

ISSN 1001 - 9677

CN44 - 1228/TQ

广州化工

GUANGZHOU CHEMICAL INDUSTRY



扫码关注

第 4 期
2023年2月
(下半月)
第 51 卷

• 《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



智配物流

多彩化工 · 专业视角

一吨起租-免押租

- 化工华南中心仓
- 丙一类立体仓库优质



扫码联系-智配直送

联系方式：吴总13926447851

联系地址：东莞市麻涌镇智配云5仓(距广州黄埔仅2公里)

ISSN 1001-9677



主办：
广州化工研究设计院
广州市化工行业协会

广州化工

GUANGZHOU HUAGONG

《中国学术期刊综合评价数据库》统计源刊
《中国核心期刊(遴选)数据库》全文收录期刊
《中国期刊全文数据库》全文收录期刊
高、中级化工职称资格评审认定期刊
广东省特色科技期刊
全国石油和化工期刊百强榜学术期刊 50 强

1973 年创刊(半月刊)

第 51 卷第 4 期

2023 年 2 月(下半年)

主 管:广州化工集团有限公司

主 办:广州化工研究设计院
广州市化工行业协会

编辑出版:《广州化工》编辑部

主 编:林珺颖

编 辑:何启宏,曹欣

地 址:广州市黄埔区科学大道 111 号科学信息
大厦主楼西座 609-610 号

邮 码:510670

电 话:020-31801512

官方网站:<http://www.gzhgbjb.cn>

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

邮 箱:gzhgbjb@vip.126.com

gzhgqks@163.com

印 刷:广州市德佳彩色印刷有限公司

发行范围:国内外公开发行人

国外发行:中国出版对外贸易总公司
(北京 782 信箱)

国际标准刊号:ISSN1001-9677

国内统一刊号:CN44-1228/TQ

广告经营许可证:穗工商广字 4401004002668 号

出版物经营许可证:新出发粤刊总批字第 226 号

国内定价:28.00 元/期 全年 672.00 元(共 24 期)

第九届编委会成员名单(按姓氏笔画排序)

马小明 方岩雄 尹国强 卢 江 叶代勇
叶家灿 吕满庚 刘自力 闫 利 麦堪成
麦裕良 李伟华 李攻科 李雪辉 杨丽庭
杨育农 吴文莉 余 林 陈旭东 林珺颖
周添国 郑 成 赵建红 赵建青 徐志达
章明秋 彭 峰 童叶翔 曾松峰 楼宏铭
蔡卫权 廖 兵 谭志良

目 次

化工信息

广化交易纯碱市场月度监测报告(2023 年 2 月) (1)

专论与综述

生物炭应用于超级电容器的研究进展
..... 崔琳瑶,施慧萍,周 泉,许英梅,宋朝霞(6)
离子液体/聚合物基复合材料的研究进展
..... 刘小波,王文楷,周勤鑫,林韵心,陈 勇(9)
水产品中孔雀石绿的研究进展
..... 邹冰雁,王相儒,周 胜,蒙晓彦,谢宇欣,李周敏,康 希(13)
可见光驱动水制过氧化氢光催化剂研究进展
..... 吴 彬,杨 桐,王 煜,杨舒然,宋海岩(16)
金属有机骨架衍生纳米复合材料的制备及在光催化领域的应用
..... 张耘钊,胡 磊,张小伟,王文博,司稳兵,李新刚,张 春(19)
独一味及其制剂的分析方法研究进展 陈 烨,胡 耿(23)
塞来昔布增溶技术研究进展
..... 刘 浪,李 婷,欧阳芬芬,文 敏,莫 易,朱鑫庆(26)
丙烯酸阻聚剂及阻聚剂去除方法的探讨
..... 王永丽,杨 梅,沈小莉,李忠军,姚景元,姚钧健,罗振鹏(30)
MOFs 及其衍生物在光催化方面的最新研究进展 吉 杰(33)
PBAT/PLA 复合材料的制备和性能研究
..... 王香云,刘菲菲,石海峰,郭 哲,周佳盼(37)

