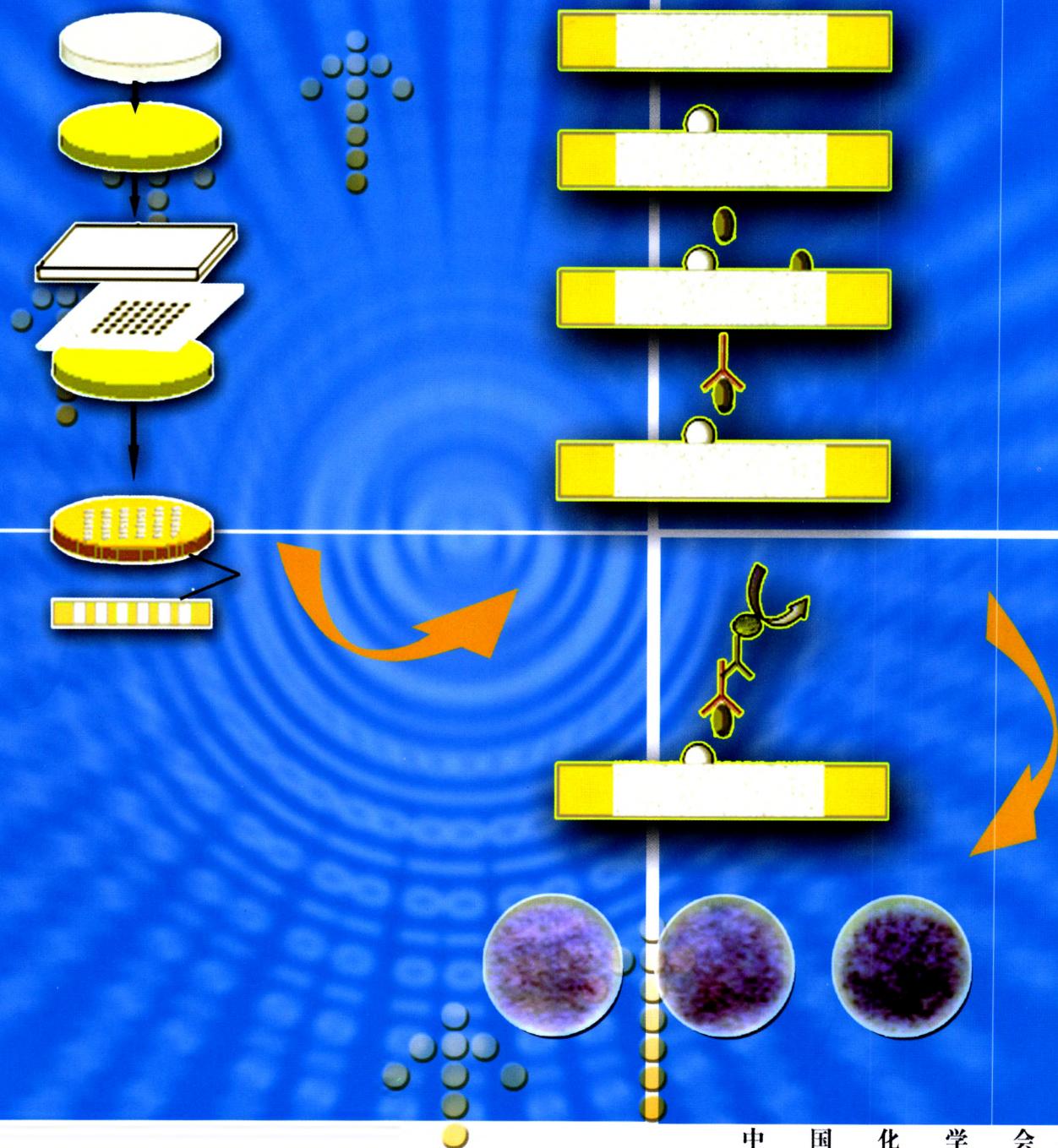


ISSN 0253-3820
CODEN FHHHDT
CN22 - 1125 / 06

分析化学

No.1 Vol.41
2013. 1

CHINESE JOURNAL OF ANALYTICAL CHEMISTRY



中国化学会主办
中国科学院长春应用化学研究所
科学出版社出版



分析化学

第41卷 第1期 2013年1月

目 次

特 约 来 稿

- ★脱氧核糖核酸电致化学发光传感技术的研究 张帆 陈红 何品刚* 方禹之 (1)
★基于反相有机整体柱的新型蛋白质酶反应器 刘静 王方军* 张振宾 邹汉法* (10)

