

ISSN 1001 - 9677

CN44 - 1228/TQ



扫码关注

# 广州化工

GUANGZHOU CHEMICAL INDUSTRY

- 《中国学术期刊综合评价数据库》统计源刊 • 《中国期刊全文数据库》全文收录期刊
- 《中国核心期刊(遴选)数据库》全文收录期刊 • 美国《化学文摘》(CA)重点收录期刊

第24期  
2019年12月  
(下半月)  
第47卷



羊城化工讲堂  
「化工人的专属课堂」



扫码添加客服  
了解更多

建设:企业 特别报道 · 羊城化工讲堂

用大数据解密化工产业未来爆发力

广化视点 2019年11月国内轮胎市场行情走势分析

化工与生态 碲化镉:让玻璃幕墙发电

中国经济的现状

多彩化工 · 专业视角

ISSN 1001-9677

24>

9 771001 967197

万方数据

主办:  
广州化工研究设计院  
广州市化工行业协会

# CONTENTS 目录



羊城化工讲堂：

## 用大数据解密化工产业未来爆发力

P01

特别报道

我国化工产业经过 70 年发展，格局发生了怎样的变化？制造业革命对经济增长方式又产生了怎样的影响？经济大环境给化工企业带来哪些的冲击和机遇 ..... 12 月 12 日，于广州涵天戴斯酒店开讲的首期羊城化工讲堂，中山大学管理学院李孔岳教授从宏观经济现状、企业战略管理、政策推演三大层面，助力广大化工企业打造竞争力。大（数据）、移（动互联网）、物（联网）、人（人工智能）、（产业链）将引发新一轮经济增长潮。

（丁肖娟 周文俊）

特别报道 • 羊城化工讲堂

用大数据解密化工产业未来爆发力.....	丁肖娟 周文俊	01
观点 .....		03
看图说话.....		04

广化视点

2019年11月国内轮胎市场行情走势分析.....	唐伟民	05
乙醇：年底行情坚挺 东北货源紧张 .....	陈嘉丽	08

企业与法

假冒企业名称 真不正当竞争 .....	蔡培展（摘编）	09
---------------------	---------	----

化工与生态

碲化镉：让玻璃幕墙发电 .....	何红梅	11
-------------------	-----	----

# CONTENTS 目录

化工大数据·图说国内双酚A市场 ..... 资讯部 13

## 专论与综述

小分子多肽在化妆品中的应用综述.....	何平	14
齐墩果酸研究进展.....	沈晓静 赵红梅 赵蕾 姜薇薇	16
稀土离子掺杂蓝色荧光粉的研究进展.....	周勤勤 王梦霞 王忆	20
白光WLED用铕(Eu <sup>3+</sup> )红色荧光配合物配体设计及合成方法.....	徐博伟 张雄 王莉	30
氟化石墨烯的制备方法研究进展.....	李栋 金小康 陈倩雯	34
松香及其衍生物的应用研究进展.....	马晓霖 胡琳莉 李水清 肖江林	37
静电纺纳米纤维敷料在创伤修复中的应用研究进展.....	邵倩倩 巫甜甜 胡洪涛 陈锐 花扣珍	41
木棉的化学成分和药理作用研究进展.....	陶鑫 薛中峰 覃骊兰	44
4种化学药剂对黑臭水体底泥的修复作用.....	牛美青 苏玉更 乔永波 武仁超	48
我国煤粉燃烧技术进展.....	李瑶 张生军 徐婕 陈刚 杨小彦 卫鹏程 李恒	50
烟气脱硝技术综述.....	刘小文 李俊 李加兴 倪钟孝 易秀乐 陆新密	53
煤制油在柴油机上燃烧排放分析.....	马跃 康凯 蔡贤修 李建峰 段雄成	56

