



ISSN 1004-4957

CODEN: FCXES

CN 44-1318/TH

中文核心期刊

分析测试学报



FENXI CESHIXUEBAO

JOURNAL OF INSTRUMENTAL ANALYSIS

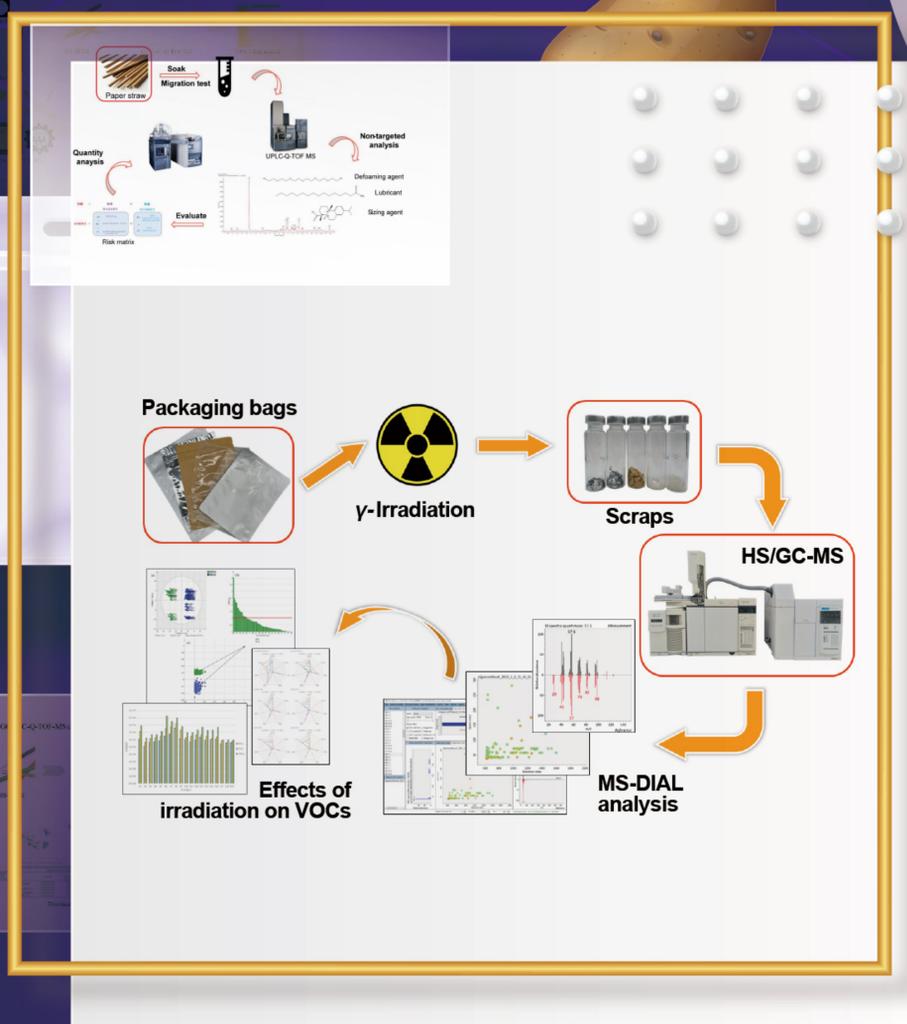
40th周年 刊庆 国际食品接触材料安全论坛专辑

Vol. 41

No.

10

2022



ISSN 1004-4957



9 771004 495222



中国广州分析测试中心 中国分析测试协会 主办

MINERAL Na

Mn

MINERAL Cu

VITAMIN C

MINERAL Zn

MINERAL Mg

VITAMIN A

VITAMIN B12

MINERAL Ca

MINERAL Se

MINERAL Fe

40周年刊庆 2022国际食品接触材料 安全论坛专辑

目 次

引言..... 李 丹

研究报告

- 1447 HS-SPME/GC×GC-Q-TOF MS结合化学计量学对回收聚对苯二甲酸乙二醇酯鉴别能力的研究 郝天英, 林勤保, 钟怀宁, 董 犇, 寇筱雪, 陈智峰, 叶智康, 王志伟
- 1459 ⁶⁰Co-γ辐照对食品接触用复合包装袋中挥发性化合物的影响 赵子青, 李佳怡, 林勤保, 叶智康, 李 河
- 1470 基于GC-MS和化学计量法探究边角料添加比例对食品接触用再生PE薄膜的影响 郭 盼, 曾少甫, 朱 蕾, 吴永宁, 王志伟, 胡长鹰
- 1478 纸吸管中非挥发性迁移物的非靶向筛查及风险评估 安皓月, 马 鑫, 王 倩, 隋海霞, 杜振霞
- 1486 GC-MS/MS法测定食品接触用硅橡胶制品中6种环硅氧烷迁移量 葛丹阳, 刘桂华, 姜 欢, 祝雨筱, 商贵芹, 罗世鹏, 胡长鹰
- 1494 覆膜金属罐中PBT/PET环状低聚物在食品中的迁移测试及基于膳食暴露量的风险评估 李倩云, 吴 刚, 王 亚, 王晓龙, 潘 峰, 张 泓, 邢 航, 李建文, 朱 蕾
- 1501 食品接触材料中高锰酸钾消耗量检测能力验证实施及应用评价 董 静, 杨昭颖, 余丽波, 戴丽雪, 卜丹丹, 雷思佳, 陈冬东, 彭 涛
- 1508 水性涂料中半挥发性化合物的非靶向筛查及其潜在危害评估 马洪生, 杨青华, 林勤保, 颜凌燕, 魏晓芬, 王 玥
- 1516 盐析辅助液液萃取/超高效液相色谱-串联质谱法测定含乳饮料中12种邻苯二甲酸酯 王东旭, 王新财, 胡奇杰, 王凤丽, 厉 芬
- 1523 一次性塑料餐具中风险物质的筛查 童嘉琦, 詹何珊, 朱晓艳, 翁江赉