研 究 报 告

- ★叶酸及其相关代谢物在神经管畸形风险评估和预测中的作用比较研究 黄敏 梁晓萍 梁琼麟 王义明 罗国安* (15)
★基于滤纸微孔板的酶联免疫吸附测定方法研究 白鹏 罗雁 李英 余晓冬* 陈洪渊 (20)
液相色谱-串联质谱法测定食品接触材料中28种初级芳香胺的迁移量 李全忠* 周明辉 刘莹峰 翟翠萍 郑建国 王云玉 (25)
★超高效液相色谱-飞行时间质谱法高通量筛查乳制品中20种镇静剂 严丽娟 张洁* 潘晨松 林立毅 张欣怡 申河清 (31)
★液相色谱-串联四级杆质谱联用测定大肠杆菌中的核苷 谢玉萍 田晶* 高鹏 许国旺 费旭 王一 (36)
单光子/光电子电离-膜进样质谱法在线检测水中醚类汽油添加剂 李芳龙 侯可勇* 陈文东 陈平 赵无垛 崔华鹏 花磊 谢园园 裴克梅 李海洋* (42)
★自动固相萃取-高效液相色谱串联质谱法测定生活污水中13种抗精神病药物 袁圣柳 李晓锋 姜晓满 张海霞 郑少奎* (49)
N-甲基咪唑固载化离子交换树脂对砷的吸附分离 贾敏 金为群 崔红敏 陈继* (57)
在茶叶农药残留测定中用四氧化三铁纳米粒子去除样品中的色素 李媛 肖乐辉 周乃元 袁平 吴永宁* 陈波* (63)
母乳中溴代/氯代阻燃剂及其代谢产物的分析检测方法 贡玉婕 李龙 王文月 李兴红* 田媛 徐晓白 (69)
全自动固相萃取分子筛脱水气质联用法测定水中多氯联苯 秦朋友 张新申* 康莉 陈刚才 杨清玲 (76)
基质固相分散-超快速液相色谱法测定牛肉中磺胺类兽药 王重洋 王远鹏 王宁 姜春竹 于希 宋大千 孙颖* (83)
固相萃取-高效液相色谱串联质谱法同时测定土壤中3种微囊藻毒素 李彦文 黄献培 吴小莲 向垒 詹晓静 李梓君 温宏飞 钟方龙 莫测辉* 洪爱华 (88)
半胱氨酸改性介孔材料对Hg(II)高选择性分离富集性能研究 李青 汪正* 朱燕 邹慧君 屈海云 方冬梅 胡慧廉* 杜一平 (93)
基于氧化石墨烯/碳纳米管复合薄膜修饰电极制备L-色氨酸电化学传感器 李俊华* 尹代治 冯泳兰 刘梦琴 王德平 邓培红 (98)

研 究 简 报

- 纳米Fe₃O₄分离富集-悬浮进样-氢化物发生原子荧光法测定砷形态 安明日 陈明丽 王建华* (105)

本期封面论文见20~24页

液相色谱-离子阱-飞行时间质谱法定性分析未知着色剂	胡莉*	雷绍荣	郭灵安	冀峰	(110)	
基质辅助激光解吸电离-飞行时间质谱法检测罕见单糖合成酶	周大炜*	刘斌	吴俊丽	齐源远	(115)	
气相色谱-质谱法测定木材及木制品中的有机锡化合物	戚佳琳	杨桂朋*	王兆锟	牛增元	(119)	
高效液相色谱-电感耦合等离子体质谱联用技术测定玩具中痕量可迁移 Cr(VI)	王欣*	幸苑娜	陈泽勇	霍巨垣	陈丽琼	(123)
固相萃取-高效液相色谱/串联质谱法同时测定牛奶中阿特拉津及其两类代谢物的残留	石冬冬	常碧影	刘庆生	石波*	(128)	
返魂草的高效液相色谱法指纹图谱研究及成分分析	赵春芳	李庆杰	王莲萍	何忠梅	刘永强*	(133)