科学实验

深度学习辅助柠檬渣解析 Cu^{2+} 的研究
..... 黄 波,沈王庆,黄成华(39)
紫色叶菜维生素 P 提取优化研究
..... 蒋 艺,孙洪波,孙小成,欧阳国春,唐利忠(42)
虎耳草乙酸乙酯部位的化学成分研究
..... 刘瀚琳,何席呈,刘晓龙,杜 江(45)
 $\text{Ga}_2\text{SSe/g-C}_6\text{N}_6$ 异质结光催化水分解的第一性原理研究
..... 舒小妹,黄 欣,杨志红(48)
L-乳酸修饰自具微孔聚合物膜的制备及应用
..... 危淑鸿,李丽明,陈文龙,黄 露(52)
橘红药物化学成分对 DNA 氧化损伤抑制作用研究
..... 肖尔建,李立彩,张伟祺,利 韦,段志芳(55)
温度对油包水乳状液稳定性的影响规律 徐莹洁,吴 晓,
曹慧青,张程翔,刘 飞,杨 剑,王立强,孟嘉孟,刘 畅,姚志豪(59)
不同加工工艺对都匀毛尖茶感官品质及化学成分的影响
..... 喻 俊,李亚波,张 婕(62)
海洋来源青霉 *Penicillium* sp. 的化学成分研究
..... 范佐旺,陈靓雯,王芳兵,柯晓燕(65)
硫酸镁添加剂对水系锌离子电池改性研究
..... 张晋鹏,连一杰,周佳骏,干雅平(68)

苹果草果块茎复合饮料研制及抗氧化活性研究·····	张文艳,徐银宏,王朝森,李茂东,师睿,杨永胜,赵仲霞(71)
稀土离子掺杂 $0.6\text{BaTiO}_3-0.4\text{Bi}(\text{Mg}_{1/2}\text{Ti}_{1/2})\text{O}_3$ 陶瓷的储能性能研究·····	常劲祎,毛海军,汪丰麟,陈兴宇,刘卓峰,李巍,张为军(75)
SrPb_3Br_8 晶体的制备和变温霍尔效应研究·····	肖骁,王杰,张绍卿,彭静,熊正斌,刘心尧,陈宝军,黄巍,何知宇(78)
油醇聚氧乙烯醚双子乳化剂的合成及其在乳化炸药中的应用·····	李永元(83)
异丙醇铝水解制备高纯氧化铝·····	刘慧妮,曾俊杰,伍青龙,胡松,李涛,金会心(86)
活性炭负载氢氧化钨吸附剂的制备及其吸附性能研究·····	宋小双,郝艳玲,高奇奇(91)
热聚合制备氮掺杂氮化碳光催化性能研究·····	许晶晶,梁鹏飞(94)
不同吸附基团聚羧酸对水泥浆体分散性能的影响·····	张慧莲,张霞,王秀梅(98)
富马酸精制提纯工艺研究·····	齐雷,贾亚亚,朱靖,刘春生(101)

分析测试

汽车内饰用麻纤维的热解特性及动力学分析·····	曹守萌,王志,曲芳(104)
一测多评法测定一支箭中3种活性成分的含量·····	曾碧涛,刘丽秀,何爱江(109)
土壤中游离铁测定方法验证·····	刘春霞(112)
谷胱甘肽与汞离子弱相互作用的密度泛函理论研究·····	王灿,梁如铭,李健,吕薇,武世奎(115)
金丝富集-冷原子荧光分光光度法测定环境空气中气态汞·····	龙剑英,陆往,褚娟(119)
提高女金片的质量标准研究·····	王玉,伏娇,李佳(122)
美洛昔康血浆样品分析方法验证及药动学研究·····	盛利娟,王永庆,李成蹊,王宏民,林霞,杨子毅(126)
破壁油菜花粉总黄酮含量的测定及体外抗氧化作用的研究·····	陶婧雯,雷佳泽,李格格,郑万年,韦程梁,方欢乐(129)
气相色谱仪检测限(灵敏度)不确定度的评定·····	吴昊(132)

环境保护

餐厨垃圾发酵液与传统有机酸对土壤重金属淋洗效果的比较·····	曹栩菡,黄小军,张华芳,古明鲜(137)
O+A/O-MBBR 工艺系统对食品加工废水处理特性研究·····	李超,刘丹婵,黄佳(141)
豆奶制品生产废水处理工程实例·····	陈细妹(145)
浅谈高校实验室废气提标工程复杂性与应对措施·····	易斌,徐遵主,孙永嘉(148)
多相抽提联合原位化学氧化技术对工业地块的治理应用·····	范正杰(150)
膜滤浓缩液与垃圾渗滤液协同处理工程实例·····	涂乐乐(154)
非正规垃圾填埋场整治措施对地下水质量的影响研究·····	蔡苗,张瑞,宋小毛,邝美娟,吴多贵,高方伟(157)
波罗蜜基活性炭吸附废水中金属离子性能研究·····	张方哲,汪颖(162)