实验技术与方法

- 1530 吹扫捕集/气相色谱-质谱联用法同时测定食品接触材料及制品中9种苯系物的迁移量 阿文伟, 曾 铭, 黄华军, 曾 莹, 董 犇, 李 丹, 陈燕芬, 钟怀宁, 郑建国
- 1536 热解分离/气相色谱-质谱法测定再生苯乙烯类聚合物中13种替代型溴系阻燃剂 张子豪, 刘莹峰, 彭 莹, 王 晶, 李全忠, 翟翠萍, 肖 前, 郑建国

分析测试学报

第41卷 第10期

2022年10月15日出版

月刊, 1982年创刊

刊名题字: 启功

主办单位: 中国广州分析测试中心
中国分析测试协会

主管单位: 广东省科学院

主 编: 陈小明

副主编: 庞国芳 江桂斌 吴惠勤(常务)
郑建国 王海水

编辑部主任: 龙秀芬

国际标准连续出版物号: ISSN 1004-4957

国内统一连续出版物号: CN44-1318/TH

CODEN: FCEXES

发行范围: 国内外公开发行

总发行处: 广东省报刊发行局

邮发代号: 46-104

订购处: 全国各地邮局

定价: 60.00元/册

国外总发行: 中国国际图书贸易总公司

国外发行代号: BM6013

广告经营许可证: 440000100186

编辑出版: 《分析测试学报》编辑部

地址: 广州市先烈中路100号(510070)

电话: 020-37656606, 87684776

E-mail: fxcxb@china.com

http://www.fxcxb.com

印刷: 广州市新齐彩印刷有限公司

责任编辑: 丁 岩 盛文彦 龙秀芬

- * 中文核心期刊
- * 中国分析测试协会会刊
- * 中国精品科技期刊
- * 广东省品牌期刊
- * 广东省优秀期刊
- * 广东省优秀科技期刊

- * 中国科技论文统计源期刊(中国科技核心期刊)
- * 《中国科学引文数据库》来源期刊
- * 《中国科技期刊数据库》来源期刊
- * 《中国学术期刊(光盘版)》收录期刊
- * 《中国期刊网》全文收录期刊
- * 《中国科技期刊精品数据库》收录期刊
- * 美国《化学文摘》(CA)收录期刊
- * 俄罗斯《文摘杂志》收录期刊
- * 日本科学技术社科学技术数据库收录期刊
- * 英国皇家化学学会《分析文摘》(AA)及《质谱》(MBS)系统摘录期刊
- * 荷兰《文摘与引文数据库》(Scopus)

目 次

- 1542 气相色谱-热能分析法同时测定食品接触材料及制品中15种N-亚硝胺在酒精类食品模拟物中的迁移量…………… 林 睿, 徐敦明, 黄旖珏, 董清木, 赖 莺, 杨子禾, 杨 泽, 庄丽丽, 郭思立, 吴易峰, 林伟靖, 林海霞, 丁华军, 沈露虹, 涂星朋
- 1548 UPLC - Orbitrap HRMS法同时测定食品接触用纸中23种有机抗菌剂 …… 刘益锋, 邱嘉兴, 张朋杰, 孙克强, 张宪臣, 赵珍玉, 梁润梅
- 1553 超高效液相色谱-串联质谱法测定食品接触用纸和纸制品中乙烯亚胺的迁移量…………… 黎梓城, 张海峰, 梁进欣, 董 犇, 陈燕芬, 曾 莹, 陈 胜, 钟怀宁, 李 丹, 郑建国

综 述

- 1558 食品接触材料中化合物的非靶向筛查技术研究进展 …………… 苏启枝, 董 犇, 李 丹, 钟怀宁
- 1568 食品接触用再生塑料的非有意添加物和鉴别技术研究进展 …………… 陈智峰, 郝天英, 林勤保, 钟怀宁, 王志伟

广告目录

雪景电子科技(上海)有限公司(封二) 北京海光仪器有限公司(封三)
上海兰博贸易有限公司(封底)