评述与进展

★ 纳米多孔金在分析化学中的应用进展	郑力拓	魏玉磊	龚河卿	钱磊*	(137)
--------------------	-----	-----	-----	-----	-------

仪器装置与实验技术

用于等离子体质谱的低成本可拆卸式直接注入高效雾化器	陈晓盼	程和勇*	徐子刚	殷学锋	(145)
★ 电喷雾电离源测定印刷线路板阵列离子阱的分析性能	储艳秋	肖育	凌星	丁传凡*	(152)

NEWS

基于 Ag@BSA 核壳材料的电化学免疫传感器对尿视黄醇结合蛋白的特异性检测	(159)
核酸适配体的筛选与应用	(159)

会议消息

“第十四届国际电分析化学会议”的通知(56)、第五届国际微化学与微系统学术会议暨第八届全国微全分析系统学术会议暨第三届全国微纳尺度生物分离分析学术会议(厦门)(144)

书刊征订

《现代有机反应》(14)、《复杂体系仪器分析——白、灰、黑分析体系及其多变量解析方法》(48)、《有机化学实验室技术手册》(82)、《稀土元素及其分析化学》(104)、《冶金仪器分析技术与应用》(109)、《生物质材料现代分析技术》(114)、《热分析与量热仪及其应用》(127)、《光谱分析仪器使用与维护》(151)

广告目录

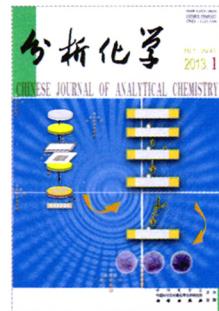
通用电气(中国)医疗集团生命科学部(封二) 岛津国际贸易(上海)有限公司(文前1) 岛津国际贸易(上海)有限公司(文前2) 岛津技迹(上海)商贸有限公司(文前3) 飞世尔实验器材(上海)有限公司(文前4) 成都超纯科技有限公司(文前5) 大连依利特分析仪器有限公司(文前6) 订阅《分析化学》(文前7) 北京浩天晖科贸有限公司(文前8) 北京浩天晖科贸有限公司(文前9) 信息仪器网(文前10) 订阅《分析化学》(文前11) 上海伍丰科学仪器有限公司(目录前12) 赛默飞世尔科技(中国)有限公司(中插1) 赛默飞世尔科技(中国)有限公司(中插2) 北京爱万提斯(中插3) 北京氮普北分气体工业有限公司(中插4) 北京氮普北分气体工业有限公司(中插5) 北京莱伯泰科仪器有限公司(中插6) 山东禹王实北有限公司(文后1) 北京海光仪器公司(封三) 北京吉天仪器有限公司(封底)

(本期责任编辑:于桂红 编排、制图:潘文革)

* 联系人

★ 该篇文章的英文电子版由 Elsevier 出版社在 ScienceDirect 上出版 (<http://www.sciencedirect.com/science/journal/18722040>)

Cover



The cover image presents a paper-based micro-zone plates. On page 20, BAI et al demonstrate that photolithography was used to pattern hydrophobic design on common quantitative filter paper, by which the paper-based micro-zone plates were fabricated. Then the modified silicon dioxide micro-beads were deposited onto the surface of paper, and indirect-ELISA for goat anti-rabbit IgG was applied on the 36-well plates.

CONTENTS

Vol.41 No.1(1-158) January 2013

Invited Papers

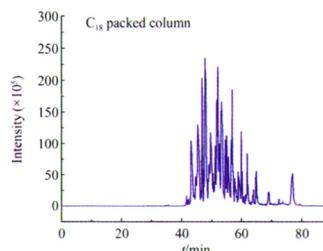
★ Research on DNA Electrochemiluminescence Biosensing

ZHANG Fan, CHEN Hong, HE Pin-Gang*, FANG Yu-Zhi
Chinese J. Anal. Chem., 2013, 41(1): 1-9

Due to its high sensitivity, specificity, easy realization of integration, real-time and in-situ detection, ECL provides powerful research tools and methods for the life sciences entering into the molecular level.