化工机械

环境和充满率对不同容积气瓶静态蒸发率的影响·····	张夏,孙旦旦,刘剑楨,李朝(165)
重整芳烃装置加热炉 95+技术改造的可行性探讨·····	孙雪冬,王涛(168)
高压聚乙烯装置长周期运行探讨·····	段国鹏(171)

生产技术

LNG 槽车撬保冷循环流程优化分析探讨·····	龙德才(174)
液相加氢技术在煤制乙二醇中的应用·····	吴浩,李成科,乔玉山,马达,刘春浩,贾树峰(177)
热处理油基钻屑干渣在固井水泥浆中应用的初步研究·····	张文彬,马春旭,许前富,马小康,李斌(180)
井下条件对固井用空心微珠破碎率的影响研究·····	张勇(183)
梨树断陷致密承压封堵钻井液技术研究·····	孙志刚,李骏函,孙明杰,张茂稳,王立锋(186)

教学园地

- 浅谈课程思政与物理化学实验教学的有机融合途径..... 褚玉婷,严 新(189)
- 药学综合实验室开放模式的初探..... 何 欢,祁宝辉,杨 燕,王 敏(192)
- 基于 STEM 教育理念的《药物分析》跨学科课程教学改革研究.....
..... 洪婷婷,周 琪,刘意莲,刘 星,谭沁文,蔡志强(194)
- 思维导图在 高分子化学课程中的应用探讨 贾 兰,王 丕,何宏伟,马彦龙,朱晶心(196)
- 新工科背景下《环境监测》课程思政教学改革研究.....
..... 姜沛汶,邓天天,刘帅霞,李晗晟,徐荣敏,曹志林,王 晶(199)
- 新工科背景下化工原理课程思政建设与教学实践..... 李红玲,章艳玲(201)
- 浅析 Aspen Plus 在新能源专业教学环节中的应用 李治宇,刘润东,张玉春,唐秋燕,吕致琳,付 鹏(204)
- 高职无机化学实验课程思政实施路径探索 刘云霞,张 兰,陈 洪,唐红卫,刘 丹(208)
- 基于雨课堂对有机合成课程教学模式的研究..... 孟宪群,王 丹,康廷国,包 璇,刘 莲,黄梓萌(211)
- 高职高专生物化学课程思政建设初探..... 尚娟芳,成 洲,罗 鸣,彭春芳(214)
- 《仪器分析实验》线上线下混合式教学的探索与研究 吴峰敏,郭旭明,汪小伟,罗 洁,芦雷鸣,徐 航(217)
- SPOC 混合式物理化学教学的设计与实践 辛 红,曹慧群,魏 波(219)
- “三全育人”背景下材料制备与加工技术课程思政教学改革 许利刚(222)
- 以化工故事导入《化学基础》等高校化学思政教育 杨靖霞,王金杰,江振林(224)
- 药物分析课程思政教学实践探索..... 杨 琳,郭廷旺(227)
- 核心素养导向下的中学化学课堂有效教学设计 赵 钰,冯 勋,张 甜,尚晓凯,段 祥(230)
- 工程认证背景下《物理化学实验》教学改革探索与实践 朱政斌,曹 兢,张 岑(233)
- MATLAB 软件在安全检测与监控技术课程教学中的应用探讨.....
..... 娄 全,贾 炳,邱黎明,万祥云,彭荣富,马钰琛(235)
- 基于 $g-C_3N_4$ 光催化剂的制备及其光催化降解 RhB 的综合化学实验教学改革与实践
..... 唐小强,黄小红,赵子轩,覃佳惠,吴子欣,郭洋洋,张海全(238)
- 以学生为中心的“化学史”课程教学改革探索 贾永梅,周国华,刘培炼,余 彪,何东宁,李志果,薛茗月(241)
- 制药工程工艺设计课程教学模式探索..... 林文辉,吴晶晶,张 华,汪忠华(244)
- 化工安全与环保校企合作开发课程模式探索..... 刘 坤,王 军,刘玉亭,王小艳(247)
- 新型太阳能海水淡化材料制备及其性能表征 张盼盼,赵崧阳,汪 婧,程雨飞,武文彪,杨博文,纪志永(250)
- 疫情背景下《光谱分析》课程“线上网络教学”的实践与反思 周言凤,漆寒梅,张敏娜,戴 全(254)
- 化学热力学函数教学的几点思考 陈少华,金 震,马 婕,胡强飞,钱 泉(257)
- 有机化学实验废液处理综合实验设计 许雯靓,陶 浩,冯天辉,王 芳,王随华(259)
- 浅谈普通化学课程学生创新能力的培养 丁丽丽(262)
- 材料类专业量子力学课程的教学改革探索 孙 宇,石文超,李培成(265)
- 高职油气储运技术专业专业核心课程体系开发..... 王晓涛,林晓华,任 亮,李 阔(268)
- 校企协同育人培养环境工程专业应用型人才教学模式探索
..... 王艺璇,赵尔康,滕洪辉,汤 茜,朴明月,孙玉伟(271)
- 农业院校生物工程专业物理化学课程教学探索..... 魏 民,李 伟,宁爱民,宋美荣,王彩霞,董玉涛(273)
- STSE 背景下化学学科核心素养提升的策略研究 袁阳阳,陆国志(276)
- 复合型反蛋白石结构制备及电催化氧还原研究——一个研究型综合实验设计 杜晓航,李敬德,刘桂华(279)
- 《水质分析方法与仪器》课程教学改革研究 邵 青,刘子正,黄理志,陈轶群(282)

