

# Analytical Methods

rsc.li/methods

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 1759-9679 CODEN AMNECT 17(4) 625–860 (2025)



### Cover

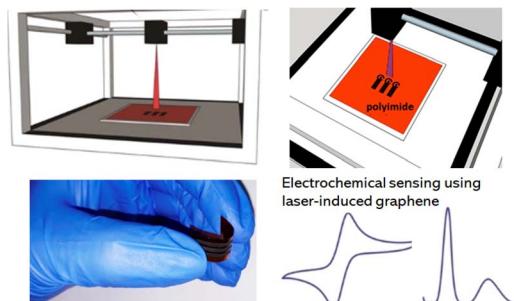
Front cover image © Science Photo Library/Getty Images.

## MINIREVIEWS

635

### Electroanalytical overview: the use of laser-induced graphene sensors

Robert D. Crapnell, Elena Bernalte, Rodrigo A. A. Muñoz and Craig E. Banks\*

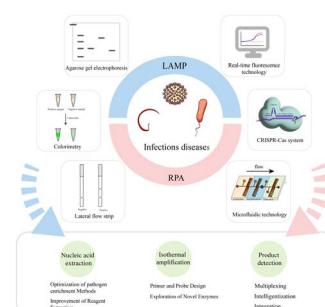


Electrochemical sensing using laser-induced graphene

652

### Recent developments in isothermal amplification technology for rapid detection of SARS-CoV-2

Linlin Wang, Ruitong Tang, Wentao Wang, Lingguang Bu, Jingle Sun, Yurong Fu,\* Meng Li\* and Zhengjun Yi\*



# EES Batteries

Exceptional research on  
batteries and energy storage

Part of the EES family

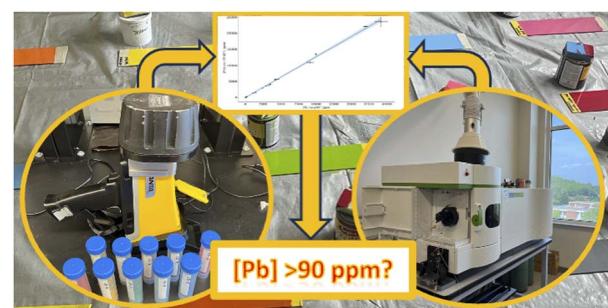
Join  
in | Publish with us  
[rsc.li/EESBatteries](http://rsc.li/EESBatteries)

## COMMUNICATIONS

665

**Preliminary studies for the standardization of a pXRF analyzer via ICP-OES for the accurate quantification of Pb in new paint**

Caryn S. Seney, Adam M. Kiefer,\* Samantha T. Brown, Evan R. Stair, David G. Nelson, Lloyd L. Bandoo, W. Benjamin Stewart, Nuren Z. Lara and Clare Donaldson



671

**Chitosan as a fluorescent probe for the detection of the AIE-active food colorant quinoline yellow**

Yuan Gu, Jianwei Wu, Bingyong Lin, Yueliang Wang, Yuanyuan Yao, Lifen Chen, Jianguo Xu\* and Longhua Guo\*

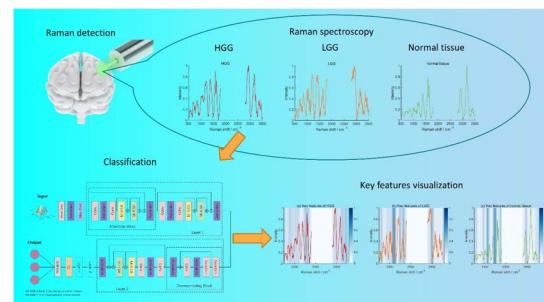


## PAPERS

677

**An interpretable multi-scale convolutional attention residual neural network for glioma grading with Raman spectroscopy**

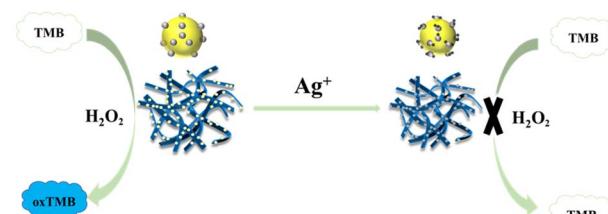
Qingbo Li,\* Xupeng Shao, Yan Zhou, Yinyan Wang, Zeya Yan, Hongbo Bao and Lipu Zhou



