

ISSN 1001 - 9677

CN44 - 1228/TQ



扫码关注

第12期
2020年6月
(下半月)
第48卷

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



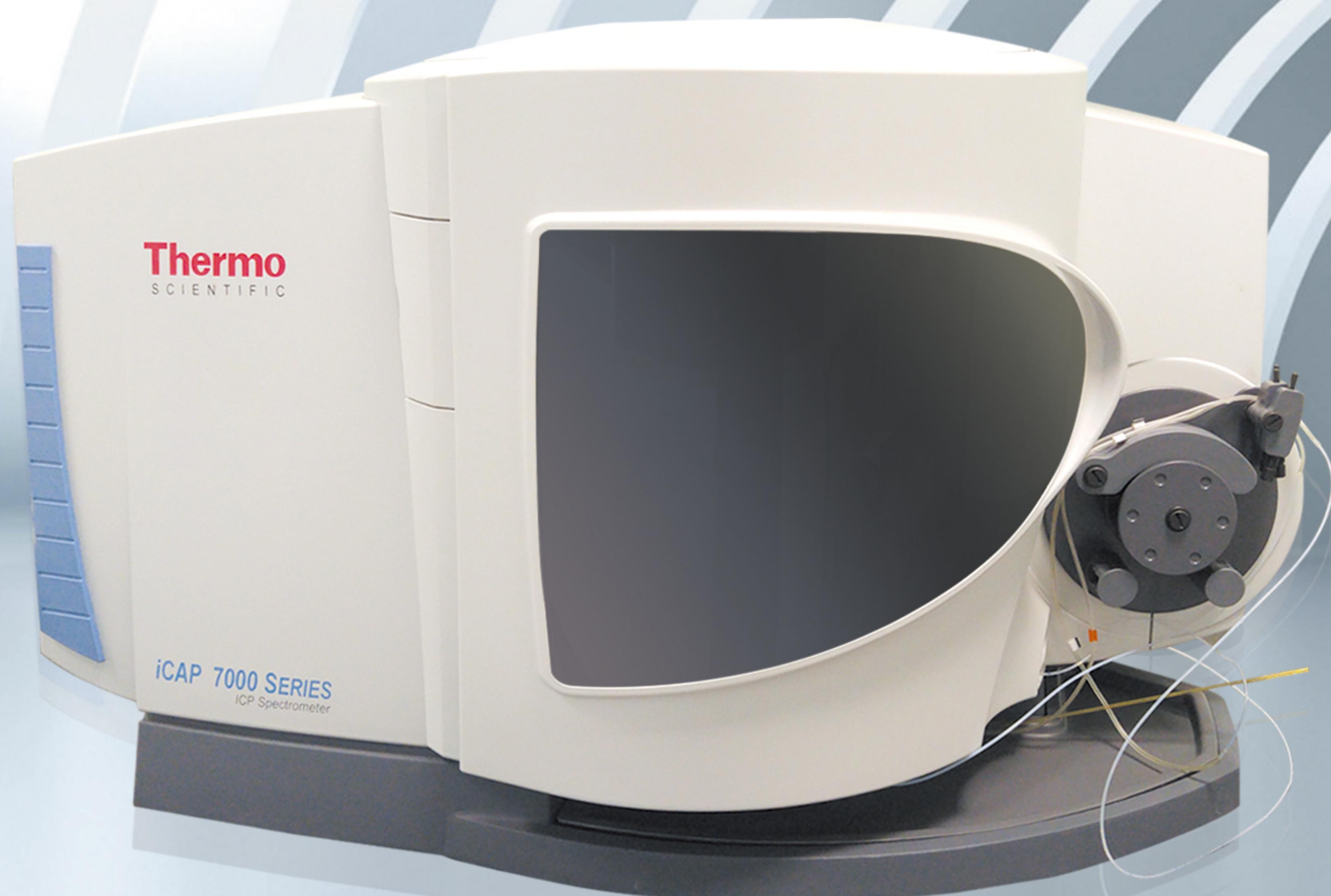
广州化工研究设计院有限公司
分析测试中心

多彩化工 · 专业视角

广州科学城：
集聚化工创新力量
引领世界科技潮流

经CNAS权威认证

专业从事化工、涂料
等分析检测



ISSN 1001-9677



12>

9 771001 967203

主办：

广州化工研究设计院
广州市化工行业协会

地址：广州市白云区鹤联街229号万力创新园D座二楼
联系人及电话：周先生 020-35549551 13710809830

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 48 卷第 12 期

2020 年 6 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

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:广州市白云区鹤联街 229 号万力创新园
D 座

邮 码:510425

电 话:(020)36372165

邮 箱:gzhgbjb@vip.126.com

网 址:<http://gzha.cbpt.cnki.net>

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

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 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

专论与综述

嵌段共聚物自组装中的缺陷研究进展 沈佳伟, 曹瑞芳, 杨涛(1)

纳米材料修饰电化学传感器应用研究进展 杨轶, 陈宏硕, 韩博伦(4)

钒酸铋光催化剂的制备及改性的研究进展 毛君, 董亚莉, 章佳艳, 陶菲菲(7)

辐射技术在聚乙烯改性的研究进展 孔令光(10)

柠檬酸钙的合成研究进展 李虎强, 史博颖(12)