安全与管理

- 企业数字化智能化转型实践——能源管理系统 崔明海,王 允,王 岚(285)
- 基于故障树分析法的洞库油罐换底大修项目风险管理研究 战希臣,赵志诚,李 慧(288)

CONTENTS

Research Progress on Biomass-derived Carbon for Supercapacitors	6
..... CUI Lin-yao, SHI Hui-ping, ZHOU Quan, XU Ying-mei, SONG Zhao-xia	
Research Progress on Ionic Liquid/Polymer Matrix Composites	9
..... LIU Xiao-bo, WANG Wen-kai, ZHOU Qin-xin, LIN Yun-xin, CHEN Yong	
Research Progress on Malachite Green in Aquatic Products	13
..... ZOU Bing-yan, WANG Xiang-ru, ZHOU Sheng, MENG Xiao-yan, XIE Yu-xin, LI Zhou-min, KANG Xi	
Research Progress on Photocatalysts for Visible-light Driven Hydrogen Peroxide Production from Water	16
..... WU Bin, YANG Tong, WANG Yu, YANG Shu-ran, SONG Hai-yan	
Preparation of Metal Organic Frameworks-derived Nanocomposites and Their Application in Photocatalysis	19
..... ZHANG Yun-zhao, HU Lei, ZHANG Xiao-wei, WANG Wen-bo, SI Wen-bing, LI Xin-gang, ZHANG Chun	
Research Progress on Analytical Methods of <i>Lamiophlomis rotata</i> . and Its Preparations	23
Research Progress on Solubilization of Celecoxib	26
..... LIU Lang, LI Ting, OUYANG Fen-fen, WEN Min, MO Yi, ZHU Li-qing	
Discussion on Polymerization Inhibitor and Removal Methods of Acrylic Acid	30
..... WANG Yong-li, YANG Mei, SHEN Xiao-li, LI Zhong-jun, YAO Jing-yuan, YAO Jun-jian, LUO Zhen-peng	
Research Progress on Photocatalysis of MOFs and Its Derivatives	33
Preparation and Properties of PBAT/PLA Composites	37
..... WANG Xiang-yun, LIU Fei-fei, SHI Hai-feng, GUO Zhe, ZHOU Jia-pan	
Study on Desorption of Cu^{2+} from Lemon Residues Assisted by Deep-learning	39
..... HUANG Bo, SHEN Wang-qing, HUANG Cheng-hua	
Optimization Study on Vitamin P Extraction from Purple Leafy Vegetables	42
..... JIANG Yi, SUN Hong-bo, SUN Xiao-cheng, OUYANG Guo-chun, TANG Li-zhong	
Study on Chemical Constituents of Ethyl Acetate Fraction of <i>Saxifraga stolonifera</i> Meeb.	45
..... LIU Han-lin, HE Xi-cheng, LIU Xiao-long, DU Jiang	
A First-Principles Study on $\text{Ga}_2\text{SSe/g-C}_6\text{N}_6$ Heterostructure as A Photocatalyst for Water Splitting	48
..... SHU Xiao-mei, HUANG Xin, YANG Zhi-hong	
Preparation and Application of Membranes from L-lactic Acid Modified Polymers of Intrinsic Microporosity	52
..... WEI Shu-hong, LI Li-ming, CHEN Wen-long, HUANG Lu	
Inhibition of Chemical Constituents of Tangerine on DNA Oxidative Damage	55
..... XIAO Er-jian, LI Li-cai, ZHANG Wei-qi, LI Wei, DUAN Zhi-fang	
Influence of Temperature on Stability of Water-in-oil Emulsions	59