★ Reversed Phase Monolithic Column Based Enzyme Reactor for Protein Analysis

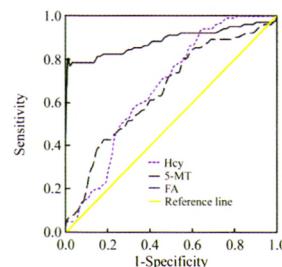
LIU Jing, WANG Fang-Jun*, ZHANG Zhen-Bin, ZOU Han-Fa*
Chinese J. Anal. Chem., 2013, 41(1): 10-14



Scientific Papers

A Comparative Study Among Folic Acid and Its Related Metabolites on Risk Assessment and Prediction of Neural Tube Defects

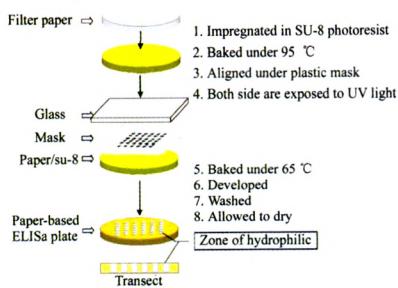
HUANG Min, LIANG Xiao-Ping, LIANG Qiong-Lin,
WANG Yi-Ming, LUO Guo-An*
Chinese J. Anal. Chem., 2013, 41(1): 15-19



★ Study on Enzyme Linked Immunosorbent Assay Using Paper-based Micro-zone Plates

BAI Peng, LUO Yan, LI Ying, YU Xiao-Dong*, CHEN Hong-Yuan

Chinese J. Anal. Chem., 2013, 41(1): 20-24

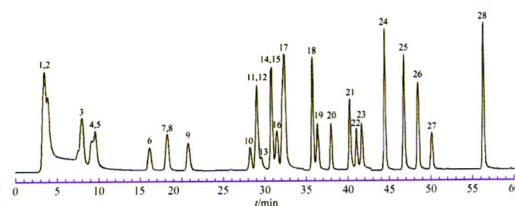


Determination of Migration of 28 Primary Aromatic Amines from Food Contact Materials by Liquid Chromatography-Tandem Mass Spectrometry

LI Quan-Zhong*, ZHOU Ming-Hui, LIU Ying-Feng, ZHAI Cui-Ping,

ZHENG Jian-Guo, WANG Yun-Yu

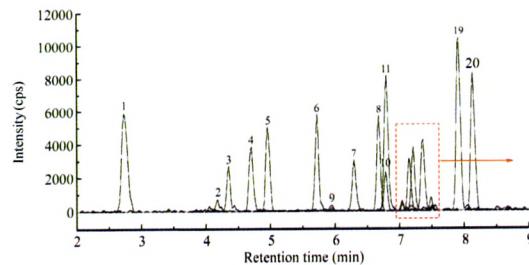
Chinese J. Anal. Chem., 2013, 41(1): 25-30



★ High Throughput Screening of Tranquillizers in Dairy Products Using Ultra Performance Liquid Chromatography Coupled to High Resolution Time-of-Flight Mass Spectrometry

YAN Li-Juan, ZHANG Jie*, PAN Chen-Song, LIN Li-Yi, ZHANG Xin-Yi, SHEN He-Qing

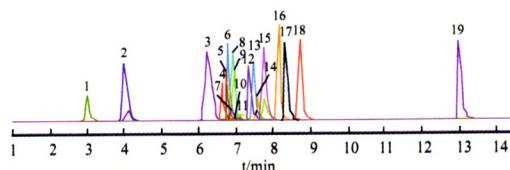
Chinese J. Anal. Chem., 2013, 41(1): 31-35



★ Determination of Nucleosides in *Escherichia coli* by Rapid Resolution Liquid Chromatography-Tandem Quadrupole Mass Spectrometry