纳米银线透明导电薄膜产业专利重要申请人分析 王卓, 罗因因, 高晓薇, 岳瑞娟(15)

固相微萃取在样品分析中的最新研究进展和应用前景 王子宜, 韩海燕, 王静(18)

氧化锌/碳量子点复合光催化剂的制备及性能研究 薛润泽, 李彤, 董亚莉(21)

科学实验

PAM/SA/CNFs 复合水凝胶的制备与性能研究 冯华伟, 林秀玲(24)

Au NPs 修饰 TiO₂ 纳米片阵列的制备及光电化学性能研究 孙焕运, 李士阔(27)

可点击聚丙烯酸酯乳液制备及性能研究 骆文森, 吕兴军, 颜昌琪, 周子潇, 田锦衡, 孙飞, 蒋军, 彭开美, 胡剑青(31)

一种新型梳状聚醚破乳剂的合成、改性及性能评价 张成玥, 耿孝恒(36)

镧掺杂二氧化钛光催化剂的制备及性能研究 张新海(39)

高固含芳香族水性聚氨酯的制备与性能研究 陈新, 吴锦京, 李季衡(42)

含[M'(CN)₂]⁻桥连配体的 Fe^{II} 霍夫曼类自旋交叉配合物 李金燕, 侯得健(45)

- 类普鲁士蓝微纳米粒子的可控合成与表征 徐 艳, 李钰欣, 许云慧, 戚若婷, 郑 妍 (48)
 $\text{Bi}_2\text{O}_2\text{CO}_3/\beta\text{-Bi}_2\text{O}_3$ 用于可见光催化协同光芬顿降解 RhB 的性能研究 马珑珑, 杨 志 (50)
交联对聚乳酸/淀粉/纳米二氧化硅复合材料力学性能的影响
..... 王运萍, 梁俊雄, 李盈颖, 周 刚, 黄承哲 (55)
胜利原油乳状液中固体颗粒特性及其脱除技术
..... 张 敏, 耿孝恒, 樊刘通, 王 睿, 张 临, 谢 辉 (58)
基于氟铝配位的鳌合树脂吸附氟的可行性分析 姜 科, 潘希贤, 周 惠 (61)
一株反硝化聚磷菌的筛选与特性研究 李 澳, 胡 月, 孙 玲, 孟 娜, 于楠楠 (63)
活性炭纤维吸附 VOCs 再生时的安全性分析 徐遵主, 张以飞, 李 明, 张纪文 (67)
羊踯躅提取物对金黄色葡萄球菌的抑菌机制研究
..... 蒋利荣, 覃 玥, 诸葛臣林, 甘恩战, 黄芳玉 (70)
离子液体-超声波协同法提取黑豆异黄酮及抗氧化性研究 黎 莉, 于德涵, 苏 适, 王广慧 (73)
一种 UV 乳化剂及其在不锈钢保护油墨中应用 覃海定, 苏 航 (77)

