

中国科学技术协会  
中 国 化 学 会  
北京师范大学  
全 国 中 文 核 心 期 刊

主 管  
主 办

ISSN 1003-3807  
CN 11-1923/O6  
美国化学文摘(CA)收录源期刊

# 化学教育

## CHINESE JOURNAL OF CHEMICAL EDUCATION

★《中文核心期刊要目总览》收录期刊  
★中国核心期刊(遴选)数据库收录期刊  
★中国期刊全文数据库收录期刊

★中国学术期刊综合评价数据库统计源期刊  
★维普网收录源期刊  
★万方数据库收录期刊



邮发代号：2-106

ISSN 1003-3807



09  
9 771003 380161

HUAXUE JIAOYU

万方数据



9

第37卷  
2016

2016年5月

# 化学教育

第37卷 第9期

## 目 次

### 生活中的化学

- 家用废弃干电池重金属浸出性探究 ..... 程颖越 尹梦洁 (1)

### 新课程天地

- 促进能量观功能化的教学策略研究——以高中必修“原电池”教学为例 ..... 徐 敏 燕丹丹 (4)

- 氧化还原反应相关概念学习困难诊断与教学建议 ..... 郑文昌 (8)

- 走班制下化学课程的分类设计与分层实施 ..... 张佳宁 蔡亚萍 (16)

### 教学研究

- 中学化学教学中以论文和答辩方式提升学生科学素养 ..... 曹 蕤 黄文君 李 璞 (20)

- 基于 SOLO 理论的思维导图建构三重表征整体关系的教学研究 ..... 刘志华 李 佳 (24)

### 高考改革

- 我国台湾学科能力测验中自然科学选择题的设置及评价 ..... 肖巧玲 叶永廉 (29)

### 复习指导

- 高三化学专题复习的新型探究教学设计——以“高考题是怎样炼成的”为例 ..... 高 杰 刘 银 田 军 (34)

### 教师教育

- 中学化学教师实验素养的结构、评价与提升 ..... 赵 铭 赵 华 (39)

### 调查报告

- 西部农村初中化学实验教学现状调查——以甘肃省某县为例 ..... 温云富 (45)

### 实验教学与教具研制

- 实验教学中要进行观念的渗透——以“乙酸乙酯的制备”实验复习为例 ..... 李晓明 (52)

- 认识离子反应本质的手持技术新实验 ..... 张 展 曲成波 (56)

- 铁的析氢腐蚀实验探究 ..... 王金龙 鞠东胜 (58)

- 实验探究固体混合物加热法制氨气 ..... 丁佐俊 (62)

### 问题讨论与思考

- 电解氯化亚铁溶液的实验探究 ..... 施志斌 (66)

- 碳酸氢钠溶液中微粒浓度大小的研究 ..... 伍 强 (70)

- 复分解反应发生条件中生成物的有关问题 ..... 李旭娃 (73)

### 国内外信息

- IB 考试及其化学试题评析 ..... 王春姣 (76)

- 欢迎订阅 2016 年《化学教育》 ..... (69)

- 中国化学会第十届全国微型化学实验研讨会暨第八届全国中学微型实验研讨会通知 ..... (封 3)

本期责任编辑 陈会玲 张霄青

# CHINESE JOURNAL OF CHEMICAL EDUCATION

2016 Vol. 37 No. 9

Sponsored by Chinese Chemical Society and Beijing Normal University

## Chemistry in Daily Life

- Inquiry on Leachability of Heavy Metal in Used Household Alkaline Dry Batteries ..... CHENG Ying-Yue YIN Meng-Jie (1)

## New Curriculum Forum

- Strategies to Functionalize Energy View in "Primary Battery" Teaching ..... XU Min YAN Dan-Dan (4)

- Diagnosis of Learning Difficulties and Teaching Suggestions on Related Concepts of Redox Reaction ..... ZHENG Wen-Chang (8)

- Classification and Implementation of High School Chemistry Curriculum Under Class Selection System ..... ZHANG Jia-Ning CAI Ya-Ping (16)

## Teaching Research

- Improving Students' Scientific Literacy by Thesis and Defense in High School Chemistry Teaching ..... CAO Kui HUANG Wen-Jun LI Jing (20)

- Construction of Overall Relationship Among Threefold Representations Based on SOLO Theory and Mind Map ..... LIU Zhi-Hua LI Jia (24)

## Reform of College Entrance Examination

- Setting and Evaluation of Multiple-Choice Questions for Natural Science Test in Chinese Taiwan's Academic Competence Test ..... XIAO Qiao-Ling YE Yong-Qian (29)

## Review Guide

- New Inquiry Teaching Design for Thematic Review of Senior High School Chemistry ..... GAO Jie LIU Yin TIAN Jun (34)

## Teacher Education

- Framework, Evaluation and Improvement of High School Chemistry Teachers' Experimental Literacy ..... ZHAO Ming ZHAO Hua (39)

## Findings Report

- Status of Chemistry Experiment Teaching in Western Rural Junior High School of One County in Gansu Province of China ..... WEN Yun-Fu (45)

## Experiment Teaching and Teaching Aid Development

- Infiltration of Experimental Ideas in Teaching of "Preparation of Ethyl Acetate" ..... LI Xiao-Ming (52)

- Understanding the Essence of Ionic Reaction by Handheld Technology Experiment ..... ZHANG Zhan QU Cheng-Bo (56)

- Experiment Inquiry on Hydrogen Evolution Corrosion of Iron ..... WANG Jin-Long JV Dong-Sheng (58)

- Experiment Inquiry on Preparation of Ammonia by Heating Solid Mixture ..... DING Zuo-Jun (62)