XIE Yu-Ping, TIAN Jing*, GAO Peng, XU Guo-Wang, FEI Xu, WANG Yi

Chinese J. Anal. Chem., 2013, 41(1): 36-41

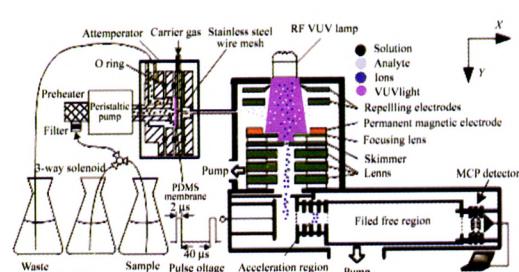


Single Photon Ionization/Photoelectron Ionization-Membrane Introduction Mass Spectrometry for On-line Analysis Ethers Gasoline Additive in Water

LI Fang-Long, HOU Ke-Yong*, CHEN Wen-Dong, CHEN Ping, ZHAO Wu-Duo, CUI Hua-Peng, HUA Lei, XIE Yuan-Yuan, PEI Ke-Mei,

LI Hai-Yang*

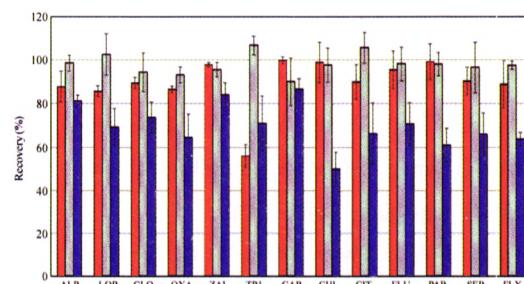
Chinese J. Anal. Chem., 2013, 41(1): 42-48



★ Simultaneous Determination of 13 Psychiatric Pharmaceuticals in Sewage by Automated Solid Phase Extraction and Liquid Chromatography-Mass Spectrometry

YUAN Sheng-Liu, LI Xiao-Feng, JIANG Xiao-Man, ZHANG Hai-Xia, ZHENG Shao-Kui*

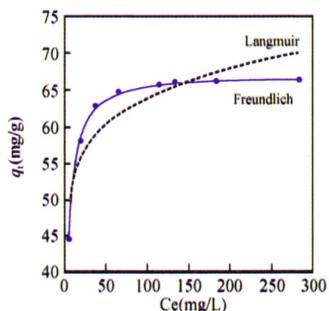
Chinese J. Anal. Chem., 2013, 41(1): 49-56



Adsorption and Separation of As(V) with N-Methylimidazolium Functionalized Anion Exchange Resin

JIA Min, JIN Wei-Qun, CUI Hong-Min, CHEN Ji*

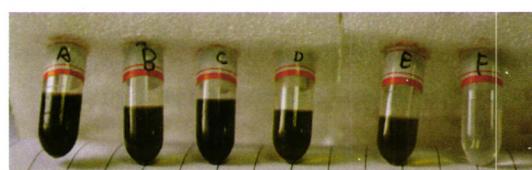
Chinese J. Anal. Chem., 2013, 41(1): 57-62



Purification of Pigments by Iron Oxide Nanoparticles for Analysis of Pesticide Residues in Tea

LI Yuan, XIAO Le-Hui, ZHOU Nai-Yuan, YUAN Ping, WU Yong-Ning*, CHEN Bo*

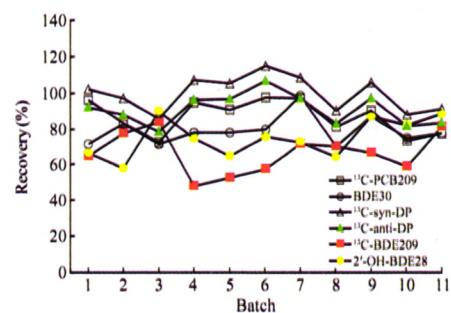
Chinese J. Anal. Chem., 2013, 41(1): 63-68



Determination of Chlorinated/Brominated Flame Retardants and their Metabolites in Breast Milk