分析测试

- 离子色谱法测定工业污水中的无机阴离子 范 华 (80)
UPLC-MS/MS 法测定饲料级兽药中甲硝唑和地美硝唑的含量 田海娇, 张府君, 武 婷 (82)
高效液相色谱法同时测定无纺布中的丙烯酸、巴豆酸和衣康酸 刘永玉 (84)
紫外分光光度法测定水晶泥中硼砂的含量 何晓莹, 黄艳芬, 余 旦, 蒋启灿 (87)
液相色谱法测定水产品中磺胺类代谢物含量的不确定度评定 李鸿超, 彭家杰, 罗健民, 姚婉仪 (89)

环境保护

- 微纳米曝气技术在水环境治理中的应用 鄢银梁, 王 澜, 李红桔, 张 扬, 许 洋, 林佩斌 (93)
LED 芯片制造业废水处理工程工艺及优化 刘 嵩 (96)
人工湖水质监测数据对治理方案的影响探讨 王 磊 (99)
谈如何最大程度的发挥环境监测的重要作用 徐瑞翔 (101)

化工机械

- 1.2 Mt/a 延迟焦化加热炉改造分析 贾金锋, 隋小山, 曾 伟, 廖有贵 (103)
EPKS 系统与 SIS 系统通讯的应用 张小兰 (107)
基于 MATLAB 的油罐罐底板应力分析 邱水才, 张玲艳, 李 云 (110)
鼓风热再生吸附式干燥机电能移峰填谷的应用 叶晓明, 吉 川, 江志坚, 伍光明, 何 莹 (114)
多段板式换热器设计选型影响因素 黄 超, 卢 奇, 周 振, 任向东, 秦 妮, 李安军 (116)

生产技术

- 氮气汽提半贫液流程与传统低温甲醇洗流程对比研究 刘莎 (120)
乙二醇装置环氧乙烷精制系统优化改造 张功尚 (123)
柴油加氢装置分馏单元流程优化 张俊娜, 王裴生 (125)
天然气处理工厂循环水系统典型问题分析及改进措施 张炜森 (128)

教学园地

- C 语言在化工分离工程教学中的应用 毕秋艳, 马丽 (131)
Gaussian 软件教学引入高校化学专业第二课堂的探索与实践
..... 杨怡萌, 李园园, 吴娅, 王仲明, 陈聪梅 (134)
《复合材料原理》课程教学改革研究 陈飞, 赵玉涛, 陈刚 (137)
结构化学教学着重培养大学生的基本能力 侯秀芳 (139)
化学实验中以 OBE 理念引导的“翻转课堂”设计 倪正民 (141)
OBE 理念下气相色谱原理教学设计 任红威, 张金锋, 苏昭桂, 孙忠强 (144)
基于 OBE 理念的环境工程产教融合教学模式构建
..... 卿湘东, 安蓉, 陈红军, 陈畅亚, 丁凤, 汲长艳, 黄毅, 徐玲 (147)
构象概念主线在高分子物理课程中的实践探讨 孙鹏飞, 范曲立 (149)
慕课背景下《药物分析》教学改革的思考 冯学花, 杨春燕, 宋祖荣 (151)
无机及分析化学分层教学探索与实践 黄剑平, 赵春, 刘华荣 (153)
STSE 教育在军事院校《材料科学与社会》课程中的实践 杨晓娜, 李奇, 张晖, 姜松 (156)
材料科学与工程专业英语的翻译技巧 杨雷, 袁雪芹, 钟煜, 张甲甲 (159)
材料科学与工程基础实验教学改革探索 凌红, 杨坡, 冉起超 (161)
研究生助教在提高无机化学实验教学效果的有益探索 吴玲芳, 王梦, 王迎春, 牛丽颖 (163)
基于应用创新型人才培养的药剂学实验教学改革探索 王双侠, 苏适, 柴宝丽, 王斌 (166)
大数据背景下应用型本科高校化学实验室管理模式探索 王桂玲, 陈俊明, 汪徐春, 牛得明 (168)
应用型焊接技术与工程专业人才培养模式改革与实践
..... 王永东, 栾亦琳, 朱艳, 郑光海, 赵霞, 管晓光 (170)
药物化学网络课程的优化设计与疫情下的运用 袁惠卿, 惠捷, 刘浩宇 (172)
线上线下模式在分析化学“金课”教学中的实践 孙文亮, 郝如斯 (175)
聚焦应用化学培养目标, 做好分析化学教学工作 何梦媛, 贾梦倩, 靳梦昭 (178)
- ## 教学园地
- 氮气环境下加氢催化剂卸剂作业安全风险分析及对策 陈栓洲 (181)

