Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

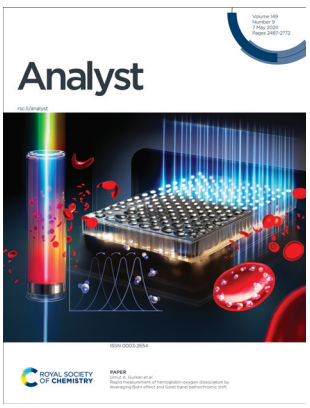
Analyst

rsc.li/analyst

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 0003-2654 CODEN ANALAO 149(9) 2487–2772 (2024)



Cover
See Umut A. Gurkan *et al.*, pp. 2561–2572.

Image reproduced by permission of Umut A. Gurkan and Grace Gongaware from *Analyst*, 2024, **149**, 2561.

Inside cover
See Jonas Warneke *et al.*, pp. 2573–2585.

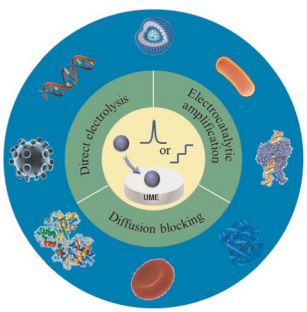
Image reproduced by permission of Jonas Warneke from *Analyst*, 2024, **149**, 2573.

MINIREVIEWS

2498

Impact electrochemistry for biosensing: advances and future directions

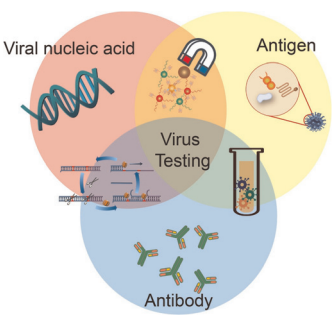
Jian-Hua Zhang,* Dian-Mei Song and Yi-Ge Zhou*



2507

Advances in rapid point-of-care virus testing

Yu-Peng Zhang, Jin-Wei Bu, Ru-Xin Shu* and Shu-Lin Liu*



View Article Online

ROYAL SOCIETY OF CHEMISTRY

10 YEARS ANNIVERSARY

Environmental Science journals

One impactful portfolio for every exceptional mind

Harnessing the power of interdisciplinary science to preserve our environment

rsc.li/envsci

Fundamental questions
Elemental answers

Registered charity number: 207890

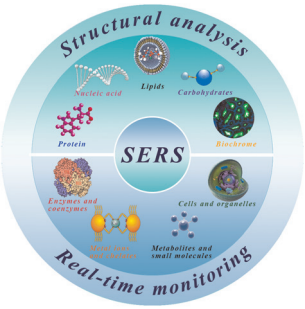
Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

CRITICAL REVIEW

2526

Deciphering biomolecular complexities: the indispensable role of surface-enhanced Raman spectroscopy in modern bioanalytical research

Ling Xia, Yujiang Huang, Qiuying Wang, Xiaotong Wang, Yunpeng Wang, Jing Wu and Yang Li*

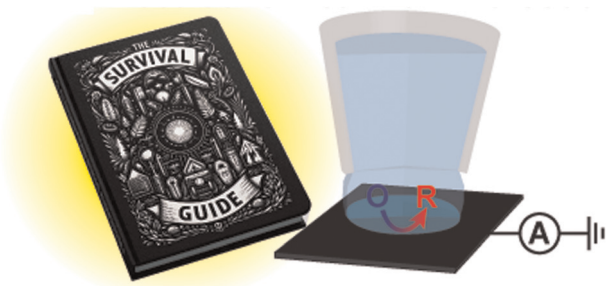


TUTORIAL REVIEW

2542

Practical guidelines for the use of scanning electrochemical cell microscopy (SECCM)

Gunani Jayamaha, Mahin Maleki, Cameron L. Bentley and Minkyung Kang*

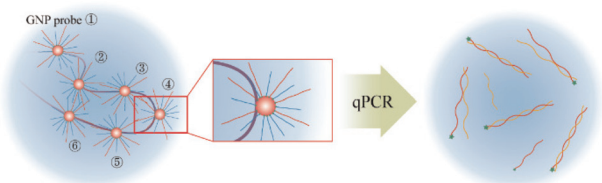


COMMUNICATION

2556

Single-virus-sensitive barcode qPCR mediated by the aggregation of gold nanoparticle probes