BEN Yu-Jie, LI Long, WANG Wen-Yue, LI Xing-Hong*, TIAN Yuan, XU Xiao-Bai

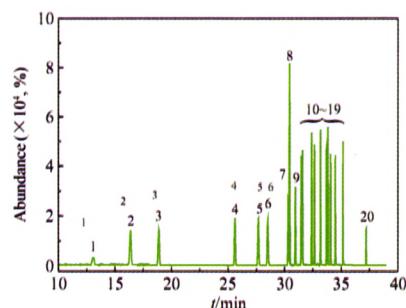
Chinese J. Anal. Chem., 2013, 41(1): 69-75



Determination of Polychlorinated Biphenyls in Water Samples Using Automated Solid Phase Extraction and Molecular Sieve Dehydration Coupled with Gas Chromatography/Mass Spectrometry

QIN Ming-You, ZHANG Xin-Shen*, KANG Li, CHEN Gang-Cai, YANG Qing-Ling

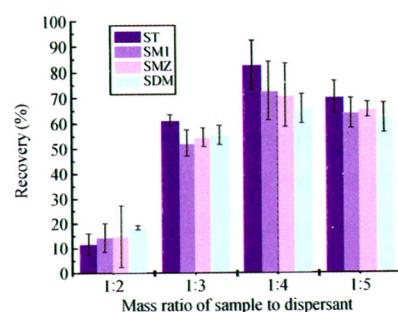
Chinese J. Anal. Chem., 2013, 41(1): 76-82



Matrix Solid Phase Dispersion Coupled with Ultra-Fast Liquid Chromatography for Detection of Sulfonamides in Beef Tissue

WANG Chong-Yang, WANG Yuan-Peng,
WANG Ning, JIANG Chun-Zhu, YU Xi,
SONG Da-Qian, SUN Ying*

Chinese J. Anal. Chem., 2013, 41(1): 83–87

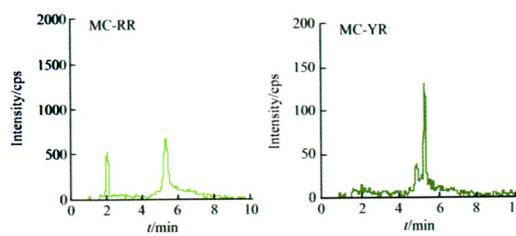


Simultaneous Extraction and Determination of Three Microcystins from Soil Using Solid Phase Extraction and Liquid Chromatography-Tandem Mass Spectrometry

LI Yan-Wen, HUANG Xian-Pei, WU Xiao-Lian,
XIANG Lei, ZHAN Xiao-Jing, LI Zi-Jun,
WEN Hong-Fei, ZHONG Fang-Long,

MO Ce-Hui*, HONG Ai-Hua

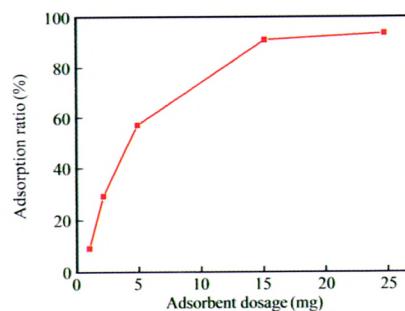
Chinese J. Anal. Chem., 2013, 41(1): 88–92



A New L-Cysteine-Functionalized Mesoporous Composite and Its High Selectivity Separation and Enrichment Properties for Hg(II)

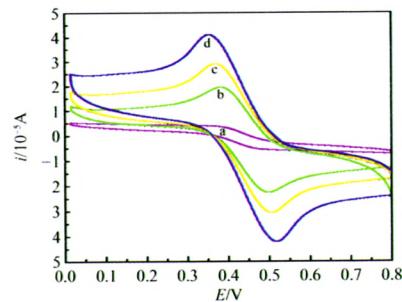
LI Qing, WANG Zheng*, ZHU Yan,
ZOU Hui-Jun, QU Hai-Yun, FANG Dong-Mei,
HU Hui-Lian*, DU Yi-Ping

