



中国化工教育协会会刊  
第38卷 · 第2期

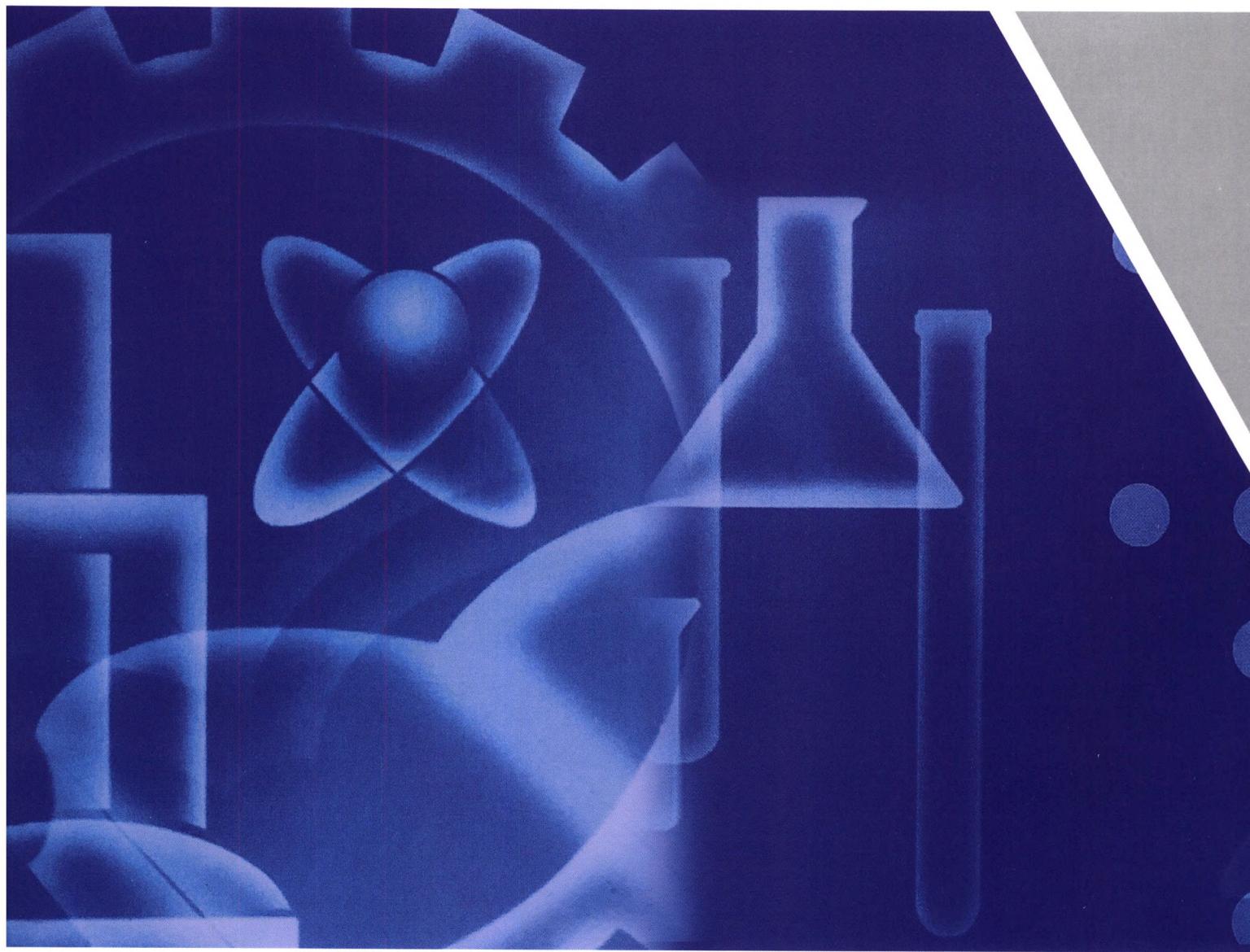


Q K 2 1 1 6 4 4 0 1 1000-6168

CN 31-1043/G4

# 化工高等教育

HIGHER EDUCATION IN CHEMICAL ENGINEERING



2021年 / 4月

华东理工大学主办

# 化工高等教育

第38卷第2期 2021年4月

## 目 次

### 特稿与约稿

院校研究“中国化”之困：条块关系对高校决策系统的影响 ..... 张端鸿,王倩(2)