Yuanzhao Shen, Chih-Tsung Yang, Weiwei Li* and Xin Zhou*

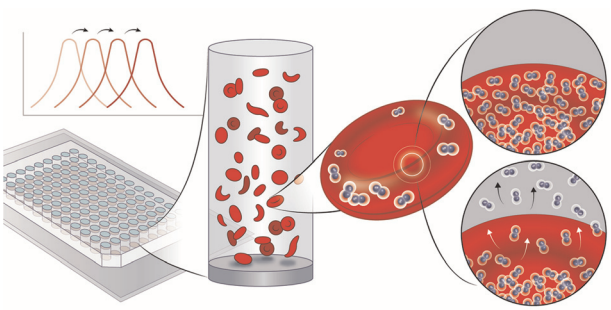


PAPERS

2561

Rapid measurement of hemoglobin-oxygen dissociation by leveraging Bohr effect and Soret band bathochromic shift

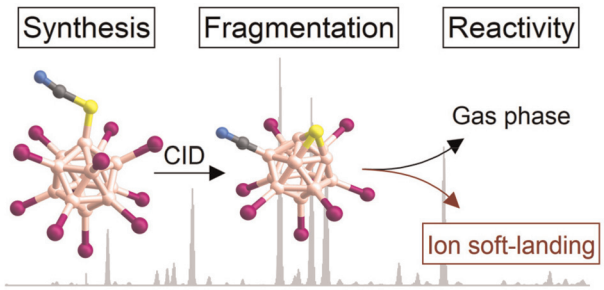
Zoe Sekyonda, Ran An, Utku Goreke, Yuncheng Man, Karamoja Monchamp, Allison Bode, Qiaochu Zhang, Yasmin El-Gammal, Cissy Kityo, Theodosia A. Kalfa, Ozan Akkus and Umut A. Gurkan*



Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

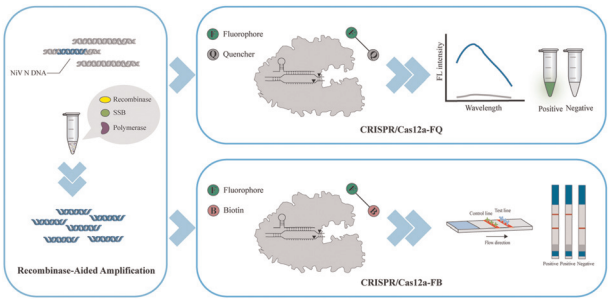
2573



Generation and reactivity of the fragment ion $[B_{12}I_8S(CN)]^-$ in the gas phase and on surfaces

Sebastian Kawa, Jaskiran Kaur, Harald Knorke, Ziyan Warneke, Myriam Wadsack, Markus Rohdenburg, Marc Nierstenhöfer, Carsten Jenne, Hilkka Kenttämaa and Jonas Warneke*

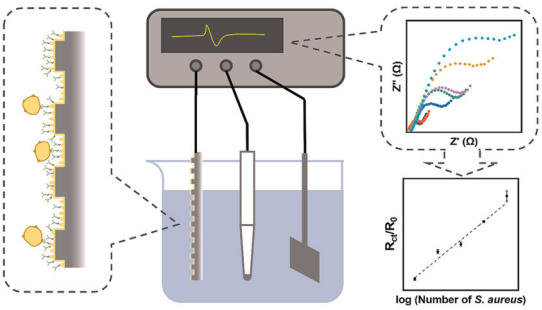
2586



Novel methods for the rapid and sensitive detection of Nipah virus based on a CRISPR/Cas12a system

Xi Yang, Kexin Xu, Siying Li, Jiangnian Zhang, Yinli Xie,* Yongliang Lou* and Xingxing Xiao*

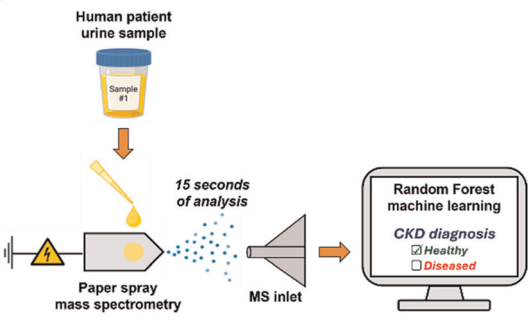
2594



An electrochemical biosensor for *Staphylococcus aureus* detection based on a multilevel surface 3D micro/nanostructure

Caiyun Wang, Rui Yang, Guangtong Wang* and Shaoqin Liu*

2600



Paper spray mass spectrometry combined with machine learning as a rapid diagnostic for chronic kidney disease