Chinese J. Anal. Chem., 2013, 41(1): 93–97



Preparation of L-Tryptophan Electrochemical Sensor Based on Graphene Oxide/Carbon Nanotubes Nanocomposite Modified Electrode

LI Jun-Hua*, KUANG Dai-Zhi, FENG Yong-Lan,
LIU Meng-Qin, WANG De-Ping, DENG Pei-Hong
Chinese J. Anal. Chem., 2013, 41(1): 98–104

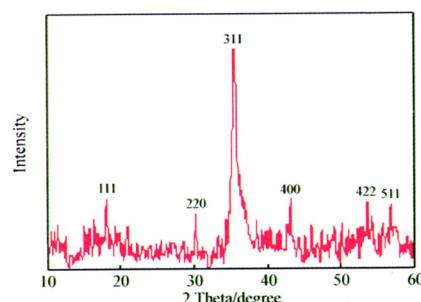


Research Notes

Analysis of Arsenic Speciation by Coupling Fe₃O₄ Nanoparticles Separation with Slurry Sampling and Hydride Generation Atomic Fluorescence Spectrometry

An Myong-II, CHEN Ming-Li, WANG Jian-Hua*

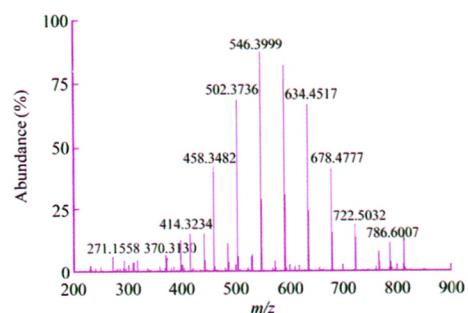
Chinese J. Anal. Chem., 2013, 41(1): 105–109



Qualitative Analysis of Unknown Color Additive by Liquid Chromatography-Ion Trap-Time of Flight Tandem Mass Spectrometry

HU Li*, LEI Shao-Rong, GUO Ling-An, JI Feng

Chinese J. Anal. Chem., 2013, 41(1): 110–114

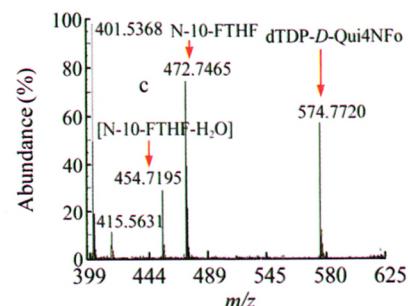


Monitoring of Unusual Sugar Biosynthesis Enzyme Reaction by MALDI-TOF Mass Spectrometry

ZHOU Da-Wei*, LIU Bin, WU Jun-Li,

QI Yuan-Yuan

Chinese J. Anal. Chem., 2013, 41(1): 115–118

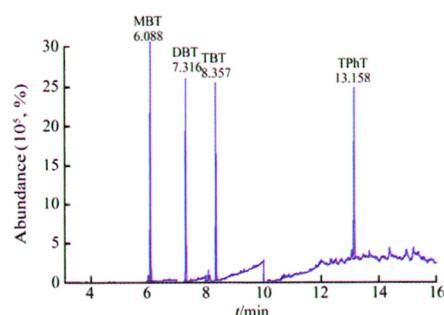


Determination of Organotin Compounds in Timber and Wood Products by GC-MS

QI Jia-Lin, YANG Gui-Peng*, WANG Zhao-Kun,

NIU Zeng-Yuan

Chinese J. Anal. Chem., 2013, 41(1): 119–122

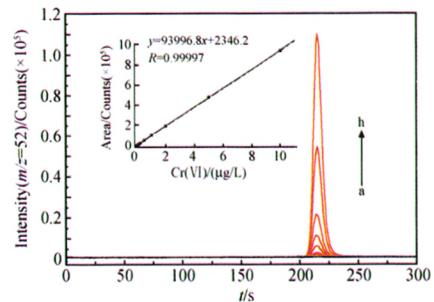


Determination of Trace Migratory Chromium(VI) in Toys by High Performance Liquid Chromatography-Inductively Coupled Plasma Mass Spectrometry