## 科学实验

ZSM-5分子筛的合成及碱改性方法的研究.....	崔丽平 杨海荟 熊玉阁	58
TBPO导向Cu(III)催化吲哚C6位芳基化的机理研究.....	耿翠环 郭尧 陈鹏飞 李春洁 卢会杰 王博	61
PI3K&mTOR双重抑制剂Apitolisib的合成工艺改进.....	吴正阳 金佳明 沈慧 蒋腾 朱启华 徐云根	64
无钯活化法制备WC-W <sub>2</sub> C复合粉末.....	胡杰 陈勇 刘丹华 徐平	66
水性脱模剂的制备及性能研究 .....	杨冲 张小磊 王伟 乔敏 赵爽 曾鲁平 李磊	70
氧化镁催化臭氧化脱色木醋液制醋酸镁.....	李宇慧 宋朝霞 熊瑶 保万琪 李明 唐觉敏 许英梅	73
铁氰化钴衍生氢氧化钴的电化学性能.....	李惠颖 唐铭鸿 钱程 唐诗航 魏晓飞 宋朝霞 周泉 许英梅	76
甘蔗叶吸附水中Cr(VI)的研究.....	柳富杰 周永升 廖丹丹 韦巧艳	79
改性魔芋葡甘聚糖对水中百菌清的吸附影响.....	许秀真	82
AFM滤料处理油田废水的实验研究.....	刘蕾 陶新良 顾一帆 王晴晴 杜力勤 王家旺 李俊航	85
低分子有机酸对污泥中铜和锌的去除效果研究.....	廖钰冰 苏瑛 周峰	87
铜阳极泥中综合回收硒、碲、金等金属的研究.....	李超 刘述平 徐凌飞 黄雯孝 梁冠杰 何兰军	90
2D醚化树脂对棉织物免烫整理正交实验研究.....	危想平 郑霁	93

# CONTENTS 目录

## 分析测试

苦水玫瑰中矿质元素的测定分析.....	曹蕾 刘亚婷	95
橡胶胶乳机械稳定性测定的精密度实验分析.....	杜烨 赵慧晖 王春龙 陈海华 杨玉琼	97
茚三酮法测定氨基接枝介孔MCM-41中氨基含量.....	逯月然 赵会玲	101
电弧直读发射光谱测定地质环境样品中银硼锡.....	金晨江 洪铮 龚祖星 李云木子 郑存江	103
煎炸用植物油中苯并(a)芘含量测定的方法研究.....	黎殊 杨英 许乾丽	109
直读光谱仪测定回收铜米的铜及杂质含量.....	周永涛 刘志英 王磊 刘奇	112
两种汽车内饰原材料VOC测试方法的对比.....		
.....王莉 娄金分 胡智 刘灵祥 许声堂 谭刚 麦成猛 韦武进 吴述璐	114	
ATDS-GCMS法测量车内空气中苯的不确定度分析.....	汪昭玮 孙大顺 孙一峰 马继	117
莫尔滴定法测定油田水中氯离子含量测量结果不确定度评定.....		
.....付丽萍 钟鸿鹏 谢伟浩 陈金定 张耀元	120	

## 环境保护

溴离子对COD检测结果的影响.....	卢阳 唐伟杰 刘君君	122
化学沉淀-次氯酸钠溶液处理PCB行业高浓度氨氮废水.....		
.....彭璟 雷仁华 顾恒 张小霞 邹文 马少玲	125	

## 生产技术

热电厂凝汽器端差异常分析及处理实践.....	王乃琳 李放 吴佩熹	128
先进控制技术在催化裂化装置上的应用.....	刘卫国	131

## 教学园地

《药物分析》课程中分析化学的角色探讨.....	陈阳 别子俊 赵伟曼 马涛	134
材料物理化学课程中几个重要知识点的辨析和探讨.....	龙潇 李娟 龙绍檑	136
有机合成中“官能团添加策略”的教学思考.....	陈新 钟煜	138
化学工程与工艺专业融合创新创业教育的研究.....	张艳维 宋海香 赵凌 黄建平 刘森 耿翠环	141
海洋大学建设中应用化学专业转型的几点思考.....	宋士涛 吴素霞 王利江 彭友舜 张建平	144
关于《基础化学》教学的心得体会.....	霍涌前	146
创新背景下材料科学专业有机化学教学改革.....	高媛 傅敏 林兵 方玲 魏星耀	148
广西特色资源在高分子材料成型加工实验的探索.....	徐伟华	150
基于智慧课堂的仪器分析实验改革与探索.....	韩卓 李慧 马龙 孙兰萍	152

