生物的合成及其对蛋白酪氨酸磷酸酯酶-1B 抑制活性 .....

张成路\* 王华玉 李奕麟 王一鸣 官荣庆 孙越冬 宋府璐

以 1,3-硒唑为核心骨架, 拼合 1,2,4-三唑构筑了潜在的新型 PTPIB 抑制剂。抑制活性和分子对接模拟结果表明, 目标分子抑制活性优良, 分子与酶分子发生氢键作用。

详细描述见 749 ~ 757 页

### · 综合评述 ·

基于荧光效应的小分子抗癌药物释放体系研究进展 ..... 张继东\* 李家源 金华峰 (733)

### · 研究论文 ·

4-苯基-1,3-硒唑衍生物的合成及其对蛋白酪氨酸磷酸酯酶-1B 抑制活性 .....

张成路\* 王华玉 李奕麟 王一鸣 官荣庆 孙越冬 宋府璐 (749)

有机催化异氰基乙酸甲酯与芳香醛亚胺的不对称 Mannich 反应 .....

王黎明 穆宏文 卢栋泽 李雪涛 李彤 金瑛\* (758)

氯代烷烃、硫粉和氢亚磷酸酯一步合成 S-烷基硫磷酸酯 .....

梁弘文 张亮亮 唐果\* (764)

超支化双吡啶亚胺铬催化剂的合成及催化乙烯齐聚性能 .....

王俊\* 刘锦义 陈丽铎 兰天宇 王力搏 (773)

Ni-P 共掺杂超交联聚合物的制备及催化还原 4-硝基苯酚 .....

唐成 邹志娟 宋昆鹏\* (782)

包覆重钙粉为填充剂的橡胶加工及性能 .....

范天博 陈思 姜宇 蔡勋 亢萍 李莉 张利 刘云义\* (790)

含氟环氧树脂杂化纳米二氧化硅超疏水材料的制备与性能 .....

侯成敏\* 李娜 董海涛 寇艳萍 (798)

商用聚丙烯酸类高吸水树脂粒子尺寸及分布与其凝胶浓度的关系 .....

马蕊 李双双 王晓伟 付志磊 潘鸽 符波 石彤非 黄以能 汤华清 李思佳 许东华\* 周恒为\* (807)

功能化多壁碳纳米管填充的凝胶电解质在染料敏化太阳能电池的应用 .....

盛磊 李廷鱼 郭丽芳 李刚\* 张文栋 (815)

毛细管电色谱-电喷雾-飞行时间/质谱联用分离分析混合氨基酸对映体 .....

万方数据

|  |       |
|--|-------|
| ..... 李英杰 林肖同 高立娣* 秦世丽 唐艺旻 靳志向 张 帅 (823)   | (823) |
| 急性瘦肉精中毒检材的 QuEChERS 净化-液质联用快速确证方法.....     |       |
| ..... 蔡志斌* 孙金影 徐小燕 张 英 赖建辉 刘金明 (832)       | (832) |
| 以还原氧化石墨烯和纳米二氧化锆为 DNA 探针固定平台电化学测定转基因玉米中特定基因 |       |
| 序列..... 王学亮* 王朝霞 汪 涛 戴晓辉 (839)             | (839) |
| 基于次血红素六肽的过氧化氢和葡萄糖灵敏比色方法 .....              |       |
| ..... 石 鑫 刘传志 官 平 李 伟 侯 玥* (847)           | (847) |
| 通知·启事 .....                                | (789) |

## CONTENTS

## Cover Picture

Synthesis of 4-Phenyl-1,3-selenazole Derivative and Evaluation of Its Inhibitory Activity Against Protein Tyrosine Phosphatase-1B

ZHANG Chenglu<sup>\*</sup>, WANG Huayu, LI Yilin, WANG Yiming, GONG Rongqing, SUN Yuedong, SONG Fulu

1,3-Selenazole was used as the core framework and combined with 1,2,4-triazole to construct a novel potential PTP1B inhibitors. The result of inhibitory activities and molecular docking simulation show that the target molecules have excellent inhibitory activities and hydrogen bonds are performed between the molecule and the enzyme.