688

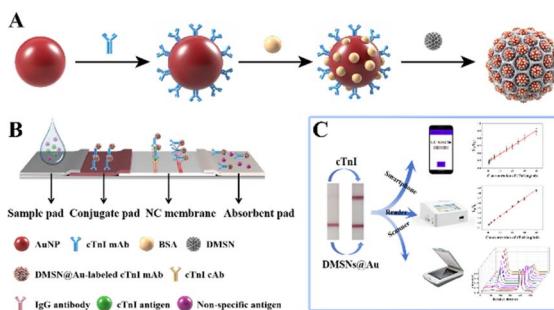
**Self-reduction of gold@platinum bimetallic nanoparticles on  $Ti_3C_2T_x$  MXene nanoribbons coupled with hydrogel and smartphone technology for colorimetric detection of silver ions**

Jing Li, Xun Zhou, Guanghua Mao, Gangbing Zhu and Yinhui Yi\*



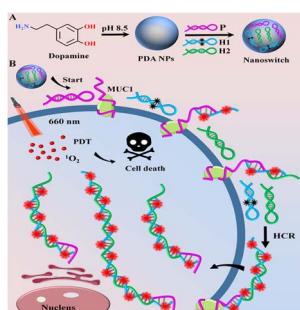
## PAPERS

698

**Quantitative and rapid lateral flow immunoassay for cardiac troponin I using dendritic mesoporous silica nanoparticles and gold nanoparticles**

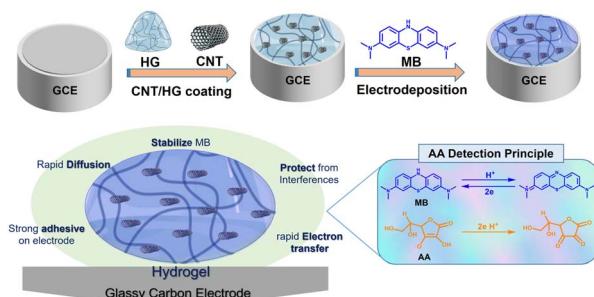
Yafei Li, Yu Yao, Qingqing Hua and Jishun Li\*

708

**A DNA conformational nanoswitch for amplification of both low-abundance protein imaging in living cells and photodynamic therapy**

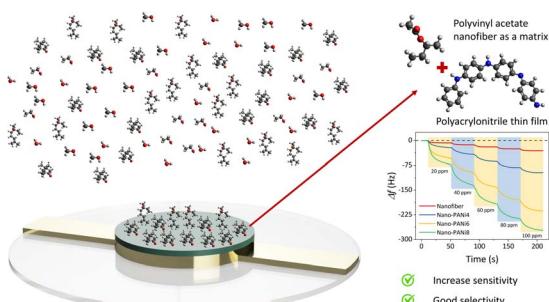
Mingzhu Fan, Wei Guo, Xinran Li, Huile Fan, Zhihui Luo, Jiayao Xu,\* Huakui Huang\* and Shulong Wang\*

714

**An electrochemical sensor based on electrodeposited methylene blue on a carbon nanotube decorated hydrogel for the detection of ascorbic acid**

Linghui Tang, Yufeng Huang, Zhihuan Qian, Jifan Zhao, Yasushi Hasebe, Yan Dong and Yue Wang\*

724

**A polyaniline-enhanced quartz crystal microbalance sensor for room-temperature camphor detection**

Rizky Aflaha, Muammar Romiz Dzaki, Laila Katriani, Ahmad Hasan As'ari, Chlara Naren Maharani, Agus Kuncaka, Taufik Abdillah Natsir, Aditya Rianjanu, Ruchi Gupta, Kuwat Triyana and Roto Roto\*

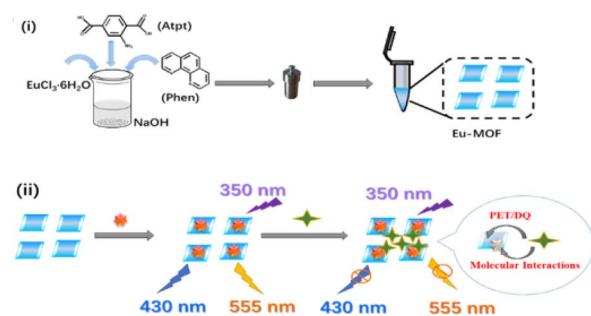


## PAPERS

735

**A simple and stable dual-emission fluorescent system based on R6G/Eu-MOF for the rapid and sensitive determination of orientin**