Journal of Instrumental Analysis

Vol. 41, No. 10

Oct. 15, 2022

Sponsored by China National Analysis Center, Guangzhou
and China Association for Instrumental Analysis

Editor-in-chief: CHEN Xiao-ming

Edited & published by the editorial office of Journal of Instrumental Analysis

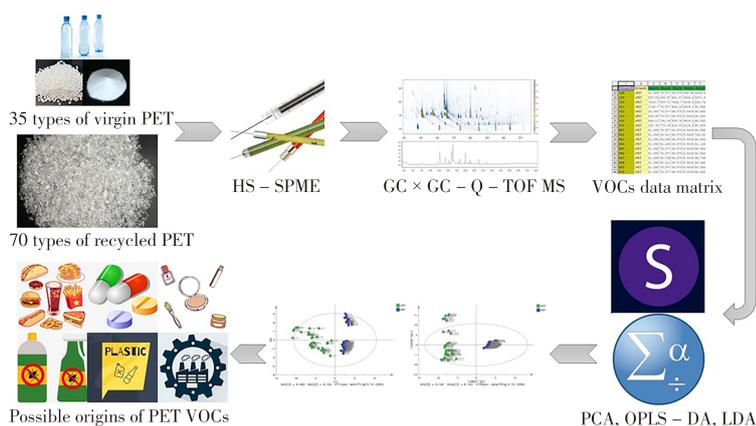
(E-mail: fxcspb@china.com, http://www.fxcspb.com)



Special Issue for 2022 International Food Contact Materials Safety Symposium

Contents

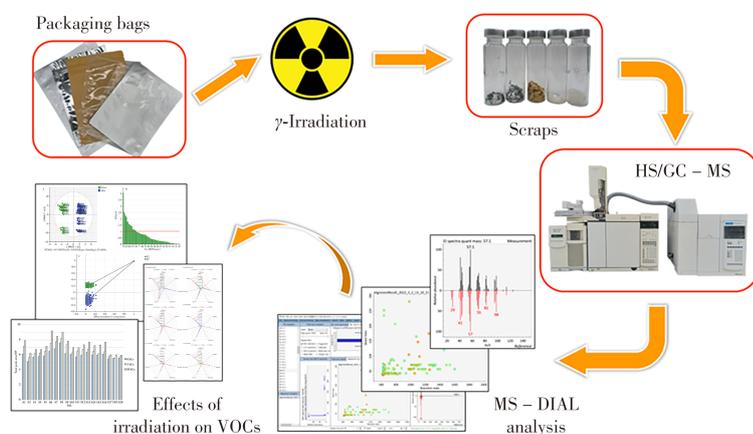
Scientific Papers



Study on the Ability of HS - SPME/GC×GC - Q - TOF MS Combined with Chemometrics to Discriminate Recycled Polyethylene Terephthalate

HAO Tian-ying, LIN Qin-bao, ZHONG Huai-ning,
DONG Ben, KOU Xiao-xue, CHEN Zhi-feng, YE
Zhi-kang, WANG Zhi-wei

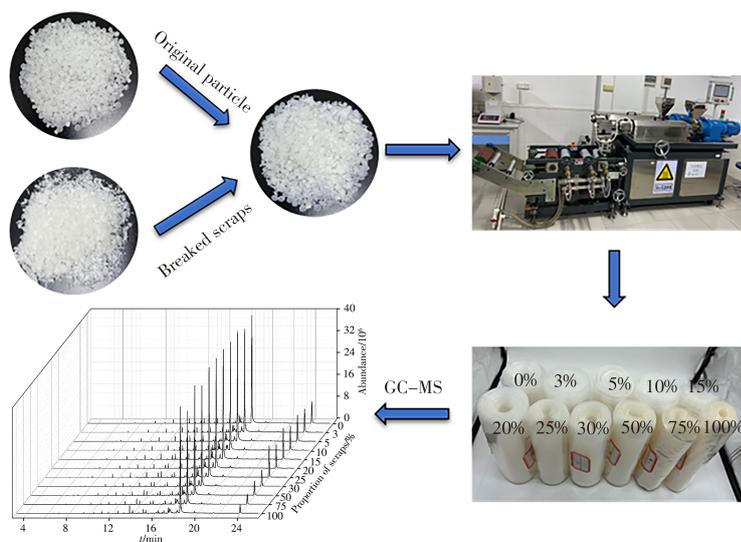
J. Instrum. Anal., 2022, 41(10): 1447 - 1458.
doi: 10.19969/j.fxcspb.22030701



Effect of ⁶⁰Co-γ Irradiation on Volatile Compounds in Food Contact Composite Packaging Bags