# CONTENTS 目录

## 教学园地

绿色化学理念在高师化学专业教育实习中的渗透.....	李政道 孙汝中 杨浩 包晓玉 赵伟	154
基于PBL的环境工程实验实践教学改革研究.....	赵文玉 刘志华 刘春华 杨敏 黄灵芝 夏畅斌	156
基于工程认证的模具材料与制造课改教学探讨.....	胡双锋 刘治田 付秀娟 王学华 刘玉兰	158
思维导图在《物理化学》课程教学中的应用.....	翟淑红 张陈 陈涛	162
有机化学实验教学过程中实验室废液处理的探讨.....	邓佑林 陆婷婷 黄秀香 韦岩松 柳亚清 韦丽勤 钟欣华	166
高职石油化工技术专业能力体系构建与实践.....	孙琪娟 闫晓前 候党社	169
环境专业应用型人才培养的改革与探索.....	张永利 曾飞 徐颂 陈忻 江学顶	171
面向高校新生的无机及分析化学教学探究.....	曾宪祥 吴雄伟 朱佳苗 雷隆慧	174
借鉴Diploma体系提升环境工程研究生学习能力的思考.....	王志康	176
材料专业混合式教学中的学生状态及改进方法.....	张海连 李东旭 陈宏伟 叶玲 李四中 黄妙良	178
信息技术在高职化学课程教学中的应用探讨.....	张朝辉	181
虚拟仿真技术在药剂学教学中的应用.....	李文兰 李鑫 杨波	184
OBE理念下的应用型创新人才培养模式探究.....	赵玲玉 金朝阳 王见	186
基于成果导向教育的化工安全课程教学设计.....	胡莹莹	189
培养制药工程专业学生工程应用能力的探索.....	冯筱晴 唐龙 邱琳	192
留学生《工业分析技术》课程“以练带学”教学模式探讨.....	吴敏娴 陈艳丽 单学凌 蒋鼎 许娟 陈智栋	194

## 安全与管理

危险化学品领域惊吓小微事件管理体系研究.....	杨倩 杨瑞霞	197
--------------------------	--------	-----

# CONTENTS

---

Summary of Applications of Small Molecular Peptides in Cosmetics.....	HE Ping	14
Research Progress on Oleanolic Acid .....		
.....SHEN Xiao-jing ZHAO Hong-mei ZHAO Lei JIANG Wei-wei		16
Research Progress on Rare Earth Ion Doped Blue Phosphors.....		
.....ZHOU Qin-qin WANG Meng-xia WANG Yi		20
Design and Synthesis of Europium ( $\text{Eu}^{3+}$ ) Red Fluorescent Ligand for WLED.....		
.....XU Bo-wei ZHANG Xiong WANG Li		30
Research Progress on Preparation Methods of Fluorinated Graphene.....		
.....LI Dong JIN Xiao-kang CHEN Qian-wen		34
Research Progress on Application of Rosin and Its Derivatives.....		
.....MA Xiao-lin HU Lin-li LI Shui-qing XIAO Jiang-lin		37
Application of Electrospun Nanofiber for Wound Dressing.....		
.....SHAO Qian-qian WU Tian-tian HU Hong-tao CHEN Rui HUA Kou-zhen		41
Research Progress on Chemical Composition and Pharmacological Action of Bombax ceiba L.....		
.....TAO Xin XUE Zhong-feng QIN Li-lan		44
Remediation Effect of Four Chemical Agents on Black and Odorous Water Sediment.....		
.....NIU Mei-qing SU Yu-geng QIAO Yong-bo WU Ren-chao		48
Research Progress on Pulverized Coal Combustion Technology.....		
.....LI Yao ZHANG Sheng-jun XU Jie CHEN Gang YANG Xiao-yan WEI Peng-cheng LI Heng		50
Overview of Flue Gas Denitrification Technology.....		
.....LIU Xiao-wen LI Jun LI Jia-xing NI Zhong-xiao YI Xiu-le LU Xin-mi		53
Analysis of Combustion Emission for Coal-to-liquids on Diesel Engine.....		
.....MA Yue KANG Kai CAI Xian-xiu LI Jian-feng DUAN Xiong-cheng		56
Study on Synthesis and Alkali Modification of ZSM-5 Molecular Sieve.....		
.....CUI Li-ping YANG Hai-hui XIONG Yu-ge		58
Mechanism Study on TBPO-directed Cu(III)-catalyzed C6-selective C-H Arylation of Indole.....		
.....GENG Cui-huan GUO Yao CHEN Peng-fei LI Chun-jie LU Hui-jie WANG Bo		61

