

- 《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
- 全国石油和化工行业优秀期刊
- 广东省、广州市优秀科技期刊

ISSN 1001-9677

CN44-1228/TQ

广州化工

GUANGZHOU CHEMICAL INDUSTRY

第4期
2017年2月
(下半月)
第45卷

广州化工研究设计院

广州市化工行业协会

广州市化学化工学会

万力创新园 聚万力 创智造



万力轮胎营销中心

万力橡胶轮胎研究院

万力化工研究院

万力中乌精细化工联合研究院

地址：广州市白云区石井镇联和路2号万力创新园

邮编：510425

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

1973 年创刊(半月刊)

第 45 卷第 4 期

2017 年 2 月(下半月)

主 管:广州化工集团有限公司
主 办:广州化工研究设计院
协 办:广州市化工行业协会
协 办:广州市化学化工学会

编辑出版:《广州化工》编辑部
主 编:吴文莉
副 主 编:林碧颖
编 辑:刘倩婷、何启宏
广 告:茅仁旭
地 址:广州市白云区石井镇联和路 2 号
万力创新园 D 座
邮 码:510425
电 话:(020)36372165
邮 箱:gzhgbjb@vip.126.com
网 址:<http://www.gzhgbjb.cn>
印 刷:南方医科大学广州广卫印刷厂
发行范围:国内外公开发行
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

收款单位:广州化工研究设计院

开户银行:广州市工商银行石井支行

帐 号:3602025309000823574

国内定价:13.00 元/期 全年 295.00 元(共 24 期)

第八届编委会成员名单

主任:崔英德
副主任:叶家灿 白 莉
秘书长:张 统
委员:(排名不分先后)
钱 宇 童叶翔 余 林 王乐夫 何榕友
杨育农 马小明 郑 成 麦堪成 彭 峰
赵建青 尹国强 刘自力 李大光 杨定乔
黄道平 李攻科 刘国光 陈国华 董新法
方岩雄 刘晓国 李雪辉 陈旭东 李锡安
梁基照 熊 亚 曾庆焕 罗国钦 余慧文

万方数据

目 次

专论与综述

- 二噻并苯并二噻吩基有机太阳能电池给体材料的研究进展 ...
..... 李明娇, 郭鹏智, 同军锋 (1)
脂肪酸与磷灰石吸附机理及其在磷矿选矿中的应用 ...
..... 龚丽, 刘润哲, 张晖, 刘丽芬, 何向文, 庞建涛 (8)
赤芍的质量控制研究进展 鲍邢杰 (12)
甲烷直接氧化催化剂的研究进展 李毛, 靳鹏 (14)
腐植酸促进菜田土壤氮磷养分利用的机制 ...
..... 袁凤英, 庞世花, 郭宗端 (17)
新型催化剂在己二酸合成中的研究进展 ...
..... 王焕哲, 谢毅, 陈涛 (20)
土壤系统对污水的净化研究综述 ...
..... 梅龙杰, 稔文晖, 毛全, 吉圆, 李炀 (23)
浅谈高分子材料及其制品低温除碳减容减量的方法 ...
..... 林裕卫, 凌锋征, 吴耀根 (25)

实验科学

- 一种新型膦羧酸分散剂的合成及性能评价 ...
..... 马建峰, 徐隽, 吴友凯, 王涛, 冉千平 (28)
高速通道压裂裂缝导流能力数值模拟研究 ...
..... 李连崇, 黄波, 李志超, 张潦源, 李明, 左家强 (31)
8-羟基喹啉衍生物金属配合物的发光研究 ...
..... 达相如, 赵玉玲 (35)
绿色化学法合成单分散 $Zn_{0.3}Fe_{2.7}O_4$ 纳米微粒 ...
..... 高生平, 李悦, 陈志超, 雷秋盈, 李会, 王清政, 赵志刚 (38)
聚异丁烯丁二酰亚胺季铵盐的合成及其性能 罗强章 (41)
三氟乙酸催化高浓度环己酮肟制备己内酰胺 ...
..... 赵朋伟, 刘怡宏, 邢亚峰 (43)
透明色气雾漆料气比的选择探究 ...
..... 谭建辉, 陈炳耀, 张志良, 宁智勇, 郑吕凤 (45)
一种发动机外部清洗剂的研制 ...
..... 牛瑞琪, 宁智勇, 张志良, 陈炳耀 (48)