ZHAO Zi-qing, LI Jia-yi, LIN Qin-bao, YE Zhi-kang, LI He

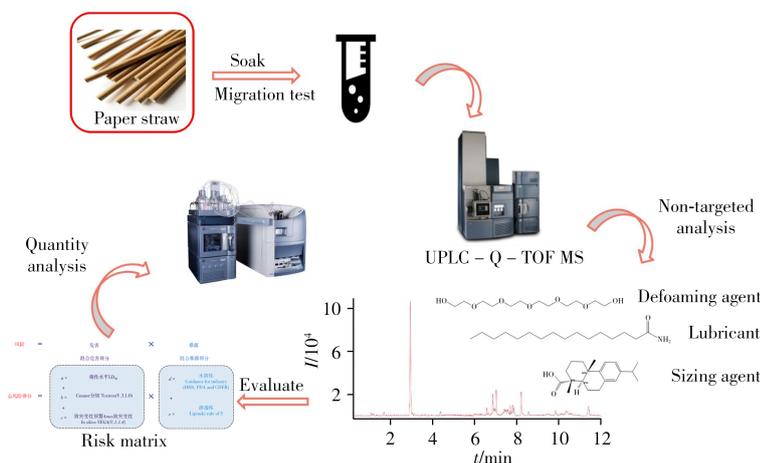
J. Instrum. Anal., 2022, 41(10): 1459 - 1469.
doi: 10.19969/j.fxcspb.22062808



Investigation of Scrap Addition Ratio on Recycled Food Contact Polyethylene Films Based on GC – MS and Chemometrics

GUO Pan, ZENG Shao-fu, ZHU Lei, WU Yong-ning, WANG Zhi-wei, HU Chang-ying

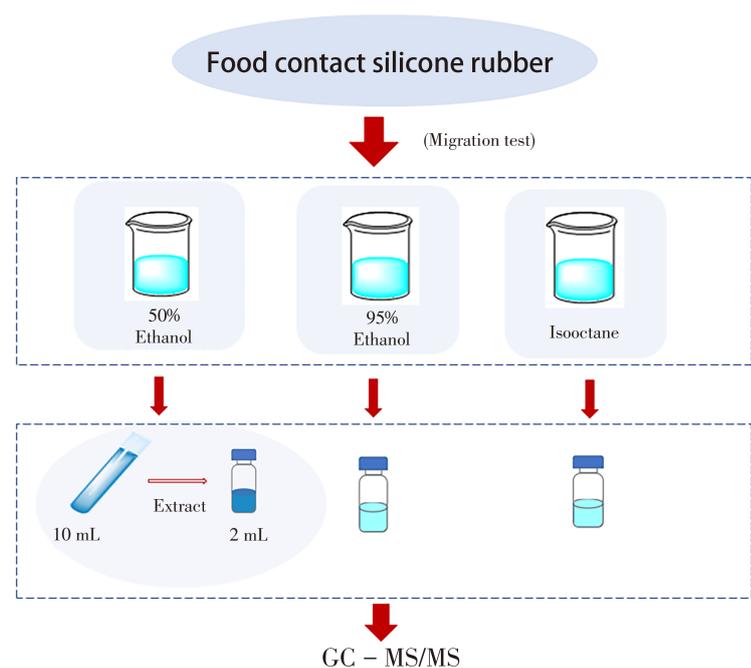
J. Instrum. Anal. , **2022**, 41(10): 1470 – 1477.
doi: 10.19969/j.fxcspb.22051902



Non-targeted Screening and Risk Assessment of Nonvolatile Migrants in Paper Straws

AN Hao-yue, MA Xin, WANG Qian, SUI Hai-xia, DU Zhen-xia

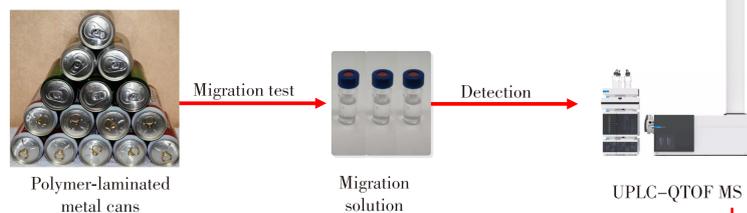
J. Instrum. Anal. , **2022**, 41(10): 1478 – 1485.
doi: 10.19969/j.fxcspb.22063003



Determination of Migration of Six Cyclosiloxanes in Silicone Rubber Products for Food Contact by GC – MS/MS

GE Dan-yang, LIU Gui-hua, JIANG Huan, ZHU Yu-xiao, SHANG Gui-qin, LUO Shi-peng, HU Chang-ying