Process Improvement of the Synthesis of PI3K&mTOR Dual Inhibitor Apitolisib.....	
.....WU Zheng-yang JIN Jia-ming SHEN Hui JIANG Teng ZHU Qi-hua XU Yun-gen	64
Preparation of WC-W <sub>2</sub> C Composite Powder by Palladium-free Activation Method.....	
..... HU Jie CHEN Yong LIU Dan-hua XU Ping	66
Study on the Preparation and Properties of Water Release Agent.....	
..... YANG Chong ZHANG Xiao-lei WANG Wei QIAO Min ZHAO Shuang ZENG Lu-ping LI Lei	70
Decolorization of Wood Vinegar by Magnesium Oxide Catalytic Ozonation for Preparation of Magnesium Acetate .....	
.....LI Yu-hui SONG Zhao-xia XIONG Yao BAO Wan-qi LI Ming TANG Jue-min XU Ying-mei	73
Electrochemical Performances of Cobalt Hexacyanoferrate-derived Cobalt Hydroxide.....	
.....LI Hui-ying TANG Ming-hong QIAN Cheng TANG Shi-hang WEI Xiao-fei SONG Zhao-xia ZHOU Quan XU Ying-mei	76
Study on Adsorption of Cr(VI) by Sugar Cane Leaf.....	
.....LIU Fu-jie ZHOU Yong-sheng LIAO Dan-dan WEI Qiao-yan	79
Effect of Modified Konjac Glucomannan on Adsorption of Chlorhydrin in Water.....	
.....XU Xiu-zhen	82
Experimental Study on Treatment of Oilfield Wastewater with AFM Filter Material.....	
.....LIU Lei TAO Xin-liang GU Yi-fan WANG Qing-qing DU Li-qin WANG Jia-wang LI Jun-hang	85
Removal of Copper and Zinc from Sludge Using Low-molecular-weight Organic Acids.....	
.....LIAO Yu-bing SU Ying ZHOU Feng	87
Study on Comprehensive Recovery of Selenium, Tellurium and Gold from Copper Anode Mud.....	
.....LI Chao LIU Shu-ping XU Ling-fei HUANG Wen-xiao LIANG Guan-jie HE Lan-jun	90
Orthogonal Experimental Study on Non-ironing Finishing of Cotton Fabric with 2D Etherified Resin.....	
.....WEI Xiang-ping ZHENG Ji	93
Determination and Analysis of Mineral Elements in <i>Rosa rugosa</i> Thunb. in Kushui .....	
.....CAO Lei LIU Ya-ting	95
Analysis of Precision Test for the Determination of Mechanical Stability of Rubber Latex.....	
.....DU Ye ZHAO Hui-hui WANG Chun-long CHEN Hai-hua YANG Yu-qiong	97
Determination of Amino in Amine-modified MCM-41 by Ninhydrin.....	
.....LU Yue-ran ZHAO Hui-ling	101