CONTENTS

Research Progress on Defects in Self-Assembly of Block Copolymers	SHEN Jia-wei, CAO Rui-fang, YANG Tao(1)
Advances in Electrochemical Sensors Modified by Nanomaterials ...	YANG Yi, CHEN Hong-shuo, HAN Bo-lun(4)
Review on the Preparation and Modification of Bismuth Vanadate Photocatalysts	MAO Jun, DONG Ya-li, ZHANG Jia-yan, TAO Fei-fei(7)
Research Progress of Radiation Technology in Polyethylene Modification	KONG Ling-guang(10)
Progress in Preparation of Calcium Citrate	LI Hu-qiang, SHI Bo-ying(12)
Analysis of Key Patent Applicants of Transparent Silver Nanowire Conductive Film	WANG Zhuo, LUO Nan-nan, GAO Xiao-wei, YUE Rui-juan(15)
The Latest Research Progress and Application Prospect of Solid Phase Microextraction in Sample Analysis	WANG Zi-ji, HAN Hai-yan, WANG Jing (18)
Preparation and Properties of ZnO/CQDs Composite Photocatalyst	XUE Run-ze, LI Tong, DONG Ya-li(21)
Study on Preparation and Properties of PAM/SA/CNFs Composite Hydrogel	FENG Hua-wei, LIN Xiu-ling(24)
Preparation and Photoelectrochemical Properties of Au NPs Modified TiO ₂ Nanosheet Arrays	SUN Huan-yun, LI Shi-kuo(27)
Preparation of Clickable Polyacrylate Emulsions and Its Physical Properties	LUO Wen-sen, LV Xing-jun, YAN Chang-qi, ZHOU Zi-xiao, TIAN Jin-heng, SUN Fei, JIANG Jun, PENG Kai-meい, HU Jian-qing(31)
Synthesis, Modification and Performance Evaluation of A New Comb Polyether Demulsifier	ZHANG Cheng-yue, GENG Xiao-heng(36)
Preparation and Properties of La-doped TiO ₂ Photocatalyst	ZHANG Xin-hai(39)
Study on Preparations and Properties of High Solid Aromatic Waterborne Polyurethane	CHEN Xin, WU Jin-jing, LI Ji-heng(42)
Fe ^{II} Hofmann-like Spin Crossover Complexes with [M'(CN) ₂] ⁻ Bridging Ligand	LI Jin-yan, HOU De-jian(45)
Controllable Synthesis and Characterization of Prussian Blue Nanoparticles	XU Yan, LI Yu-xin, XU Yun-hui, QI Ruo-ting, ZHENG Yan(48)
Study on the Photocatalysis Performance of Bi ₂ O ₂ CO ₃ /β-Bi ₂ O ₃ in Synergy with Photo-Fenton for Degradation of RhB under Visible Light	MA Long-long, YANG Zhi(50)
Effect of Crosslinking on Mechanical Properties of PLA/Starch/Nano-silica Composites	WANG Yun-ping, LIANG Jun-xiong, LI Ying-ying, ZHOU Gang, HUANG Cheng-zhe(55)
Study on Characteristics of Solid Particles in Shengli Crude Oil Emulsion and Its Removal Technology	ZHANG Min, GENG Xiao-heng, FAN Liu-tong, WANG Rui, ZHANG Lin, XIE Hui(58)
Feasibility Analysis for Adsorption of Fluorine by Chelating Resin Based on Aluminum-fluoride Coordination	JIANG Ke, PAN Xi-xian, ZHOU Hui(61)
Screening and Characterization of A Denitrifying Phosphorus Accumulating Organisms	LI Ao, HU Yue, SUN Ling, MENG Na, YU Nan-nan(63)
Safety Analysis of VOCs Regeneration Adsorbed by Activated Carbon Fiber	XU Zun-zhu, ZHANG Yi-fei, LI Ming, ZHANG Ji-wen(67)
Antibacterial Mechanism of <i>Rhododendron molle</i> (Blume) G. Don Against <i>Staphylococcus Aureus</i>	JIANG Li-rong, QIN Yue, ZHU GE Chen-Lin, GAN En-Zhan, HUANG Fang-yu(70)
Study on the Extraction of Isoflavone from Black Soybean by Ionic Liquid Ultrasonic Assisted Method and Its Antioxidant Activity	LI Li, YU De-han, SU Shi, WANG Guang-hui(73)