..... XU Ying-jie, WU Xiao, CAO Hui-qing, ZHANG Cheng-xiang, LIU Fei, YANG Jian, WANG Li-qiang, MENG Jia-meng, LIU Chang, YAO Zhi-hao	
Effects of Different Processing Techniques on Sensory Quality and Chemical Constituents of Duyun Maojian Tea	62
..... YU Jun, LI Ya-bo, ZHANG Jie	
Study on Chemical Constituents from Marine-derived <i>Penicillium</i> sp.	65
..... FAN Zuo-wang, CHEN Liang-wen, WANG Fang-bing, KE Xiao-yan	
Study on Modification of Aqueous Zinc Ion Batteries with Magnesium Sulfate Additives	68
..... ZHANG Jin-peng, LIAN Yi-jie, ZHOU Jia-jun, GAN Ya-ping	
Development of Apple Fructus <i>Tsaoko</i> Composite Drink and Antioxidant Activity	71
..... ZHANG Wen-yan, XU Yin-hong, WANG Chao-miao, LI Mao-dong, SHI Rui, YANG Yong-sheng, ZHAO Zhong-xia	
Energy Storage Properties of Rare Earth Ions Doped $0.6\text{BaTiO}_3-0.4\text{Bi}(\text{Mg}_{1/2}\text{Ti}_{1/2})\text{O}_3$ Ceramics	75
..... CHANG Shao-yi, MAO Hai-jun, WANG Feng-lin, CHEN Xing-yu, LIU Zhuo-feng, LI Wei, ZHANG Wei-jun	
Growth and Variable Temperature Hall Effect Study on SrPb_3Br_8 Crystal	78
..... XIAO Xiao, WANG Jie, ZHANG Shao-qing, PENG Jing, XIONG Zheng-bin, LIU Xin-yao, CHEN Bao-jun, HUANG Wei, HE Zhi-yu	
Synthesis of Oleyl Alcohol Polyoxyethylene Ether Gemini Emulsifier and Its Application in Emulsion Explosive	83
..... LI Yong-yuan	
Preparation of High Purity Alumina by Hydrolysis of Aluminum Isopropoxide	86
..... LIU Hui-ni, ZENG Jun-jie, WU Qing-long, HU Song, LI Tao, JIN Hui-xin	
Preparation and Adsorption Properties of Lanthanum Hydroxide Adsorbent Supported on Activated Carbon	91
..... SONG Xiao-shuang, HAO Yan-ling, GAO Qi-qi	
Study on Photocatalytic Performance of Nitrogen-doped Carbon Nitride Prepared by Thermal Polymerization	94
..... XU Jing-jing, LIANG Peng-fei	
Effect of Polycarboxylate with Different Adsorption Groups on Dispersion Properties of Cement Paste	98
..... ZHANG Hui-lian, ZHANG Xia, WANG Xiu-mei	
Study on Refining and Purification Process of Fumaric Acid	101
..... QI Lei, JIA Ya-ya, ZHU Jing, LIU Chun-sheng	
Pyrolysis Characteristics and Kinetic Analysis of Hemp Fiber for Automobile Interior Decoration	104
..... CAO Shou-meng, WANG Zhi, QU Fang	
Simultaneous Determination of Three Active Components in <i>Ophioglossum vulgatum</i> L. by QAMS	109
..... ZENG Bi-tao, LIU Li-xiu, HE Ai-jiang	
Verification of Determination Method of Free Iron in Soil	112
..... LIU Chun-xia	
Density Functional Theory Study on Weak Interaction between Glutathione and Mercury Ion	115
..... WANG Can, LIANG Ru-ming, LI Jian, LV Wei, WU Shi-kui	