### 高教改革与发展

顶尖科技人才科研产出特征研究——以化学领域中国大陆高被引科学家为例..... 高芳祎,康洁雨(10)

工科优势高校国际化人才培养路径研究 ..... 周玲,刘甘雨(16)

### 课程建设与改革

发酵工程课程教学改革与实践探索 ..... 田锡炜,夏建业,王启要,高淑红,左鹏,庄英萍(21)

新工科愿景下过程流体机械课程的教学实践及思考 ..... 周邵萍,张洪波,邢改兰(25)

OBE理念下基于“知识—能力—创新”思想的课程教学设计——以水泥熟工设备课程为例

..... 赵蔚琳,段广彬(29)

### 以学生为中心的线上线下混合式教学模式设计

..... 李强,周昌静,许伟伟,王梦简,刘兆增,孙治谦,王振波(34)

面向新工科建设的化工原理课程教学改革与实践 ..... 成忠,诸爱士,刘宝鉴,王士财,赵军子(40)

药物设计学课程的建设和教学实践 ..... 李卫华,吴曾睿,刘桂霞,程家高,唐赟(47)

化工类专业本科生工程设计能力培养的思考与实践 ..... 孟祥海,黄星亮,朱建华,姜桂元,刘梦溪(51)

工程教育专业认证背景下化工传递过程课程教学改革探索 ..... 吴峰,闫渊,马晓迅,田斌(57)

### 新时期普通高校化学反应工程双语教学改革探究

..... 彭莘媚,贺银菊,王江河,李云萍,邢焰,张杰(62)

轻化工特色水污染控制工程课程体系的构建与教学实践 ..... 郭昌梓,裴立影(68)

责任编辑:李丽妍

## 基于预警信号的化工过程安全课程教学体系研究

..... 王兰云,王 燕,徐永亮,穆仕芳,李 瑶,杨 娟,纪文涛(76)

## 实验与实践教学

物理化学实验智慧教学平台的构建与实践 ..... 田福平,戴 岳,张永策,张艳娟,张文珠,黄斐斐(82)

基于学生自主和创新能力开发的项目教学法探析

..... 赵爱娟,齐向娟,郭红宇,樊丽萍,李 建,冯荣秀,孙希明,陈艳英,刘秀凤(86)

智能化现代工厂虚拟仿真实习在应用型化工人才培养中的应用 ..... 俞 俊,陈桂娥,孟 涛,周义锋(92)

化工安全及事故应急虚拟现实与 3D 仿真综合实训平台的构建与实践

..... 邵小晗,邵 辉,毕海普,葛秀坤(100)

过程装备与控制工程专业生产实习教学的思考与探讨 ..... 赵 敏,郭兴建,王江云,魏耀东(105)

融研入教,助推过程设备创新设计——以搅拌设备为例 ..... 杨锋苓,王贵超,王卫国,唐委校(109)

虚拟实验对实践教学的促进作用——以气流床气化炉耐火砖蚀损为例

..... 龚 岩,廖舒泓,包玲玲,李 贺,陈 夏,郭庆华,代正华,于广锁(115)

“双一流”背景下高校实验室安全管理路径探析——以北京化工大学为例

..... 于 颖,许媛媛,甫玉龙(121)

## 教学经验交流

香兰素新合成工艺路线的绿色化学原理解析 ... 冀亚飞,杨金月,刘宏伟,赵建宏,任国斌,宋恭华(126)

丰富教学手段,提高化学反应工程课堂教学质量 ..... 王安杰,孙志超,张守臣,贡卫涛,李 艳(132)

Fluent 软件在化工专业教学中的应用 ..... 谢 乐,蒋崇文,王 帅,钟 宏(137)