- 枇杷叶中枇杷叶油的提取及其工艺改进 赵华楠,陈美慧,陈朝晖,朱明光,杨发福(51)
一种双组分聚合物保温砂浆涂层的研制 滕佳恒,余晓红,严晓阳,胡玲霞,陆 露,郑绍成(54)
胆固醇-g-聚乳酸对成纤维细胞生长和分化的影响 王 炜,张 瑞,倪 妮,杨 眇,高向东(57)
枇杷核渣对甲基橙吸附性能的研究 王丹丹,卓友臻,朱明光,杨发福(60)
EDTA 柱撑 MgAl 水滑石对水中 Cd²⁺的吸附 徐 芳,陈秋燕,王军涛(63)
紫藤花多糖的提取工艺及抗氧化性研究 庞 允,申 漫,刘建军,戴沛霞,曹小燕(66)
碱性过氧化氢预处理对稻草秸秆酶解的影响 黄炳硕,孙万里(70)
新型丙酮酸离子液体的制备与研究 侯亚伟(73)
低亲水基含量丙烯酸酯-聚氨酯复合乳液及其膜性能的研究 杨 斌,孙东成(77)
磁性树脂去除垃圾渗滤液生化出水中的 COD 和 UV₂₅₄ 谢海林,张虎彪,谭柳霞,罗国焰,肖谷清(81)
N-羧甲基壳聚糖的制备及其对铬(VI)离子吸附性能探讨 孙自淑,张 凯,纪 辉,钱 琳,张宏伟(84)
锡青铜粉改性 PTFE 复合材料对铝合金摩擦磨损性能的研究 金石磊,李小慧(87)

分析测试

- 微波消解 ICP-OES 法测定丹参 6 种微量元素 雷超海(91)
不同产地寻骨风中 Cu、Cd、Cr、Pb 元素的测定 洪宗超,吴松涛,周从辉,段雪云(93)

环境保护

- 城市综合体安全现状评价指标体系研究 黄 婷,段在鹏(95)

化工机械

- 某炼化企业在役管道腐蚀监测技术的应用 王 语,张 伟,任雪梅 (98)
搪玻璃设备强度计算方法研究 曹洪波(101)

生产技术

- 新钢冷轧废水处理系统运行管理 汪占鑫 103)
反渗透工艺与多效蒸馏工艺海水淡化技术经济比较 韩建伟 (105)

教学园地

- 苯乙烯悬浮聚合实验的改进设计 周玉惠,张前军(108)
- 科研成果向教学资源转化一例——麦饭石复合高吸水树脂合成 孙宾宾,杨博(110)
- 环境科学专业化学热力学章节教学环节研究 牟新利,张永缘,吴沐晗,熊启润,张婷(112)
- 物理化学趣味实验教学探索 吕喜风,秦少伟,王芳,张娜,李旭(114)
- 对无水乙醇与金属钠反应演示实验的改进 朱秀娟,陈文东,崔文辉(117)
- 浅谈 Chemoffice 软件在化学化工文献检索课程中的应用 黄桂梅(119)
- 过程装备与控制工程专业实验综合改革与实践 李建立,赵杰,张卫义,侯燕,吕涛高洁(122)
- 高分子专业实验的开放式教学探索 丁光柱,刘结平,曹静,李品华(126)
- 基于实践能力培养的药物分析实验教学改革 李晓娟,郭亚可祝世发,赵文彬,唐辉(128)
- 化工工艺学教学改革探索 潘玲(130)
- 微课在化工单元操作与设备课程教学中的应用 上官小东,潘哲(132)
- 基于微课和任务驱动教学法的课程教改探究 唐晓曼,傅敏,王崇均,李宁,王小平,谭雪梅(134)
- 独立学院校外实践课程过程考核的初步研究 吴敏芝,谢果(136)
- 水泥生产辅助设备课程教学改革与探索 张印民,滕英跃(138)
- 翻转课堂模式下药物化学的理论教学改革 陆群,单连海,方维臻(140)
- 大学无机化学“翻转课堂”教学模式的设计 刘洋,马福东,刘尊奇(142)
- 仪器分析实验教学改革的初探与实践 孙萍(144)
- 《大型仪器应用技术》课程的教学改革探索 王永花,陆光华(146)
- 浅谈案例教学法与药物分析课程的有机结合 景慧萍,洪海龙(148)
- 《大学化学》绪论课授课内容的一点尝试 杨青林,郭林,江雷(150)
- 浅谈化学教育实习综合量化考评体系的改革 袁叶,龚小娟,欧阳跃军,陈桂(152)
- 地方高师院校综合化学实验开放平台的构建 乔瑞,杨松,刘杰,陈水生(155)
- 交通类高校开设化学与健康公选课实践与思考 杨小敏(157)
- 高校环境专业考查课教学模式的改革探索 李亚林,刘蕾,史丹,李钢(160)
- 新形势下应用化学类本科人才培养模式研究 冯勋,张甜(163)
- 食品专业结合“互联网+”人才培养模式的探索 安艳霞,张剑,李梦琴(165)
- 轻工专业卓越工程人才培养模式的实践与改进 任浩,张辉,童国林,景宜(168)
- 论化工原理教学改革与微流控芯片的关系 孟彦羽,姜松(171)
- 适应水分析化学课程教学改革探索 王淑静,裴同英(173)
- 第三方环境检测机构的发展现状与出路 肖玲君,寇丹丹,赵劲(175)