Determination of Gaseous Mercury in Ambient Air by Gold Wire Preconcentration-cold Atomic Fluorescence Spectrometry	LONG Jian-ying, LU Wang, CHU Juan(119)
Study on Quality Standard of Nvjin Tablets	WANG Yu, FU Jiao, LI Jia(122)
Validation and Pharmacokinetic Study on Plasma Samples with Meloxicam	SHENG Li-juan, WANG Yong-qing, LI Cheng-xi, WANG Hong-ming, LIN Xia, YANG Zi-yi(126)
Determination of Total Flavonoid Content in Wall-broken Rape Pollen and Study on its Antioxidant Effect in Vitro	TAO Jing-wen, LEI Jia-ze, LI Ge-ge, ZHENG Wan-nian, WEI Cheng-liang, FANG Huan-le(129)
Evaluation of Uncertainty of Detection Limit (Sensitivity) of Gas Chromatograph	WU Hao(132)
Comparison of Leaching Effect of Kitchen Waste Fermentation Broth and Traditional Organic Acids on Soil Heavy Metals	CAO Xu-han, HUANG Xiao-jun, ZHANG Hua-fang, GU Ming-xian(137)
Study on Treatment Characteristics of Food Processing Wastewater by O+A/O-MBBR Process System	LI Chao, LIU Dan-chan, HUANG Jia(141)
An Example of Wastewater Treatment Project of Soymilk	CHEN Xi-mei(145)
Discussion on Complexity and Countermeasures of University Laboratory Waste Gas Upgrading Project	YI Bin, XU Zun-zhu, SUN Yong-jia(148)
Application of Multi-phase Extraction Combined with in Situ Chemical Oxidation Technology in Remediations of Industrial Sites	FAN Zheng-jie(150)
A Case of Cooperative Treatment Project between Membrane Filtration Concentrated Solution and Landfill Leachate	TU Le-le(154)
Study on Influence of Remediation Measures of Informal Landfill on Groundwater Quality	CAI Miao, ZHANG Rui, SONG Xiao-mao, KUANG Mei-juan, WU Duo-gui, GAO Fang-wei(157)
Study on Adsorption Performance of Metal Ions in Wastewater by Bolomel-based Activated Carbon	ZHANG Fang-zhe, WANG Ying(162)
Effect of Balance Filling Rate on Static Evaporation Rate in Different Volume Cylinders	ZHANG Xia, SUN Dan-dan, LIU Jian-zhen, LI Chao(165)
Discussion on Feasibility of 95+ Technical Transformation of Heating Furnace in Reforming Aromatics Unit	SUN Xue-dong, WANG Tao(168)
Discussion on Long-term Operation of High Pressure LDPE Plant	DUAN Guo-peng(171)
Analysis and Discussion on Optimization of Cold Circulation Process of LNG Tanker Skid	LONG De-cai(174)
Application of Liquid Phase Hydrogenation Technology in Coal-to-Ethylene Glycol	WU Hao, LI Cheng-ke, QIAO Yu-shan, MA Da, LIU Chun-hao, JIA Shu-feng(177)
Preliminary Study on Application of Oil-based Drilling Cuttings in Cementing Slurry	ZHANG Wen-bin, MA Chun-xu, XU Qian-fu, MA Xiao-kang, LI Bin(180)
Study on Effect of Downhole Conditions on Crushing Rate of Hollow Spheres	ZHANG Yong(183)
Study on Pressure Bearing and Tight Plugging Drilling Fluid Technology in Lishu Fault Depression	SUN Zhi-gang, LI Jun-han, SUN Ming-jie, ZHANG Mao-wen, WANG Li-feng(186)
Discussion on Organic Integration of Curriculum Ideological Politics and Physical Chemistry Experiment Teaching	CHU Yu-ting, YAN Xin(189)
Preliminary Study on Opening Mode of Pharmaceutical Comprehensive Laboratory	HE Huan, QI Bao-hui, YANG Yan, WANG Min(192)
Exploration on Interdisciplinary Teaching Innovation about Pharmaceutical Analysis Based on STEM Education Concept	HONG Ting-ting, ZHOU Qi, LIU Yi-lian, LIU Xing, TAN Song-wen, CAI Zhi-qiang(194)
Application of Mind Mapping in Polymer Chemistry Course	JIA Lan, WANG Pi, HE Hong-wei, MA Yan-long, ZHU Jing-xin(196)
Study on Ideological and Political Teaching Reform of Environmental Monitoring under the Background of New Engineering	JIANG Pei-wen, DENG Tian-tian, LIU Shuai-xia, LI Han-sheng, XU Rong-min, CAO Zhi-lin, WANG Jing(199)
Ideological and Political Construction and Teaching Practice on Chemical Engineering Principle Course under New Engineering Background	LI Hong-ling, ZHANG Yan-ling(201)
Analysis on Application of Aspen Plus in Teaching Links of New Energy Specialty	LI Zhi-yu, LIU Run-dong, ZHANG Yu-chun, TANG Qiu-yan, LV Zhi-lin, FU Peng(204)
Exploration on Ideological and Political Teaching of Inorganic Chemistry Experiment Course in Higher Vocational Colleges	LIU Yun-xia, ZHANG Lan, CHEN Hong, TANG Hong-wei, LIU Dan(208)
Study on Teaching Mode of Modern Organic Synthesis Course Based on Rain Class	MENG Xian-qun, WANG Dan, KANG Ting-guo, BAO Xuan, LIU Lian, HUNG Zi-meng(211)
Ideological and Political Education on Biochemistry Courses in Higher Vocational and Professional Colleges	SHANG Juan-fang, CHENG Zhou, LUO Ming, PENG Chun-fang(214)
Exploration and Study on Online and Offline Blended Teaching Mode in Instrument Analysis Experiment	WU Feng-min, GUO Xu-ming, WANG Xiao-wei, LUO Jie, LU Lei-ming, XU Hang(217)
Exploration and Practice on SPOC Mixed Teaching Mode Based on UOOC platform in Physical Chemistry Course	XIN Hong, CAO Hui-qun, WEI Bo(219)
Curriculum Ideological and Political Teaching Reform on Material Preparation and Processing Technology under Background of "Three-integrity Education"	XU Li-gang(222)
Introducing Chemistry Story into Ideological and Political Education of College Chemistry Courses: Taking Fundamental of Chemistry as An Example	YANG Jing-xia, WANG Jin-jie, JIANG Zhen-lin(224)