J. Instrum. Anal. , **2022**, 41(10): 1486 – 1493.
doi: 10.19969/j.fxcspb.22061901



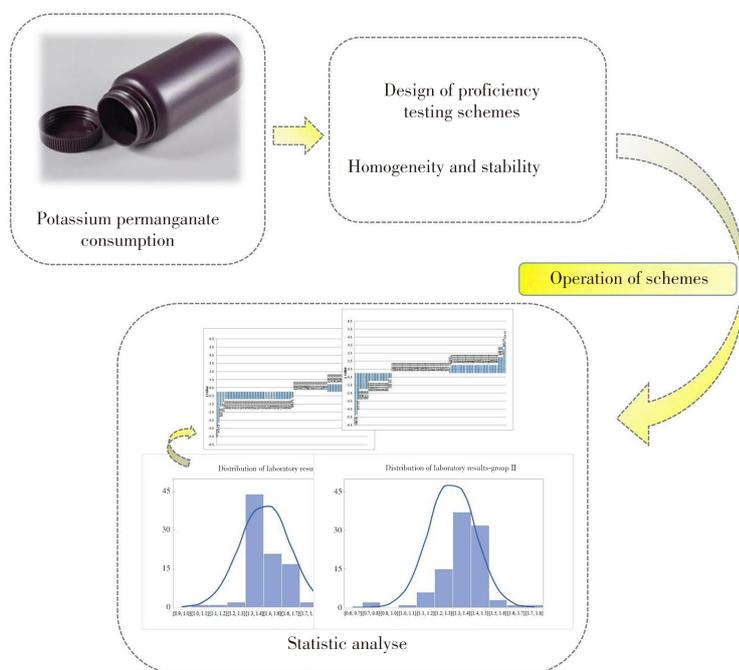
Migration Test and Risk Assessment Based on Dietary Exposure of PBT/PET Cyclic Oligomers in Polymer-laminated Metal Cans

LI Qian-yun, WU Gang, WANG Ya, WANG Xiao-long, PAN Feng, ZHANG Hong, XING Hang, LI Jian-wen, ZHU Lei

| Food categories | Sample Num. | Migration value | Cyclic PET dimer | Cyclic PET trimer | Cyclic PET tetramer | Cyclic PET pentamer | Cyclic PBT dimer | Cyclic PBT trimer |
|-----------------|-------------|-----------------|------------------|-------------------|---------------------|---------------------|------------------|-------------------|
| Canned fruit | 33 | Min | 1.57 | 0.16 | 0.01 | 0.01 | 0.31 | 1.43 |
| | | Max | 1.57 | 1.05 | 0.01 | 0.36 | 3.08 | 14.28 |
| | | Mean | 1.57 | 0.45 | 0.01 | 0.06 | 2.03 | 8.93 |
| Beverages | 42 | Min | 3.53 | 0.37 | 0.033 | 0.026 | 0.69 | 0.17 |
| | | Max | 21.67 | 106.14 | 4.80 | 1.87 | 128.28 | 31.88 |
| | | Mean | 4.83 | 35.91 | 1.18 | 0.58 | 17.34 | 7.67 |
| Beer | 36 | Min | 1.61 | 1.50 | 0.015 | 0.012 | 0.32 | 0.047 |
| | | Max | 1.61 | 1.61 | 0.015 | 0.012 | 0.32 | 1.47 |
| | | Mean | 1.61 | 1.56 | 0.015 | 0.012 | 0.32 | 0.76 |

analysis
Quantitative

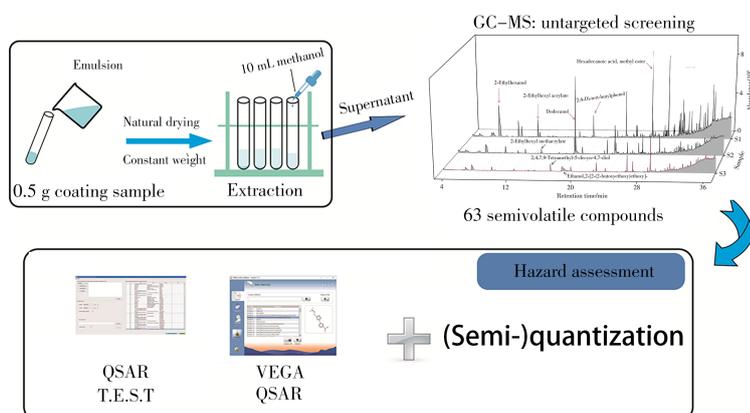
J. Instrum. Anal., **2022**, 41(10): 1494 – 1500.
doi: 10.19969/j.fxcsxb.22070203



Proficiency Testing of Potassium Permanganate Consumption in Food Contact Materials and Its Application Assessment

DONG Jing, YANG Zhao-ying, YU Li-bo, DAI Li-xue, BU Dan-dan, LEI Si-jia, CHEN Dong-dong, PENG Tao

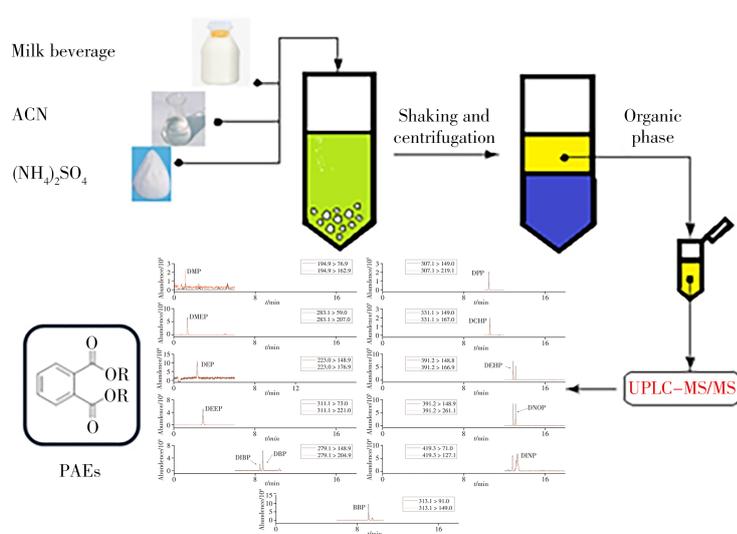
J. Instrum. Anal., **2022**, 41(10): 1501 – 1507.
doi: 10.19969/j.fxcsxb.22052703