Determination of Silver, Boron and Tin in Geological Environment Samples by Arc Direct Reading Emission Spectroscopy .....	JIN Chen-jiang HONG Zheng GONG Zu-xing LI Yun-mu-zhi ZHENG Cun-jiang	103
Researchin Determination of Benzo(a)pyrene Content in Fried Vegetable Oil.....	.....Li Shu YANG Ying XU Qian-li	109
Determination of Copper and Impurities in Recycling Copper Rice By Direct Reading Spectrometer.....	.....ZHOU Yong-tao LIU Zhi-ying WANG Lei LIU Qi	112
Comparison of Two Methods for Automotive Interior VOC Test .....	.....WANG Li	
LOU Jin-fen HU Zhi LIU Ling-xiang XU Sheng-tang TAN Gang MAI Cheng-meng WEI Wu-jin WU Shu-lu		114
Analysis of Measurement Uncertainty of Benzene in Air inside Car by ATDS-GCMS.....	.....WANG Zhao-wei SUN Da-shun SUN Yi-feng MA Ji	117
Evaluation of Uncertainty of Measurement Results of Chlorine Ion Content in Oilfield Water by Mohr Titration Method.....	FU Li-ping ZHONG Hong-peng XIE Wei-hao CHEN Jin-ding ZHANG Yao-yuan	120
Effect of Bromine Ion on COD Detection.....	LU Yang TANG Wei-jie LIU Jun-jun	122
Treatment of High Concentration of Ammonia-nitrogen Wastewater from PCB Industry by Chemical Precipitation and Sodium Hypochlorite.....	.....PENG Jing LEI Ren-hua GU Heng ZHANG Xiao-xia ZOU Wen MA Shao-ling	125
Abnormal Analysis and Treatment Practice of Condenser End Difference in Thermal Power Plant.....	.....WANG Nai-lin LI Fang WU Pei-xi	128
Application of Advanced Process Control on FCC Unit.....	.....LIU Wei-guo	131
Discussion on the Role of Analytical Chemistry in the Course of Pharmaceutical Analysis.....	.....CHEN Yang BIE Zi-jun ZHAO Wei-man MA Tao	134
Discussion on Several Significant Knowledge Points of Physical Chemistry of Materials.....	.....LONG Xiao LI Juan LONG Shao-lei	136
Ponder on Teaching Method of Syntheses Strategy of Functional Group Addition.....	.....CHEN Xin ZHONG Yu	138
Research on the Integration of Innovation and Entrepreneurship Education in Chemical Engineering and Process Engineering.....	.....ZHANG Yan-wei SONG Hai-xiang ZHAO Ling HUANG Jian-ping LIU Sen GENG Cui-huan	141