## Discussion and Thinking of Questions

- Experiment Inquiry on Electrolyzing Ferrous Chloride Solution ..... SHI Zhi-Bin (66)

- Study on Particulate Concentrations in Sodium Bicarbonate Solution ..... WU Qiang (70)

- Problems Related to Product in Conditions for Occurrence of Metathetical Reaction ..... LI Xu-Wa (73)

## Domestic and Overseas Information

- Analysis of International Baccalaureate Diploma Programme (IB) Examination and Its Chemistry Examination Questions ..... WANG Chun-Jiao (76)

# 化 学 教 育

(半月刊·1980年创刊)

2016 年 第 37 卷 第 9 期 5 月 2 日出版

主管单位 中国科学技术协会  
主办单位 中国化学会 北京师范大学  
编辑出版 《化学教育》编辑部  
编辑部地址 北京师范大学化学楼 217 室  
邮政编码 100875  
电话(传真) 010—58807875  
咨询信箱 hxjy-jce@263.net  
投稿网址 http://www.hxjy.org

顾 问 刘知新  
主 编 刘正平  
副 主 编 李艳梅 孙世刚 王磊 王祖浩  
刊名题字 杨振忠 郑长龙 朱玉军(专职)  
印刷装订 戴安邦  
总发行处 河北天普润印刷厂  
订 阅 中国邮政集团公司北京市报刊发行局  
全国各地邮局,或本刊编辑部

刊号 ISSN 1003 - 3807  
CN 11 - 1923/O6

国内邮发代号 2-106

国外发行代号 M3070

定价 12.00 元

# CHINESE JOURNAL OF CHEMICAL EDUCATION

2016 Vol. 37 No. 9

Sponsored by Chinese Chemical Society and Beijing Normal University

## Chemistry in Daily Life

- Inquiry on Leachability of Heavy Metal in Used Household Alkaline Dry Batteries ..... CHENG Ying-Yue YIN Meng-Jie (1)

## New Curriculum Forum

- Strategies to Functionalize Energy View in "Primary Battery" Teaching ..... XU Min YAN Dan-Dan (4)

- Diagnosis of Learning Difficulties and Teaching Suggestions on Related Concepts of Redox Reaction ..... ZHENG Wen-Chang (8)

- Classification and Implementation of High School Chemistry Curriculum Under Class Selection System ..... ZHANG Jia-Ning CAI Ya-Ping (16)

## Teaching Research

- Improving Students' Scientific Literacy by Thesis and Defense in High School Chemistry Teaching ..... CAO Kui HUANG Wen-Jun LI Jing (20)

- Construction of Overall Relationship Among Threefold Representations Based on SOLO Theory and Mind Map ..... LIU Zhi-Hua LI Jia (24)

## Reform of College Entrance Examination

- Setting and Evaluation of Multiple-Choice Questions for Natural Science Test in Chinese Taiwan's Academic Competence Test ..... XIAO Qiao-Ling YE Yong-Qian (29)

## Review Guide

- New Inquiry Teaching Design for Thematic Review of Senior High School Chemistry ..... GAO Jie LIU Yin TIAN Jun (34)

## Teacher Education

- Framework, Evaluation and Improvement of High School Chemistry Teachers' Experimental Literacy ..... ZHAO Ming ZHAO Hua (39)

## Findings Report

- Status of Chemistry Experiment Teaching in Western Rural Junior High School of One County in Gansu Province of China ..... WEN Yun-Fu (45)

## Experiment Teaching and Teaching Aid Development

- Infiltration of Experimental Ideas in Teaching of "Preparation of Ethyl Acetate" ..... LI Xiao-Ming (52)

- Understanding the Essence of Ionic Reaction by Handheld Technology Experiment ..... ZHANG Zhan QU Cheng-Bo (56)

- Experiment Inquiry on Hydrogen Evolution Corrosion of Iron ..... WANG Jin-Long JV Dong-Sheng (58)

- Experiment Inquiry on Preparation of Ammonia by Heating Solid Mixture ..... DING Zuo-Jun (62)

## Discussion and Thinking of Questions

- Experiment Inquiry on Electrolyzing Ferrous Chloride Solution ..... SHI Zhi-Bin (66)

- Study on Particulate Concentrations in Sodium Bicarbonate Solution ..... WU Qiang (70)

- Problems Related to Product in Conditions for Occurrence of Metathetical Reaction ..... LI Xu-Wa (73)

## Domestic and Overseas Information

- Analysis of International Baccalaureate Diploma Programme (IB) Examination and Its Chemistry Examination Questions ..... WANG Chun-Jiao (76)

# 化 学 教 育

(半月刊·1980年创刊)

2016 年 第 37 卷 第 9 期 5 月 2 日出版

主管单位 中国科学技术协会  
主办单位 中国化学会 北京师范大学  
编辑出版 《化学教育》编辑部  
编辑部地址 北京师范大学化学楼 217 室  
邮政编码 100875  
电话(传真) 010—58807875  
咨询信箱 hxjy-jce@263.net  
投稿网址 http://www.hxjy.org

顾 问 刘知新  
主 编 刘正平  
副 主 编 李艳梅 孙世刚 王磊 王祖浩  
刊名题字 杨振忠 郑长龙 朱玉军(专职)  
印刷装订 戴安邦  
总发行处 河北天普润印刷厂  
订 阅 全国各地邮局, 或本刊编辑部

刊号 ISSN 1003 - 3807  
CN 11 - 1923/O6

国内邮发代号 2-106

国外发行代号 M3070

定价 12.00 元