A UV-curable Emulgator and Its Application on Waterborne UV-curable Steel Protect Emulsion .....	.....	QIN Hai-ding, SU Hang(77)
Determination of Inorganic Anions in Industrial Wastewater by Ion Chromatography .....	.....	FAN Hua (80)
Determination of Metronidazole and Dimetridazole in Feed Grade Veterinary Preparations by Ultra Performance Liquid Chromatography-tandem Mass Spectrometry .....	.....	TIAN Hai-jiao, ZHANG Fu-jun, WU Ting(82)
Simultaneous Determination of Acrylic Acid, Crotonic Acid and Itaconic Acid in Non-woven Fabrics by HPLC .....	.....	..... LIU Yong-yu(84)
Determination of Borax in Slime by UV-Vis ... HE Xiao-ying, HUANG Yan-fen, YU Dan, JIANG Qi-can(87)		
Evaluation of Uncertainty for Detection of Sulfonamide Metabolites in Aquatic Products by HPLC .....	.....	..... LI Hong-chao, PENG Jia-jie, LUO Jian-min, YAO Wan-yi(89)
Application of Micro-nano-aeration Technology in Water Environment Treatment .....	.....	..... GAO Yin-liang, WANG Lan, LI Hong-ju, ZHANG Yang, XU Yang, LIN Pei-bin(93)
Engineering Process and Optimization of Wastewater Treatment in LED Chip Manufacturing Industry .....	.....	..... LIU Song(96)
Discussion on the Influence of Artificial Lake Water Quality Monitoring Data on the Treatment Plan .....	.....	..... WANG Lei(99)
Discussion on How to Maximize the Important Role of Environmental Monitoring .....	.....	XU Rui-xiang(101)
Retrofit Analysis of 120 Mt/a Delayed Coking Furnace .....	.....	..... JIA Jin-feng, KUI Xiao-shan, ZENG Wei, LIAO You-gui(103)
Application of Communication between EPKS System and SIS System .....	.....	ZHANG Xiao-lan(107)
Stress Analysis of Bottom Plate of Oil Tank Based on MATLAB .....	.....	..... QIU Shui-cai, ZHANG Ling-yan, LI Yun(110)
Power Saving Application for Adsorption and Heat Regeneration Type Dryer .....	.....	..... YE Xiao-ming, JI Chuan, JIANG Zhi-jian, WU Guang-ming, HE Ying(114)
Factors Influencing the Design and Selection of Multistage Plate Heat Exchanger .....	.....	..... HUANG Chao, LU Qi, ZHOU Zhen, REN Xiang-dong, QIN Ni, LI An-jun(116)
Comparison of N ₂ Stripping Semi-lean Liquid and Traditional Rectisol Process .....	.....	..... LIU Sha(120)
Optimization and Reform of Ethylene Oxide Refining System in Ethylene Glycol Plant .....	.....	..... ZHANG Gong-shang(123)
Process Optimization of Distillation Unit of Diesel Hydrogenation Plant .....	.....	..... ZHANG Jun-na, WANG Pei-sheng (125)
Analysis and Improvement Measures of Typical Problems in Circulating Water System of Natural Gas Processing Plant .....	.....	..... ZHANG Wei-sen(128)
Application of C Programming Language in the Teaching of Chemical Separation Engineering .....	.....	..... BI Qiu-yan, MA Li(131)
Exploration and Practice on Introducing Gaussian Software Teaching into the Second Classroom for Chemistry Majors in College and Universities .....	.....	..... YANG Yi-meng, LI Yuan-yuan, WU Ya, WANG Zhong-ming, CHEN Cong-mei(134)
Research on the Teaching Reform of Composite Materials Principles .....	.....	..... CHEN Fei, ZHAO Yu-tao, CHEN Gang(137)
The Essential Ability for University Students' Needs to Raise Emphatically on Structural Chemistry Teaching .....	.....	..... HOU Xiu-fang(139)
Design of "Flipped Classroom" Guided by OBE Concept in Chemistry Experiments .....	.....	..... NI Zheng-min(141)
Teaching Design of Principles of Gas Chromatography under OBE Concept .....	.....	..... REN Hong-wei, ZHANG Jin-feng, SU Zhao-gui, SUN Zhong-qiang(144)