For details see pp749-757

## Review

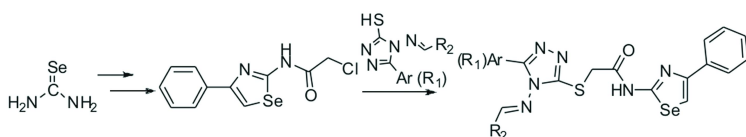
Research Progress on Small Molecule Anticancer Drug Release System Based on Fluorescence Effect

ZHANG Jidong<sup>\*</sup>, LI Jiayuan, JIN Huafeng

2019, 36(7):733-748

## Full Papers

Synthesis of 4-Phenyl-1,3-selenazole Derivative and Evaluation of Its Inhibitory Activity Against Protein Tyrosine Phosphatase-1B

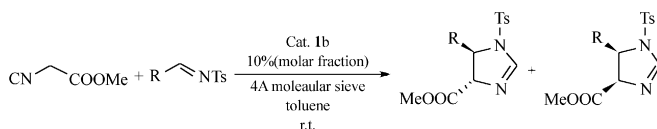


The 1,3-selenazole and 1,2,4-triazole are combined by an amide thioether bond to construct novel target molecules, which are expected to act as PTP1B inhibitors.

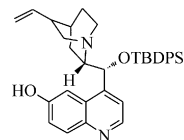
ZHANG Chenglu<sup>\*</sup>, WANG Huayu, LI Yilin, WANG Yiming, GONG Rongqing, SUN Yuedong, SONG Fulu

2019, 36(7):749-757

Organocatalyzed Asymmetric Mannich Reaction of Isocyanoacetate with Tosylimines



Cinchona alkaloid derivative 1b as organocatalyst was applied in asymmetric Mannich addition reaction of isocyanoacetate with various *N*-tosyl aryl aldimines to provide the desired products in 55%~80% yield with up to 82% ee and >99:1 dr.

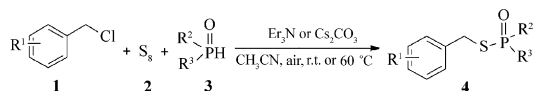


WANG Liming, MU Hongwen, LU Dongze, LI Xuetao, LI Tong, JIN Ying<sup>\*</sup>

2019, 36(7):758-763

万方数据

Synthesis of *S*-Alkyl Phosphorothioates from Alkyl Chlorides, Phosphites and Sulfur Powder



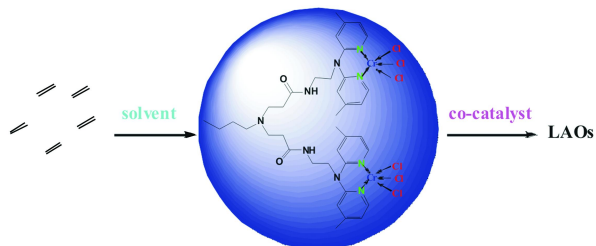
- transition metal-free and S<sub>8</sub> as sulfur source
- multicomponent reaction in one-step
- formation of P-S and C-S bonds in one reaction

Various pharmacologically-important *S*-alkyl phosphorothioates were synthesized from reactions of alkyl halides with sulfur powder(S<sub>8</sub>) and commercial available phosphites under air without any transition metal catalysts

LIANG Hongwen, ZHANG Liangliang, TANG Guo \*

2019, **36**(7):764-772

Synthesis and Ethylene Oligomerization Behavior of Hyperbranched Bispyridineimine Chromium Catalyst

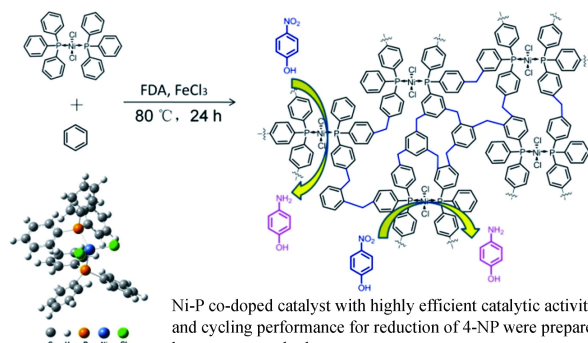


A novel hyperbranched bispyridineimine chromium catalyst has been designed to get linear  $\alpha$ -olefins(LAOs) in ethylene oligomerization.