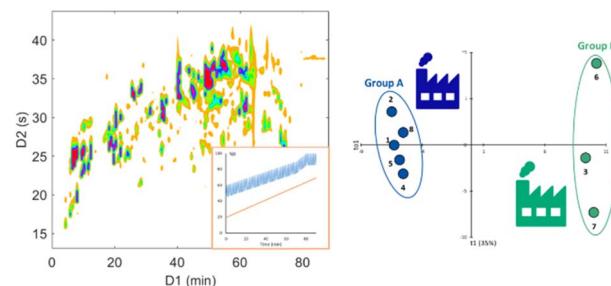
Huifeng Xu,\* Weihua Huang, Rui Pan, Ronglin Chen, Lili Wang,\* Yun Yu, Xihai Li and Xi Zhu\*



742

**Analysis of alkyl-antraquinone derivatives from hydrogen peroxide industrial process, using LC × LC-HRMS with shifting gradients**

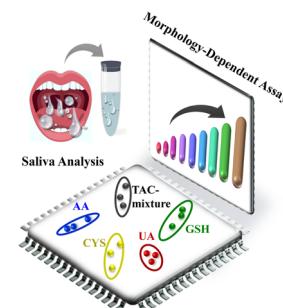
Clémence Giffard, Florent Rouvière, Olivier Falletti, Béatrice Allard-Breton, Laurent Wendlinger, Jean-Michel Bossourot and Karine Faure\*



752

**Morphology-dependent nanoplasmonic assay: a powerful signaling platform for multiplexed total antioxidant capacity analysis**

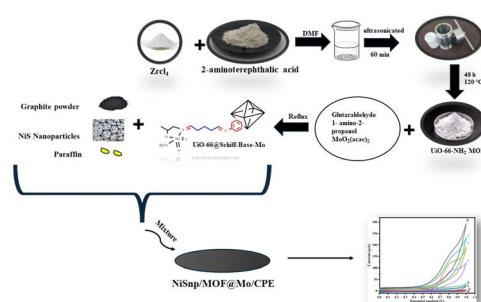
Zeinab Feyzollahi, Mahdiye Hassanpoor, Afsaneh Orouji and Mohammad Reza Hormozi-Nezhad\*



762

**A metal organic framework, UiO-66-NH<sub>2</sub>, based on a molybdenum Schiff base complex for the efficient electrochemical determination of diphenoxylate**

Samira Saeednia,\* Masoud Rezaeinasaab,\* Parvaneh Iranmanesh and Sobhan Abbasi Razgaleh



## PAPERS

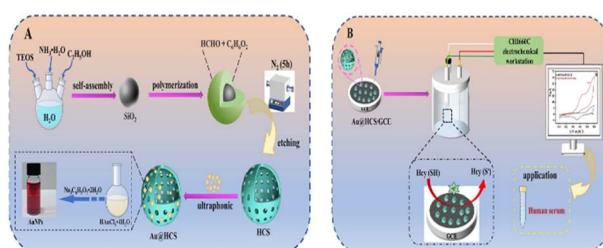
772



### Automatic magnetic solid phase extraction for rapid and high-throughput determination of neonicotinoid insecticides and their metabolites in serum, breast milk and urine samples

Kaiqin Huang, Jing Yi, Guocheng Liu, Yangyang Liu, Kaixin Jiang, Zhuowen Li, Yanji Qu, Meiqing Lin and Shengtao Ma\*

783



### Au nanoparticle-modified hollow carbon spheres as an advanced electrochemical sensing platform for effective detection of homocysteine in human serum

Na Li, Yan Zhang, Dongyu Zhang, Xiaoli Zhang, Ning Wei\* and Xiuhibi Liu\*

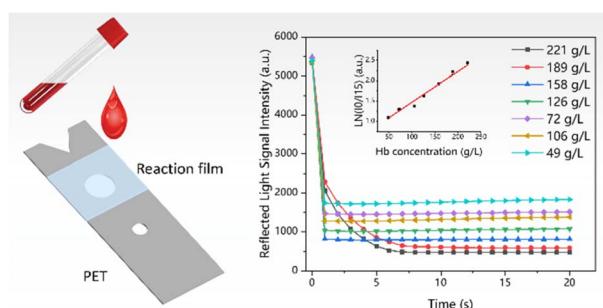
792



### A fluorescent probe based on pyrazoline with significant Stokes shifts for the detection of Cu<sup>2+</sup> ions and its applications

Yajing Shang,\* Xinghu Wu and Haoting Luo

800



### Development and clinical validation of photochemical biosensors for monitoring hemoglobin, blood lipids and uric acid in plateau areas

Bo Yu, Qiuping Li, Wei Zhang, Xiaoyan Xiang, Danzeng Quda, Gasong Zhuoga, Qiong Huang, Jie Cheng,\* Jinhong Guo,\* Zhijuan Liu\* and Li Shi\*