CONTENTS

- Research Progress on Dithieno[2,3-d;2',3'-d']benzo[1,2-b:4,5-b']dithiophene-based Donor Materials for Organic Solar Cells *LI Ming-jiao, GUO Peng-zhi, TONG Jun-feng*(1)
- Adsorption Mechanism of Fatty Acid on Apatite Surface and Application of Fatty Acid Collector in Phosphate Ore Flotation *GONG Li, LI Run-zhe, ZHANG Hui, LIU Li-fen, HE Xiang-wen, PANG Jian-tao*(8)
- Research Progress on Quality Control of *Paeoniae Rubra Radix* *BAO Xing-jie*(12)
- Research Progress on Catalysts for Direct Oxidation of Methane *LI Mao, JIN Peng*(14)
- Application of Humic Acids Promoting the Absorption Mechanism of Nitrogen and Phosphorus Nutrients in Vegetable Soil *YUAN Feng-yi, PANG Shi-hua, GUO Zong-duan*(17)
- Research Progress on New Catalysts in Synthesis of Adipic Acid *WANG Huan-zh, XIE Yi, CHEN Tao*(20)
- Review on Soil System Purification of Wastewater *MEI Long-ji, JI Wen-hui, MAO Tong, JI You, LI Yang*(23)
- Introduction to Polymer Materials and Its Products in Addition to Ways of Reducing Carbon Reduction Capacity at Low Temperature *LIN Yit-wei, LING Feng-zheng, WU Yao-gen*(25)
- Synthesis and Performance Evaluation of A New Phosphonic Acid Modified Dispersant
..... *MA Jian-feng, XU Jun, WU You-kai, WANG Tao, RAN Qian-ping*(28)
- Numerical Analysis of Fracture Conductivity and Related Factors in Channel Fracturing
..... *LI Lian-chong, HUANG Bo, LI Zhi-chao, ZHANG Liao-yuan, LI Ming, ZUO Jia-qiang*(31)
- Synthesis and Photoluminescent Properties of Three Complexes of 8-hydroxy Quinoline Derivative with Zn^{2+} , Cu^{2+} and Cd^{2+} *DA Xiang-ru, ZUAO Yu-ling*(35)
- Synthesis of Monodisperse $Zn_{0.3}Fe_{2.7}O_4$ Nanoparticles Using Green Chemistry
..... *GAO Sheng-pi, LI Ya, CHEN Zhi-chao, LEI Qiu-ying, LI Hui, WANG Qing-zheng, ZHAO Zhi-gang*(38)
- Synthesis and Properties of Quaternary Ammonium Salt Based on Polyisobutylene Succinic Imide
..... *LUO Qiang-zhang*(41)
- Trifluoroacetic Acid System Catalyzes Cyclohexanone Oxime of High Concentration to Prepare Caprolacta
..... *ZHAO Peng-wei, LIU Yi-hong, XING Ya-feng*(43)
- Study on Choice of Material Gas Ratio of Transparent Color Aerosol Paint
..... *TAN Jian-hui, CHEN Bing-yao, ZHANG Zhi-liang, NING Zhi-yong, ZHENG Lv-feng*(45)
- Research and Production of Engine Cleaner
..... *NIU Rui-qi, NING Zhi-yong, ZHANG Zhi-liang, CHEN Bing-yao*(48)
- Extraction and Technique Improvement of Loquat Leaf Oil from Loquat Leaves
..... *ZHAO Hua-nan, CHEN Mei-hui, CHEN Zhao-hui, ZHU Ming-guang, YANG Fa-fu*(51)
- Development of A Two-component Polymer Thermal Insulating Mortar Coating
..... *TENG Jia-heng, YU Xiao-hong, YAN Xiao-yang, HU Ling-xia, LU Lu, ZHENG Shao-cheng*(54)
- Effect of Cholesteryl Oligo-graft-lactic Acid on Growth and Differentiation of Fibroblast
..... *WANG Wei, ZHANG Rui, NI Ni, YANG Ye, GAO Xiang-dong*(57)
- Study on Adsorption Properties of Loquat Kernel Residue for Methyl Orange
..... *WANG Dan-dan, ZHUO You-zhen, ZHU Ming-guang, YANG Fa-fu*(60)
- Adsorption of MgAl-EDTA LDHs on Cd^{2+} from Water *XU Fang, CHEN Qiu-yan, WANG Jun-tao*(63)
- Study on Enzymatic-ultrasonic Assisted Extraction of Polysaccharide from *Wisteria* and Its Antioxidation
..... *PANG Yun, SHEN Man, LIU Jian-jun, DAI Pei-xia, CAO Xiao-yan*(66)
- Effect of Alkaline Pretreatment on Enzymatic Hydrolysis of Rice Straw *HUANG Bing-shuo, SUN Wan-li*(70)
- Preparation and Characterization of Novel Ionic Liquids Based on Pyruvate *HOU Ya-wei*(73)