Untargeted Screening and Potential Hazard Assessment of Semi-volatile Compounds in Water-borne Coating

MA Hong-sheng, YANG Qing-hua, LIN Qin-bao, YAN Ling-yan, WEI Xiao-fen, WANG Yue

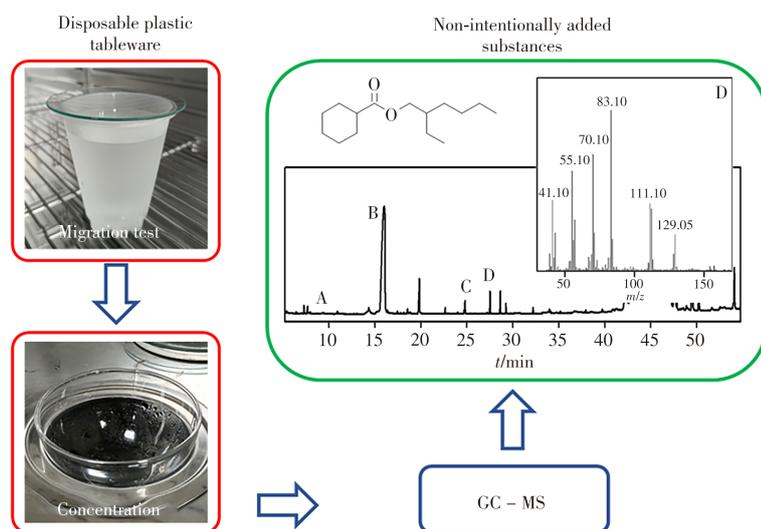
J. Instrum. Anal., **2022**, 41(10): 1508 – 1515.
doi: 10.19969/j.fxcsxb.22061701



Determination of 12 Phthalate Esters in Milk Beverage Using Ultra Performance Liquid Chromatography – Tandem Mass Spectrometry with Salting-out Assisted Liquid – Liquid Extraction

WANG Dong-xu, WANG Xin-cai, HU Qi-jie, WANG Feng-li, LI Fen

J. Instrum. Anal., **2022**, 41(10): 1516 – 1522.
doi: 10.19969/j.fxcspb.22052505

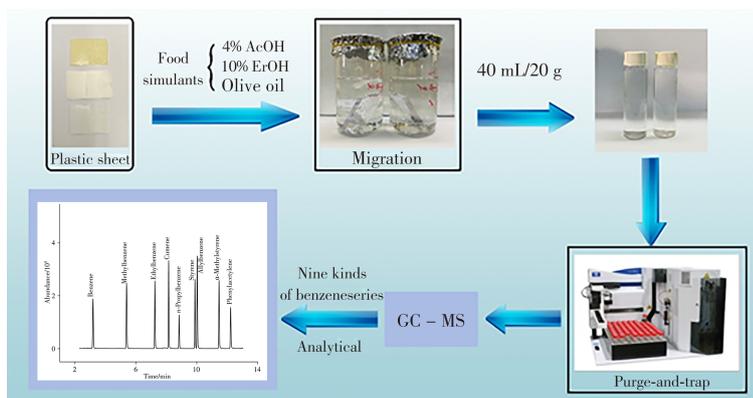


Screening of Specified Risk Materials in Disposable Plastic Tableware

TONG Jia-qi, ZHAN He-shan, ZHU Xiao-yan, WENG Jiang-lai

J. Instrum. Anal., **2022**, 41(10): 1523 – 1529.
doi: 10.19969/j.fxcspb.22063009

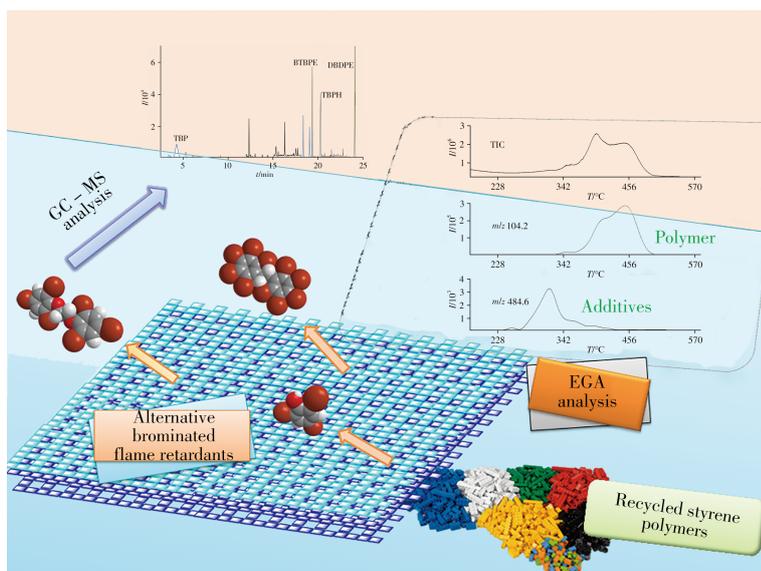
Experimental Techniques and Methods



Simultaneous Determination on Migration Amounts of 9 Kinds of Benzeneseries in Food Contact Materials and Products by Purge-and-trap/Gas Chromatography – Mass Spectrometry