化工原理教学中的核心概念:传递的平衡态与过程的推动力

..... 张 彰,郭晓亚,刘 红,鄢 浩,朱 宪(143)

## 思想政治教育

“00 后”大学生对高校师德师风建设需求侧研究调查报告——以华东理工大学为例

..... 张 曦,马天骄,张雪银(150)

主编寄语 ..... (1)

首届绿色工程教育暨未来工程师论坛在沪召开 ..... (149)

## Main Contents

- Dilemma of Sinicization of Institutional Research: The Impact of Tiao-kuai Relation on Decision Support System and Mechanism in Colleges and Universities ..... Zhang Duanhong, Wang Qian( 2 )
- A Study on the Characteristics of Top Scientific and Technological Talents' Research Output: Taking the Chemical Highly Cited Researchers in Mainland China as an Example ..... Gao Fangyi, Kang Jieyu(10)
- Study on the International Talent Training Path in China's Engineering Advantage Universities ..... Zhou Ling, Liu Ganyu(16)
- Exploration of Teaching Reform and Practice on Fermentation Engineering Course ..... Tian Xiwei, Xia Jianye, Wang Qiayao, Gao Shuhong, Zuo Peng, Zhuang Yingping(21)
- Teaching Practice and Thinking of the Course of Process Fluid Machinery under the New Vision of Engineering ..... Zhou Shaoping, Zhang Hongbo, Xing Gailan(25)
- The Teaching Design of Knowledge-Ability-Innovation Based on the OBE Concept —Taking the Course of the Cement Thermal Equipment as an Example ..... Zhao Weilin, Duan Guangbin(29)
- Student-centered Online and Offline Blended Teaching Model Design ..... Li Qiang, Zhou Changjing, Xu Weiwei, Wang Mengjian, Liu Zhaozeng, Sun Zhiqian, WangZhenbo(34)
- Teaching Reform and Practice of Chemical Engineering Principle Course Oriented to New Engineering Discipline Construction ..... Cheng Zhong, Zhu Aishi, Liu Baojian, Wang Shicai, Zhao Junzi(40)
- Construction and Teaching Practice of Drug Design Course ..... Li Weihua, Wu Zengrui, Liu Guixia, Cheng Jiagao, Tang Yun(47)
- Thinking and Practice of Engineering Design Ability Training for Undergraduates Majoring in Chemical Engineering ..... Meng Xianghai, Huang Xingliang, Zhu Jianhua, Jiang Guiyuan, Liu Mengxi(51)
- Exploration of Teaching Reform of Chemical Engineering Transport Processes Based on Engineering Education Accreditation ..... Wu Feng, Yan Yuan, Ma Xiaoxun, Tian Bin(57)
- Research on Bilingual Teaching Reform of Chemical Reaction Engineering in Regular Colleges under the New Era ..... Peng Xinmei, He Yinju, Wang Jianghe, Li Yunping, Xing Yan, Zhang Jie(62)