Study on Polyurethane-acrylate Hybrid Emulsion with Low Content of Hydrophilic Group and Its Membrane Properties	YANG Bin, SUN Dong-cheng(77)
Removal of COD and UV ₂₅₄ from Biochemical Effluent of Landfill Leachate by Magnetic Ion Exchange Resin	XIE Hai-lin, ZHANG Hu-biao, TAN Liu-xia, LUO Guo-yan, XIAO Gu-qing(81)
Study on Preparation of N-carboxymethyl Chitosan and Its Adsorption Property to Cr (VI)	SUN Zi-shu, ZHANG Kai, JI Hui, QIAN Lin, ZHANG Hong-wu(84)
Study on Tribological Properties of Bronze Powder/PTFE Composites against Aluminum Alloy	JIN Shi-lei, LI Xiao-hui(87)
Determination of 6 Trace Elements in Salvia Miltiorrhiza by Microwave Digestion with ICP-OES	LEI Chao-hai(91)
Determination of Cu, Cd, Cr and Pb in Aristolochia Mollissima Hance from Different Areas	HONG Zong-chao, WU Kang-tao, ZHOU Cong-hui, DUAN Xue-yun(93)
Study on Index System of Situation Safety Assessment for Urban Complex	HUANG Ting, DU AN Zai-peng(95)
Applications of Corrosion Monitoring in Pipe of Refinery	WANG Yu, ZHANG Wei, REN Xue-mei(98)
Study on Strength Calculation of Glass Lining Equipment	CAO Hong-bo(101)
Operation Management of Xingang Cold Rolling Wastewater Treating System	WANG Zhan-xin(103)
Economical and Technical Comparison between SWRO and MED	HAN Jian-wei(105)
Study on Experiment of Styrene Suspension Polymerization	ZHOU Yu-hui, ZHANG Qian-jun(108)
A Case of Scientific Research into Teaching Resources—Preparation of Maifan Stone/PAA Super Absorbent Composites	SUN Bin-bin, YANG Bo(110)
Study on Teaching Links of Chemical Thermodynamics in Environmental Science Specialty	MOU Xin-li, ZHANG Yong-yuan, WU Mu-han, XIONG Qi-run, ZHANG Ting(112)
Exploration on Interesting Experimental Teaching of Physical Chemistry	LV Xi-feng, QIN Shao-wei, WANG Fang, ZHANG Na, LI Xu(114)
Improvement of Experiment between Anhydrous Alcohol and Sodium Metal Reaction	ZHU Xiu-juan, CHEN Wen-dong, CUI Wen-hui(117)
Introduction to Chemoffice Software Application in Chemical and Chemical Engineering Literature Search	HUANG Gui-mei(119)
Comprehensive Reform and Practice of Specialty Experiment for Process Equipment and Control Engineering	LI Jian-li, ZHAO Jie, ZHANG Wei-yi, HOU Yan, LV Tao, GAO Jie(122)
Exploration of Open Teaching in Polymer Professional Experiment	DING Guang-zhu, LIU Jie-ping, CAO Jing, LI Pin-hua(126)
Experimental Teaching Reform of Pharmaceutical Analysis Based on Cultivation of Practical Ability	LI Xiao-juan, GUO Ya-ke, ZHU Shi-fa, ZHAO Wen-bin, TANG Hui(128)
Exploration of Teaching Reform of Chemistry Engineering Technology	PAN Ling(130)
Application of Micro-lecture in Teaching of Chemical Unit Operation and Equipments Based on Mosoteach	SHANGGUAN Xiao-dong, PAN Zhe(132)
Exploration on Teaching Reform Based on Micro-course and Task-driven Teaching Method	TANG Xiao-min, FU Min, WANG Chong-jun, LI Ning, WANG Xiao-ping, TAN Xue-mei(134)
Preliminary Study on Process Evaluation for Outside College Practice Course of Independent College	WU Min-zhi, XIE Guo(136)
Exploration and Practice on Teaching Reform in Auxiliary Equipment for Production of Cement	ZHANG Yin-min, TENG Ying-yue(138)