A Wen-wei, ZENG Ming, HUANG Hua-jun, ZENG Ying, DONG Ben, LI Dan, CHEN Yan-fen, ZHONG Huai-ning, ZHENG Jian-guo

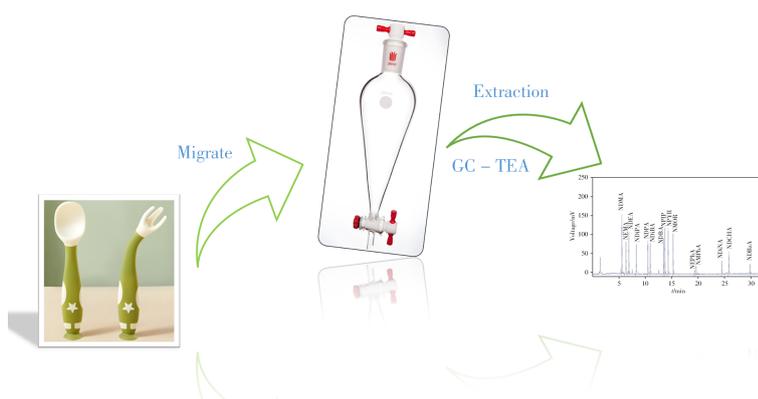
J. Instrum. Anal., **2022**, 41(10): 1530 – 1535.
doi: 10.19969/j.fxcspb.22070705



Determination of Alternative Brominated Flame Retardants in Recycled Styrene Polymers by Pyrolysis/Gas Chromatography – Mass Spectrometry

ZHANG Zi-hao, LIU Ying-feng, PENG Ying, WANG Jing, LI Quan-zhong, ZHAI Cui-ping, XIAO Qian, ZHENG Jian-guo

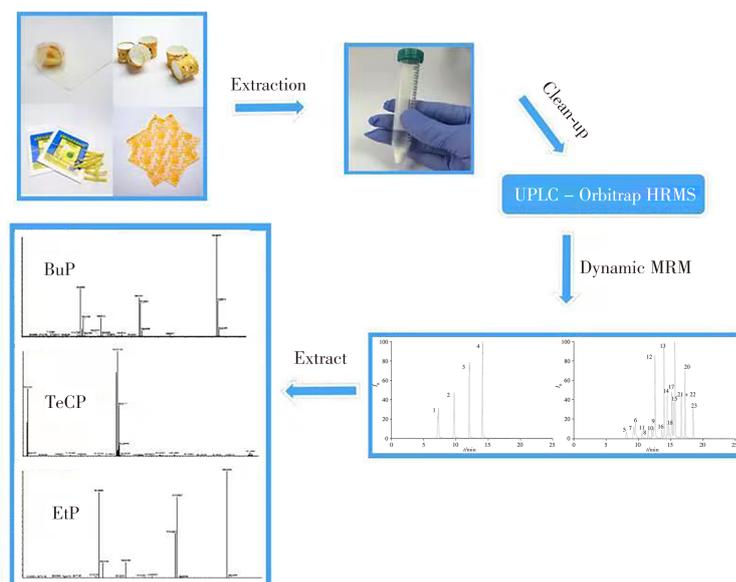
J. Instrum. Anal. , **2022**, 41(10): 1536 – 1541.
doi: 10.19969/j.fxcspb.22030304



Simultaneous Determination of Specific Migration Amounts of 15 N-nitrosamines in Food Contact Materials and Products by Gas Chromatography – Thermal Energy Analyzer with Alcoholic Food Simulants

LI Rui, XU Dun-ming, HUANG Yi-jue, DONG Qing-mu, LAI Ying, YANG Zi-he, YANG Ze, ZHUANG Li-li, GUO Si-li, WU Yi-feng, LIN Wei-jing, LIN Hai-xia, DING Hua-jun, SHEN Lu-hong, TU Xing-peng