WANG Jun \*, LIU Jinyi, CHEN Liduo, LAN Tianyu, WANG Libo

2019, **36**(7):773-781

Preparation of Ni-P Co-doped Hyper-Crosslinked Polymer and Used for Reduction of 4-Nitrophenol

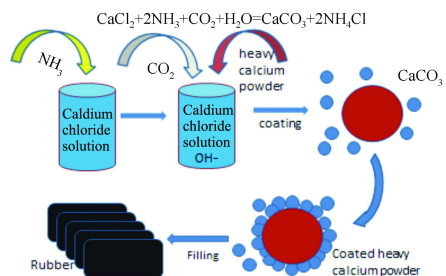


Ni-P co-doped catalyst with highly efficient catalytic activity and cycling performance for reduction of 4-NP were prepared by one-step method.

TANG Cheng, ZOU Zhijuan, SONG Kungpeng \*

2019, **36**(7):782-789

Processing and Properties of Rubber Modified by Coated Heavy Calcium Powder as the Filler

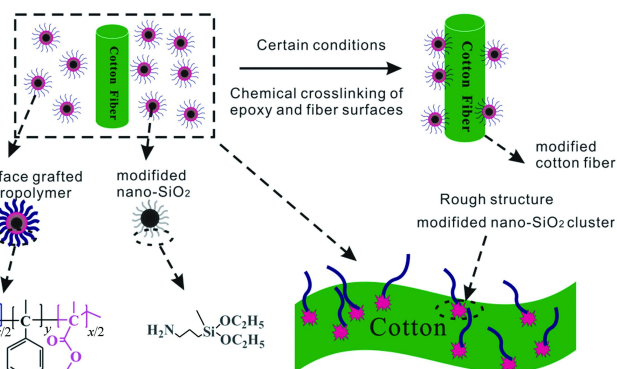


The rubber filled with coated heavy calcium powders has obvious improvement in hardness, tensile strength and modulus.

FAN Tianbo, CHEN Si, JIANG Yu, CAI Xun, KANG Ping, LI Li, ZHANG Li, LIU Yunyi \*

2019, **36**(7):790-797

Preparation and Performance of Hybrid Superhydrophobic Materials from Fluorinated Epoxy Resin and Silica Nanoparticles



The low-fluorene epoxy polymer is prepared by a conventional radical polymerization method, and the modified nano-particles are hybridized to from a super-hybridized coating. The preparation process is simple, and the modified cotton fabric has good performance.

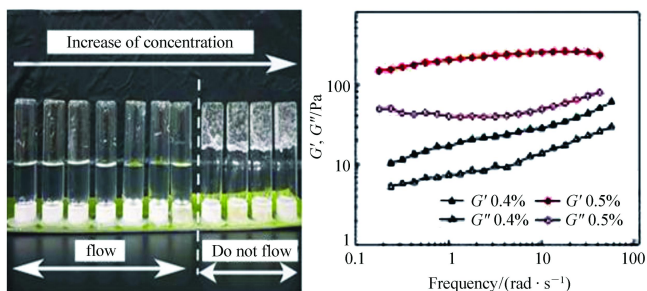
HOU Chengmin \*, LI Na, DONG Haitao, KOU Yanping

2019, **36**(7) 798-806



Relationship Between Particle Size and Distribution of Commercial Polyacrylic Superabsorbent Resin and Its Gelation Concentration

MA Rui, LI Shuangshuang, WANG Xiaowei, FU Zhilei, PAN Ge, FU Bo, SHI Tongfei, HUANG Yineng, TANG Huaqing, LI Sijia, XU Donghua\*, ZHOU Hengwei\*

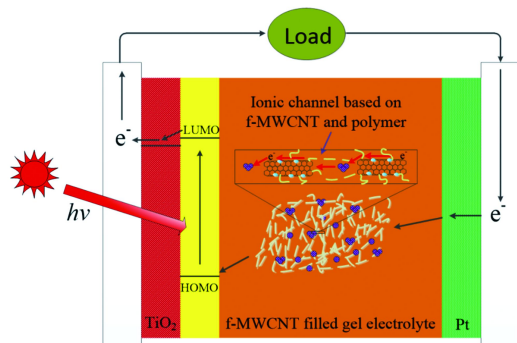


The critical gelation concentration of the six commercial superabsorbent resins decreases with the increase of particle size in the uniform range, providing a reference for the amount of superabsorbent resin added to hydrogel fire extinguishing agents to improve its ability to adhere

2019, 36(7):807-814

Application of Functionalized Multi-walled Carbon Nanotubes Filled Gel Electrolyte in Dye-Sensitized Solar Cells