- Study on Application of Flipped Classroom in Medicinal Chemistry *LU Qun, SHI Nianhai, FANG Weizhen*(140)
- Design on Flipped Classroom Teaching Mode of Inorganic Chemistry in University *LIU Yang, MA Fudong, LIU Zunqi*(142)
- Exploration and Practice of Instrumental Analysis Experiment Teaching Reform *SUN Ping*(144)
- Exploration of Teaching Reforms on *Application Technology of Advanced Instruments* in Environmental Speciality *WANG Yonghua, LU Guanghua*(146)
- Discussion on Combination of Case Teaching Methods and Pharmaceutical Analysis Course *JING Hui-ping, HONG Hai-long*(148)
- A Lecture of Introduction Lesson for *College Chemistry* *YANG Qinglin, GUO Lin, JIANG Lei*(150)
- Reform on Quantitative and Comprehensive Evaluation of Chemistry Educational Practice Evaluation Index System *YUAN Ye, GONG Xiaojuan, OUYANG Yuejun, CHEN Gui*(152)
- Construction of Comprehensive Chemistry Experimental Opening Platform in Local Normal College *QIAO Rui, YANG Song, LIU Jie, CHEN Shui-sheng*(155)
- Practice and Thought on Chemistry and Health as A Public Optional Course in University of Transportation *YANG Xiaomin*(157)
- Reform on Teaching Mode of Elective Courses in Environment Major of University *LI Yalin, LIU Lei, SHI Dan, LI Gang*(160)
- Exploration on Training Modes of Undergraduate Talents Major in Applied Chemistry under New Situation *FENG Xun, ZHANG Tian*(163)
- Exploration on Talent Training Model of Internet + for University Student in Food Science Major *AN Yanxia, ZHANG Jian, LI Mengqin*(165)
- Practice and Improvement of Professional Talents Cultivation Model in Light Industry Engineering Directions *REN Hao, ZHANG Hui, TONG Gaolin, JING Yi*(168)
- Relationship between Educational Reform about Principles of Chemical Engineering and Microfluidic Chip *MENG Yanyu, JIANG Song*(171)
- Exploration on Teaching Reform of Water Analytical Chemistry for Independent College *WANG Shujing, PEI Tongyi*(173)
- Present Situation and A Way out of the Third Party Environment Testing Institutions *XIAO Lingjun, KOU Dandan, ZHAO Jing*(175)

GUANGZHOU CHEMICAL INDUSTRY

Open Publishing

Established in 1973(Semimonthly)

Vol. 45 No. 4

Feb. 2017

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: MAO Ren-xu

Address: Building D, Vanlead Innovation Park, No. 2 Lianhe Road, Shijing Town, Baiyun District, Guangzhou, P. R. China

Postcode: 510425

Tel: (020) 36372165

E-mail: gzhgbjb@vip.126.com

Website: <http://www.gzhgbjb.cn>

Printed by:

Guangzhou Guangwei Printing Plant of Southern Medical University

Overseas Distributed by:

China National Publishing Industry Trading Corporation

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

Advertising Business License No.: 4401004002668