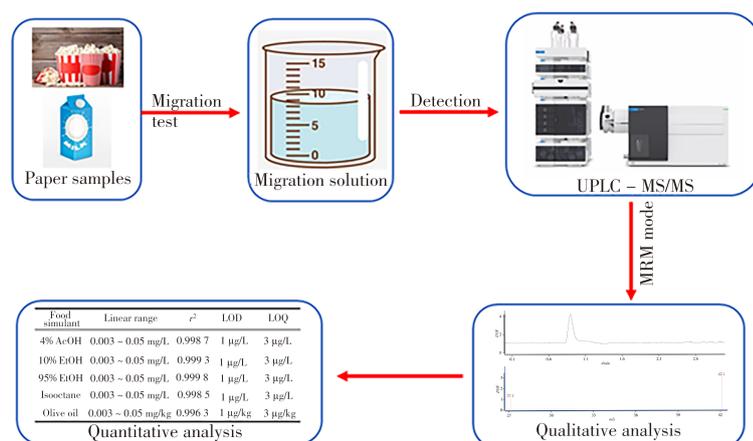
J. Instrum. Anal. , **2022**, 41(10): 1542 – 1547.
doi: 10.19969/j.fxcspb.22071001



Simultaneous Determination of 23 Organic Antibacterial Agents in Food Contact Paper Products by UPLC – Orbitrap HRMS

LIU Yi-feng, QIU Jia-xin, ZHANG Peng-jie, SUN Ke-qiang, ZHANG Xian-chen, ZHAO Zhen-yu, LIANG Run-mei

J. Instrum. Anal. , **2022**, 41(10): 1548 – 1552.
doi: 10.19969/j.fxcspb.22062101

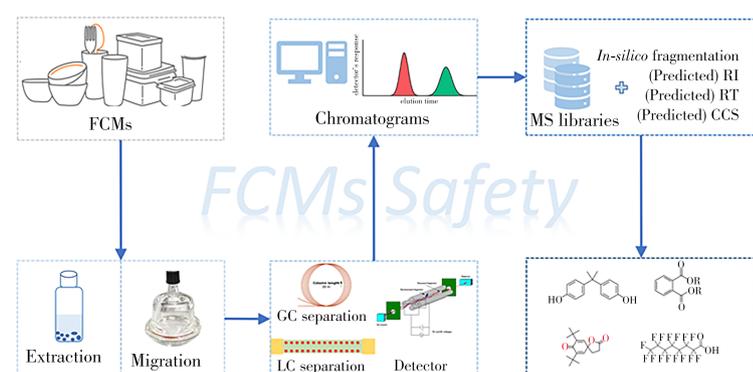


Determination of Migration of Ethyleneimine in Food Contact Paper and Paper Product by Ultra-high Performance Liquid Chromatography–Tandem Mass Spectrometry

LI Zi-cheng, ZHANG Hai-feng, LIANG Jin-xin, DONG Ben, CHEN Yan-fen, ZENG Ying, CHEN Sheng, ZHONG Huai-ning, LI Dan, ZHENG Jian-guo

J. Instrum. Anal., **2022**, 41(10): 1553 – 1557.
doi: 10.19969/j.fxcxb.22071204

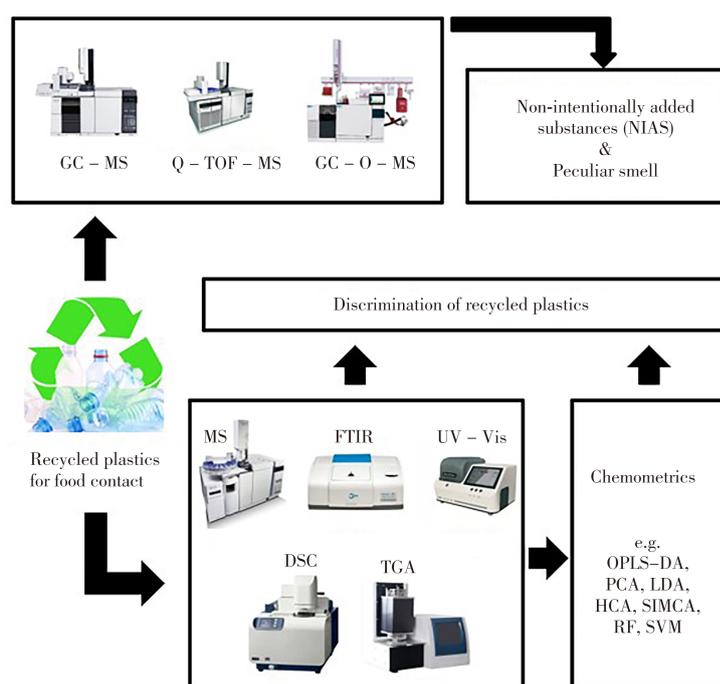
Reviews



Research Progress on Untargeted Screening of Compounds in Food Contact Materials

SU Qi-zhi, DONG Ben, LI Dan, ZHONG Huai-ning

J. Instrum. Anal., **2022**, 41(10): 1558 – 1567.
doi: 10.19969/j.fxcxb.22070201



Research Progress on Non-intentionally Added Substances in Recycled Plastics for Food Contact and Their Discrimination Methods

CHEN Zhi-feng, HAO Tian-ying, LIN Qin-bao, ZHONG Huai-ning, WANG Zhi-wei

J. Instrum. Anal., **2022**, 41(10): 1568 – 1576.
doi: 10.19969/j.fxcxb.22062302