Construction and Teaching Practice of Water Pollution Control Engineering Course System of Light Chemical Industry .....	Guo Changzi, Pei Liying(68)
Research on Teaching System on Chemical Process Safety Based on Incident Warning Signs .....	Wang Lanyun, Wang Yan, Xu Yongliang, Mu Shifang, Li Yao, Yang Juan, Ji Wentao(76)
Construction and Practice of Intelligent Teaching Platform for Physical Chemistry Laboratory ...	Tian Fuping, Dai Yue, Zhang Yongce, Zhang Yanjuan, Zhang Wenzhu, Huang Feifei(82)
Study on the Project-based Teaching and Learning Method Based on Student Independence and Innovation Ability Development .....	Zhao Aijuan, Qi Xiangjuan, Guo Hongyu, Fan Liping, Li Jian, Feng Rongxiu, Sun Ximing, Chen Yanying, Liu Xiufeng(86)
Application of Intelligent Modern Factory Virtual Simulation Training in the Cultivation of Applied Chemical Talents .....	Yu Jun, Chen Guie, Meng Tao, Zhou Yifeng(92)
Construction and Practice of Comprehensive Training Platform of Virtual Reality and 3D Simulation for Chemical Safety and Emergency .....	Shao Xiaohan, Shao Hui, Bi Haipu, Ge Xiukun(100)
Thinking and Discussion on Production Practice Teaching of Process Equipment and Control Engineering Specialty .....	Zhao Min, Guo Xingjian, Wang Jiangyun, Wei Yaodong(105)
Promoting the Innovation Design of Process Equipment by Research-teaching Integration —Taking Agitation Equipments as Examples .....	Yang Fengling, Wang Guichao, Wang Weiguo, Tang Weixiao(109)
The Promotion of Virtual Experiment to Practical Teaching—A Teaching Example of Entrained-flow Gasification Refractory Failure .....	Gong Yan, Liao Shuhong, Bao Lingling, Li He, Chen Xia, Guo Qinghua, Dai Zhenghua, Yu Guangsuo(115)
Analysis on the Path of University Laboratory Safety Management under the "Double First-class" Background—Taking Beijing University of Chemical Technology as an Example .....	Yu Ying, Xu Yuanyuan, Fu Yulong(121)
Resolution on New Synthetic Process of the Route to Vanillin by Principles of Green Chemistry .....	Ji Yafei, Yang Jinyue, Liu Hongwei, Zhao Jianhong, Ren Guobin, Song Gonghua(126)
Enriching Teaching Methods to Improve the Quality of Chemical Reaction Engineering .....	Wang Anjie, Sun Zhichao, Zhang Shouchen, Gong Weitao, Li Yan(132)
The Application of Fluent Software in the Teaching of Chemical Engineering .....	Xie Le, Jiang Chongwen, Wang Shuai, Zhong Hong(137)
The Core Concept in the Course of Principles of Chemical Engineering: Transfer Equilibrium State & Process Driving Force .....	Zhang Zhang, Guo Xiaoya, Liu Hong, Yan Hao, Zhu Xian(143)
A Survey Report on University Students Born in the 2000s's Demand Side on the Cultivation of Teachers' Ethics and Virtues in Colleges and Universities—A Case Study of East China University of Science and Technology .....	Zhang Xi, Ma Tianjiao, Zhang Xueyin(150)
Chief Editor's Words .....	(1)
The First Green Engineering Education and Future Engineers Forum Held in Shanghai .....	(149)

双月刊，1984年创刊

主 编：辛 忠

第38卷第2期

常务副主编：周 玲

2021年4月30日出版

副 主 编：苏海佳 余立新 夏淑倩 潘艳秋 艾 宁 杜志平

编辑部主任：李丽妍

## 《化工高等教育》编委会 (以下顾问、编委按姓氏笔画为序)

主任委员：郝长江

副主任委员：辛 忠

顾 问：山红红 刘有智 李伯耿 张凤宝 陈建峰 梁 斌 彭孝军

编 委：马连湘 马灵玉 马晓迅 艾 宁 吕永康 任其龙 任保增

任新钢 庄志军 刘永忠 孙艳丽 杜志平 李文秀 杨朝合

余立新 余 皓 余 徽 辛 晓 宋景华 张玉苍 张彦铎

金志浩 周 玲 胡晓钧 侯琳熙 夏淑倩 高大威 郭绪强

崔 鹏 梁志武 韩占生 童张法 管国锋 潘正安 潘艳秋

主管单位：中华人民共和国教育部

主办单位：华东理工大学

编辑出版：《化工高等教育》编辑部

地 址：上海市梅陇路130号华东理工大学343信箱

邮 编：200237

电 话：021-64252403

电子邮箱：gjyj@ecust.edu.cn

网 址：<https://hggdjy.ecust.edu.cn>

印 刷：上海贝叶图书有限公司

发 行：《化工高等教育》编辑部

发行范围：公开发行

定 价：16.80元

RCCSE中国核心学术期刊

“中国学术期刊综合评价数据库”来源期刊

“中国社会科学期刊精品数据库”入选期刊

“万方数据—数字化期刊群”和“中国核心期刊（遴选）数据库”入选期刊



ISSN 1000-6168



9 771000 616218