Several Considerations on Transformation of Applied Chemistry Major in Construction of Ocean University.....	
..... <i>SONG Shi-tao WU Su-xia WANG Li-jiang PENG You-shun ZHANG Jian-ping</i>	144
Teaching Experience of Basic Chemistry..... <i>HUO Yong-qian</i>	146
Teaching Reform of Organic Chemistry in Material Science Major under the Background of Innovative Education .....	
..... <i>GAO Yuan FU Min LIN Bing FANG Ling WEI Xing-yao</i>	148
Exploration of Characteristic Resources of Guangxi in Polymer Materials Processing Experiment.....	
..... <i>XU Wei-hua</i>	150
Teaching Reform and Exploration of Instrumental Analysis Experiment Based on Smart Classroom...	
..... <i>HAN Zhuo LI Hui MA Long SUN Lan-ping</i>	152
Infiltration of Green Chemistry Concept in Teaching Practice of Chemistry Specialty in Normal Universities.....	
..... <i>LI Zheng-dao SUN Ru-zhong YANG Hao BAO Xiao-yu ZHAO Wei</i>	154
Teaching Reform on PBL-based Environmental Engineering Experiment Practice .....	
..... <i>ZHAO Wen-yu LIU Zhi-hua LIU Chun-hua YANG Min HUANG Ling-zhi XIA Chang-bin</i>	156
Teaching Reform on Mold Materials & Manufacturing Course under the Background of Engineering Education	
Accreditation..... <i>HU Shuang-feng LIU Zhi-tian FU Xiu-juan WANG Xue-hua LIU Yu-lan</i>	158
Application of Mind Mapping in the Teaching of Physical Chemistry.....	
..... <i>ZHAI Shu-hong ZHANG Chen CHEN Tao</i>	162
Discussion on Treatment of Laboratory Waste in Organic Chemistry Experimental Teaching ....	
..... <i>DENG You-lin LU Ting-ting HUANG Xiu-xiang WEI Yan-song LIU Ya-qing WEI Li-qin ZHONG Xin-hua</i>	166
Construction and Practice of the Professional Capability System of Petrochemical Technology in Higher	
Vocational Colleges..... <i>SUN Qi-juan YAN Xiao-qian HOU Dang-she</i>	169
Reform and Exploration on Applied Talents Cultivation in Environmental Specialty.....	
..... <i>ZHANG Yong-li ZENG Fei XU Song CHEN Xin JIANG Xue-ding</i>	171
Teaching Study of Inorganic and Analytical Chemistry for College Freshmen.....	
..... <i>ZENG Xian-xiang WU Xiong-wei ZHU Jia-miao LEI Long-hui</i>	174
Discussion of Using Diploma Education System of Germany in Improving Study Capacity of Graduate Students	
in Environmental Engineering..... <i>WANG Zhi-kang</i>	176
Study on the Status of Students under the Blended Teaching Mode and Improvement Methods.....	
..... <i>ZHANG Hai-lian LI Dong-xu CHEN Hong-wei YE Ling LI Si-zhong HUANG Miao-liang</i>	178

Discussion on the Application of Information Technology in the Teaching of Chemistry Courses in Higher Vocational Education .....	ZHANG Zhao-hui	181
Application of Virtual Simulation Technology in Pharmacy Teaching.....	LI Wen-lan LI Xin YANG Bo	184
Exploration on Training Mode of Innovative & Applied Talents Based on OBE Mode .....	ZHAO Ling-yu JIN Zhao-yang WANG Jian	186
Teaching Design of Chemical Safety Curriculum Based on Outcome Based Education.....	HU Ying-ying	189
Exploration of Cultivating Engineering Application Ability of Pharmaceutical Engineering Students.....	FENG Xiao-qing TANG Long QIU Lin	192
Discussions on Teaching Mode of "Learning by Practice" in Course of Industrial Analysis Technology for International Students.....	WU Min-xian CHEN Yan-li	
SHAN Xue-ling JIANG Ding XU Juan CHEN Zhi-Dong	194	
Study on Management System of Small Scared Events in Field of Hazardous Chemicals .....	YANG Qian YANG Rui-xia	197

## GUANGZHOU CHEMICAL INDUSTRY

Open Publishing

Established in 1973 (Semimonthly)

Vol.47 No.24

Dec . 2019

### Managed by :

Guangzhou Chemical Industrial Group Co., Ltd.

### Sponsored by :

Guangzhou Research & Design Institute of Chemical Industry

Guangzhou Society of Chemistry and Chemical Engineering

### Assisted by :

Guangzhou Chemical Industry Association

### Edited by :

Editorial Office of "GUANGZHOU CHEMICAL INDUSTRY"

**Chief Editor :** WU Wen-li

**Vice Chief Editor :** LIN Jun-ying

**Editor :** LIU Qian-ting, HE Qi-hong

**Advertisement Department :** CHEN Liang

**Address :** Building D, Vanlead Innovation Park,  
No.229, Helian Street, Baiyun District,  
Guangzhou, P.R. China

**Postcode :** 510425

**Tel :** (020) 36372165

**E-mail :** gzhgbjb@vip.126.com

**Website :** <http://gzha.cbpt.cnki.net>

### Printed by :

Guangdong Haifeng Printing Company Limted

### Overseas Distributed by :

China National Publishing Industry Trading Corporation

**Journal Code :** ISSN 1001-9677  
CN 44-1228/TQ

**Adverxising Business License No.:** 4401004002668