Practice and Exploration on Ideological and Political Teaching of Pharmaceutical Analysis *YANG Lin, GUO Ting-wang*(227)

Design on Effective Teaching of Junior High School Chemistry Course Based on Key Competence *ZHAO Yu, FENG Xun, ZHANG Tian, SHANG Xiao-kai, DUAN Xiang*(233)

Exploration and Practice on Physical Chemistry Experiment Teaching Reform under the Background of Engineering Specialty Certification *ZHU Zheng-bin, CAO Jing, ZHANG Cen*(233)

Discussion on Application of MATLAB in Classroom Teaching of Safety Detection and Monitoring Technology *LOU Quan, JIA Bing, QIU Li-ming, WAN Xiang-yun, PENG Rong-fu, MA Yu-chen*(235)

Teaching Reform and Practice on Comprehensive Chemical Experiment Based on Preparation of $g-C_3N_4$ Photocatalyst and Its Photocatalytic Degradation of RhB *TANG Xiao-qiang, HUANG Xiao-hong, ZHAO Zi-xuan, QIN Jia-hui, WU Zi-xin, GUO Yang-yang, ZHANG Hai-quan*(238)

Exploration on Teaching Reform of History of Chemistry Based on Student-centered Idea *JIA Yong-mei, ZHOU Guo-hua, LIU Pei-lian, YU Biao, HE Dong-ning, LI Zhi-guo, XUE Ming-yue*(241)

Exploration on Teaching Mode in Pharmaceutical Engineering and Technological Process Design *LIN Wen-hui, WU Jing-jing, ZHANG Hua, WANG Zhong-hua*(244)

Exploration on Teaching Mode of Chemical Safety and Environmental Protection in School-enterprise Cooperative Development *LIU Kun, WANG Jun, LIU Yu-ting, WANG Xiao-yan*(247)

Preparation and Characterization of Novel Materials for Solar Driven Seawater Desalination *ZHANG Pan-pan, ZHAO Song-yang, WANG Jing, CHENG Yu-fei, WU Wen-biao, YANG Bo-wen, JI Zhi-yong*(250)

Practice and Reflection on Online Teaching of Spectral Analysis in Context of Epidemic *ZHOU Yan-feng, QI Han-mei, ZHANG Min-na, DAI Quan*(254)