WANG Xin*, XING Yuan-Na, CHEN Ze-Yong,

HUO Ju-Yuan, CHEN Li-Qiong

Chinese J. Anal. Chem., 2013, 41(1): 123–127

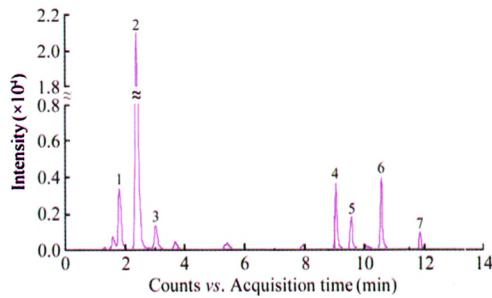


Determination of Trace Atrazine and Two Kinds of Its Metabolites in Milk by Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry

SHI Dong-Dong, CHANG Bi-Ying,

LIU Qing-Sheng, SHI Bo*

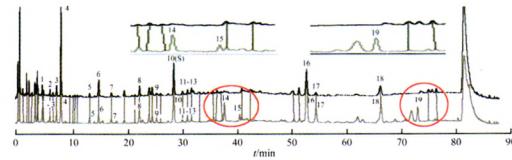
Chinese J. Anal. Chem., 2013, 41(1): 128–132



High Performance Liquid Chromatographic Fingerprint and Active Ingredient Assay of *Senecio cannabifolius* Less

ZHAO Chun-Fang, LI Qing-Jie, WANG Lian-Ping,
HE Zhong-Mei, LIU Yong-Qiang*

Chinese J. Anal. Chem., 2013, 41(1): 133–136



Review and Progress

★ Application Progress of Nanoporous Gold in Analytical Chemistry

ZHENG Li-Tuo, WEI Yu-Lei, GONG He-Qing,
QIAN Lei*

Chinese J. Anal. Chem., 2013, 41(1): 137–144

As a new type of nano-metal materials, nanoporous gold has gradually received widespread concern of researchers in recent years. It exhibits many characteristics such as high specific surface area, good electrical conductivity, controllable structure and etc. Because of its special structure and properties, nanoporous gold has been widely used in many fields such as catalysis, sensors, separation and energy. This review summarizes the applications and development of nanoporous gold in analytical chemistry in recent five years.

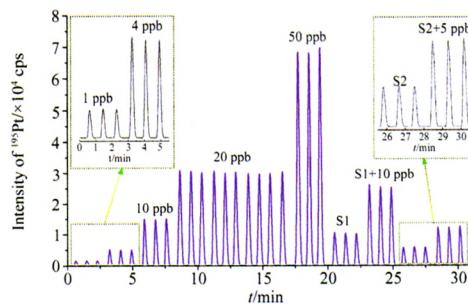
Experimental Technique and Instrument

A Low-cost Demountable Direct Injection High-Efficiency Nebulizer for Inductively Coupled Plasma Mass Spectrometry

CHEN Xiao-Pan, CHENG He-Yong*,

XU Zi-Gang, YIN Xue-Feng

Chinese J. Anal. Chem., 2013, 41(1): 145–151

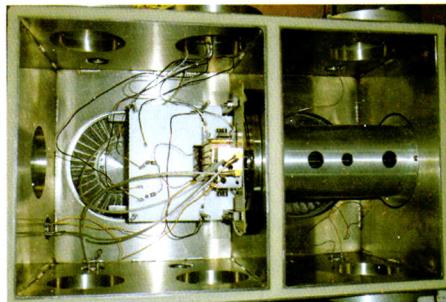


★ Analytical Performance of Printed Circuit Board Ion Trap Array Mass Analyzer with Electrospray Ionization

CHU Yan-Qiu, XIAO Yu, LING Xing,

DING Chuan-Fan*

Chinese J. Anal. Chem., 2013, 41(1): 152–158



* The author to whom the correspondence should be addressed

★ The English electronic version of the article is published by Elsevier BV on ScienceDirect (<http://www.sciencedirect.com/science/journal/18722040>)