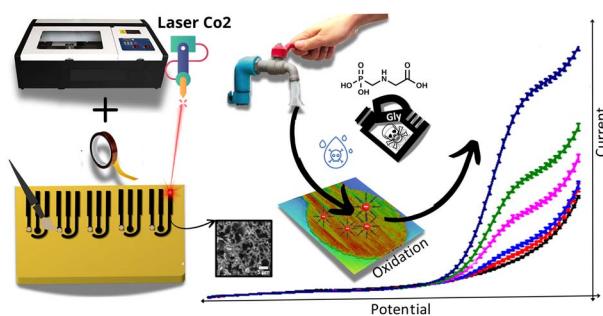


## PAPERS

808

**Direct-detection of glyphosate in drinking water via a scalable and low-cost laser-induced graphene sensor**

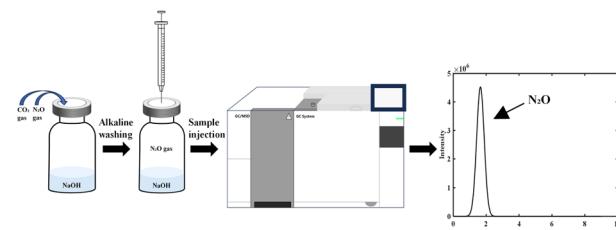
Bruno Vasconcellos Lopes, Guilherme Kurz Maron, Mateus Gallucci Masteghin, Raphael Dorneles Caldeira Balboni, S. Ravi P. Silva and Neftali Lenin Villarreal Carreno\*



816

**An effective method for detecting nitrous oxide using alkaline washing and GC-MS**

Mu Yang, Wenqing Gao,\* Liang Ma, Xingyu Chen, Haixing Wang,\* Jiancheng Yu\* and Keqi Tang



823

**One-pot isothermal CRISPR/Dx system for specific and sensitive detection of microRNA**

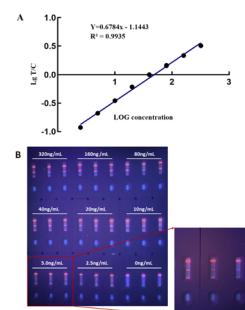
Xinyu Li, Zhihao Huang, Cia-Hin Lau, Jiaqi Li, Minghai Zou, Weidong Wu, Xiaoqing Chen, Jiahui Li, Yumei Huang, Tao Wang, Yulin Li, Meijing Xu, Xiaojun Huang, Haibao Zhu\* and Chunkang Yang\*



834

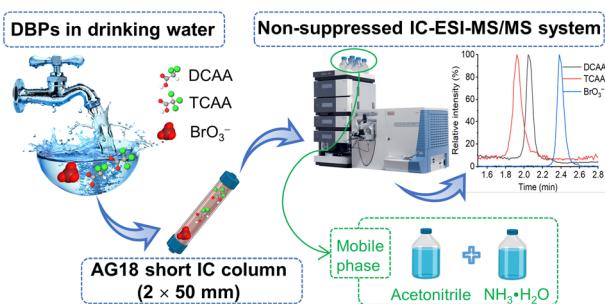
**Preliminary establishment and evaluation of a rapid detection method for GII human norovirus based on time-resolved fluorescence chromatography**

Kebei Wang, Min Li, Chaofan Yin, Lei Cheng, Fang Li, Lei Zuo, Xiaojun Wang, Xudong Wang and Yunlong Wang\*



## PAPERS

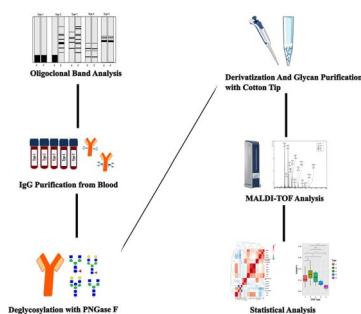
841



**Non-suppressed ion chromatography-tandem electrospray mass spectrometry using a short column for simultaneous analysis of dichloroacetic acid, trichloroacetic acid, and bromate: aqueous ammonia as the eluent additive**

Mingguo Peng, Jiali Chen, Shi Cheng,\* Huaicheng Zhang, Liangtao Pu, Erdeng Du, Qingfeng Cheng, Yanting Zuo\* and Aimin Li

850



**Glycan profiling of multiple sclerosis oligoclonal bands with MALDI-TOF**

Furkan Şahin, Zelal Zuhal Kaya, Mustafa Serteser, Hasan Ümit Öztürk\* and Ahmet Tarık Baykal\*