- Construction of OBE-based Industry–education Integration Teaching Model for Environmental Engineering
..... *QING Xiang-dong, AN Rong, CHEN Hong-jun, CHEN Chang-ya, DING Feng, JI Chang-yan, HUANG Yi, XU Ling*(147)
- Practical Discussion on the Main Line of Conformation Concept in the Course of Polymer Physics
..... *SUN Peng-fei, FAN Qu-li*(149)
- Thoughts on the Teaching Reform of Drug Analysis under the Background of MOOC
..... *FENG Xue-hua, YANG Chun-yan, SONG Zu-rong*(151)
- Exploration and Practice of Stratified Teaching in Inorganic and Analytical Chemistry
..... *HUANG Jian-ping, ZHAO Chun, LIU Hua-rong*(153)
- Exploration of STSE Education in the Course of Materials Science and Society in Military Colleges
..... *YANG Xiao-na, LI Qi, ZHANG Hui, JIANG Song*(156)
- Translation Skills of Technical English for Material Science and Engineering
..... *YANG Lei, YUAN Xue-qin, ZHONG Yu, ZHANG Jia-jia*(159)
- Experimental Teaching Reform of Fundamentals of Materials Science and Engineering ... *LING Hong, YANG Po, RAN Qi-chao*(161)
- The Beneficial Exploration of Graduate Assistant in Improving the Teaching Effect of Inorganic Chemistry Experiment
..... *WU Ling-fang, WANG Meng, WANG Ying-chun, NIU Li-ying* (163)
- Exploration of Pharmaceutical Experiment Teaching Reform Based on the Cultivation of Applied Innovative Talents
..... *WANG Shuang-xia, SU Shi, CHAI Bao-li, WANG Bin*(166)
- Exploration of Chemistry Laboratory Management Mode in Application-oriented Universities under the Background of Big Data
WANG Gui-ling, CHEN Jun-ming, WANG Xu-chun, NIU De-ming (168)
- Reform and Practice of Talent Training Model for Applied Welding Technology and Engineering Specialty
..... *WANG Yong-dong, LUAN Yi-lin, ZHU Yan, ZHENG Guang-hai, ZHAO Xia, GUAN Xiao-guang*(170)
- Optimized Design of Medicinal Chemistry Online Course and Its Use during Epidemic
..... *YUAN Hui-qing, HUI Jie, LIU Hao-yu*(172)
- Practice of Online and Offline Mode in the Teaching of “Gold Course” of Analytical Chemistry
..... *SUN Wen-liang, HAO Ru-si*(175)
- Focus on the Training Objectives of Applied Chemistry and Do Well in the Teaching of Analytical Chemistry
..... *HE Meng-yuan, JIA Meng-qian, JIN Meng-zhao*(178)
- Safety Risk Analysis and Countermeasures of Catalyst Unloading under Nitrogen Environment
..... *CHEN Shuan-zhou*(181)

GUANGZHOU CHEMICAL INDUSTRY

Open Publishing

Established in 1973 (Semimonthly)

Vol. 48 No. 12

Jun. 2020

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. 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:

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

Adverxising Business License No.: 4401004002668