Reflections on Teaching of Chemical Thermodynamic Function *CHEN Shao-hua, JIN Zhen, MA Jie, HU Qiang-fei, QIAN Quan*(257)

Comprehensive Experimental Design for Waste Liquid Treatment in Organic Chemistry Experiment *XU Wen-jing, TAO Hao, FENG Tian-hui, WANG Fang, WANG Sui-hua*(259)

Discussion on Cultivation of Innovative Ability of Students in General Chemistry Course *DING Li-li*(262)

Teaching Reform and Exploration on Quantum Mechanics Course for Materials Science *SUN Yu, SHI Wen-chao, LI Pei-xian*(265)

Development of Core Curriculum System of Oil - gas Storage and Transportation Technology Specialty in Higher Vocational Colleges *WANG Xiao-tao, LIN Xiao-hua, REN Liang, LI Kuo*(268)

Exploration on Teaching Mode of Cultivating Applied Talents Based on School-enterprise Cooperation ... *WANG Yi-xuan, ZHAO Er-kang, TENG Hong-hui, TANG Qian, PIAO Ming-yue, SUN Yu-wei*(271)

Teaching Exploration on Physical Chemistry for Biological Engineering in Agricultural Universities *WEI Min, LI Wei, NING Ai-min, SONG Mei-rong, WANG Cai-xia, DONG Yu-tao*(273)

Study on the Strategy of Improving the Core Literacy of Chemistry Subject under the Background of STSE *YUAN Yang-yang, LU Guo-zhi*(276)

Preparation of Inverse Opal Structured Composite and Study on Its Electrocatalytic Oxygen Reduction—A Research - based Comprehensive Experimental Design *DU Xiao-hang, LI Jing-de, LIU Gui-hua*(279)

Study on Teaching Reform of Water Quality Analysis Methods and Instruments *SHAO Qing, LIU Zi-zheng, HUANG Li-zhi, CHEN Yi-qun*(282)

Enterprise Digital Intelligent Transformation Practice—Energy Management System ... *CUI Ming-hai, WANG Yun, WANG Lan*(285)

Risk Management of Construction of Tank Bottom Replacement Overhaul Project Based on Fault Tree Analysis *ZHAN Xi-chen, ZHAO Zhi-cheng, LI Hui*(288)

GUANGZHOU CHEMICAL INDUSTRY

Open Publishing

Established in 1973 (Semimonthly)

Vol. 51 No. 4

Feb. 2023

Managed by:

Guangzhou Chemical Industrial Group Co., Ltd.

Sponsored by:

Guangzhou Research & Design Institute of Chemical Industry

Guangzhou Society of Chemistry and Chemical Engineering

Edited by:

Editorial Office of "GUANGZHOU CHEMICAL INDUSTRY"

Chief Editor: LIN Jun-ying

Editor: HE Qi-hong, CAO Xin

Address: No. 609-610, West Block, Main Building,
Science Information Building, 111 Huangpu
District Science Avenue, Guangzhou, P. R.
China

Postcode: 510670

Tel: 020-31801512

Official website: <http://www.gzhghjb.cn>

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

E-mail: gzhghjb@vip.126.com

gzhgqks@163.com

Printed by:

Guangzhou Dejia Color Printing Co., Ltd.

Overseas Distributed by:

China National Publishing Industry Trading Corporation

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

Adverxising Business License No. :4401004002668

广州捷翔化工有限公司

广州捷翔化工有限公司成立于2017年，自成立以来一直秉承“精诚合作、互惠互利”的经营原则，以灵活的营销模式和全新的服务理念，诚实守信、重合同，坚持以客户为核心，始终为客户提供优质产品、物流支持和技术支持、健全的售后服务，为合作伙伴提供有力的支持和热忱的服务；公司凭借优等的质量、合理的价格、周到的服务，在业界赢得了良好的口碑，深受广大用户的青睐。



主要经营产品：

食品级双氧水、食品级冰醋酸、食品级液碱、食品级保险粉、
印度醋酸钠、液体醋酸钠、液体聚合氯化铝、
次氯酸钠、氢氟酸、消泡剂、阻垢剂



联系人：杨云翔 经理

地址：广州广州市天河区圃兴路6号华城大厦H1A

Tel: 15814879400

E-mail: 3086727622@qq.com



扫码识别，联系我们！

国内定价：28.00元