SHENG Lei, LI Tingyu, GUO Lifang, LI Gang\*, ZHANG Wendong,

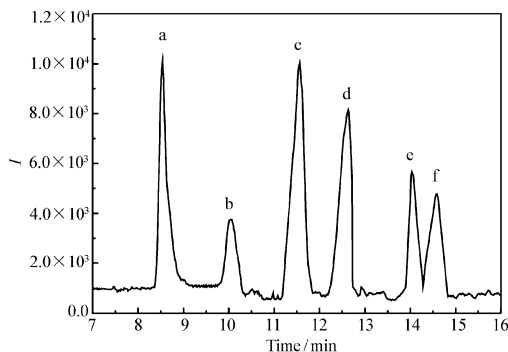


With the addition of f-MWCNT in PVDF-HFP electrolyte, ionic channels for iodide/tri-iodide are built, which improve the performance of electrolytes via enhancing charge transport and ionic diffusion.

2019, 36(7):815-822

Separation and Analysis of Mixed Amino Acid Enantiomers by Capillary Electrochromatography-Electrospray-Time of Flight/Mass Spectrometry

LI Yingjie, LIN Xiaotong, GAO Lidi\*, QIN Shili, TANG Yimin, JIN Zhixiang, ZHANG Shuai

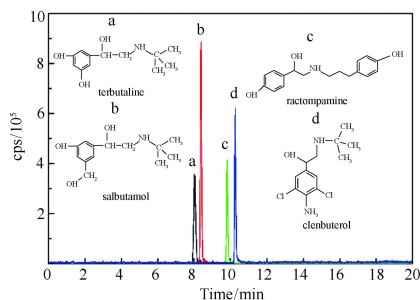


A simple and efficient capillary electrochromatography-electrospray-time of flight/mass spectrometry(CEC-ESI-TOF/MS) method for the separation and analysis of mixed amino acids enantiomers is established.

2019, 36(7):823-831

QuEChERS Purification with HPLC-MS/MS for Rapid Confirmation in Acute Clenbuterol Poisoning Case Sample

CAI Zhibin\*, SUN Jinying, XU Xiaoyan, ZHANG Ying, LAI Jianhui, LIU Jinming

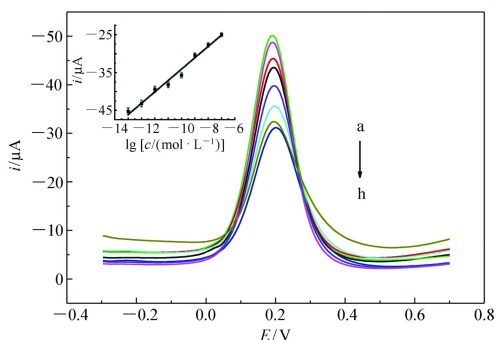


The combined use of acid/enzymatic hydrolysis extraction and QuEChERS promote the emergency determination of four  $\beta_2$ -agonists in food of animal origin by HPLC-MS/MS.

2019, 36(7):832-838

Electrochemical Determination of the Specific Genetic Sequence in Transgenic Maize Using Reduced Graphene Oxide and Nano Zirconia Composites as a Platform for Immobilizing DNA

WANG Xueliang<sup>\*</sup>, WANG Zhaoxia,  
WANG Tao, DAI Xiaohui

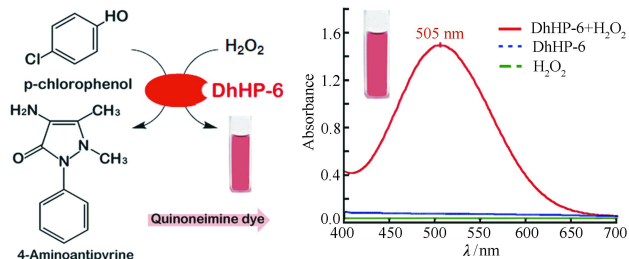


The electrochemically reduced graphene oxide and nano zirconia composites are used to fabricate an electrochemical DNA sensor for the determination of the specific genetic sequence in transgenic maize with high stability and sensitivity.

2019, **36**(7):839-846

Hydrogen Peroxide and Glucose Sensitive Colorimetric Method Based on Deuterohemin-Ala His Thr Val Glu Lys

SHI Xin, LIU Chuanzhi, GONG Ping,  
LI wei, HOU Yue<sup>\*</sup>



As a mimic of enzyme, DhHP-6 has the function of catalyzing the decomposition of H<sub>2</sub>O<sub>2</sub>.

2019, **36**(7):847-854