Igor Pereira, Jindar N. S. Sboto, Jason L. Robinson and Chris G. Gill*

This journal is © The Royal Society of Chemistry 2024

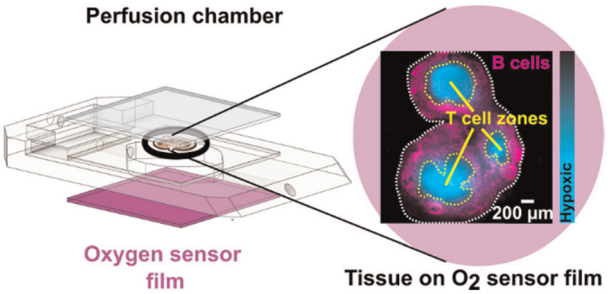
Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2609

Spatially resolved quantification of oxygen consumption rate in *ex vivo* lymph node slices

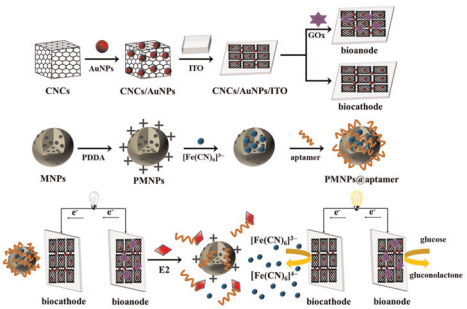
Parastoo Anbaei, Marissa G. Stevens, Alexander G. Ball, Timothy N. J. Bullock and Rebecca R. Pompano*



2621

A self-powered electrochemical aptasensor for the detection of 17β-estradiol based on carbon nanocages/gold nanoparticles and DNA bioconjugate mediated biofuel cells

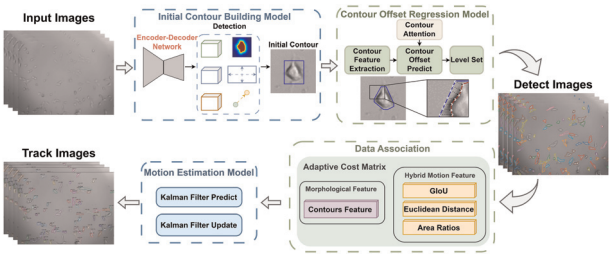
Yongju Wu, Dan Luo, Jinfei Yi, Rong Li, Dan Yang, Pengfei Pang,* Hongbin Wang, Wenrong Yang and Yanli Zhang*



2629

HFM-Tracker: a cell tracking algorithm based on hybrid feature matching

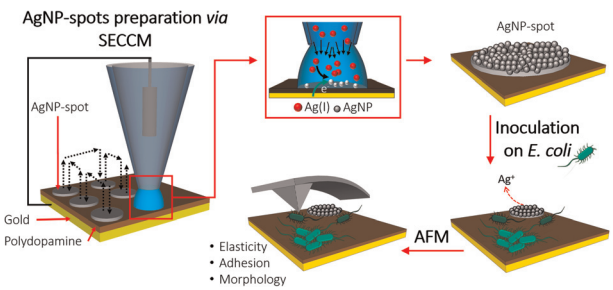
Yan Zhao, Ke-Le Chen, Xin-Yu Shen, Ming-Kang Li, Yong-Jing Wan,* Cheng Yang, Ru-Jia Yu,* Yi-Tao Long, Feng Yan and Yi-Lun Ying



2637

Antimicrobial effects of silver nanoparticle-microspots on the mechanical properties of single bacteria

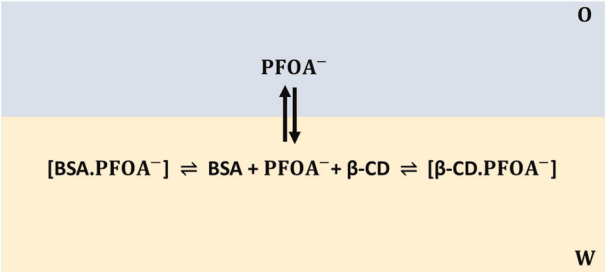
Giada Caniglia,* Dimitrios Valavanis, Gözde Tezcan, Joshua Magiera, Holger Barth, Joachim Bansmann, Christine Kranz* and Patrick R. Unwin*



Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

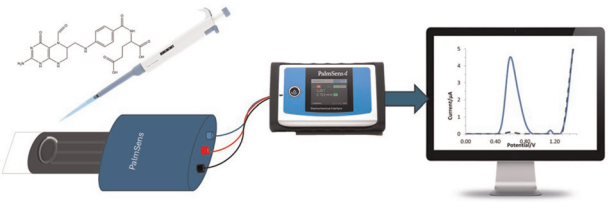
2647



Modulating the ion-transfer electrochemistry of perfluorooctanoate with serum albumin and β-cyclodextrin

Hum Bahadur Lamichhane and Damien W. M. Arrigan*

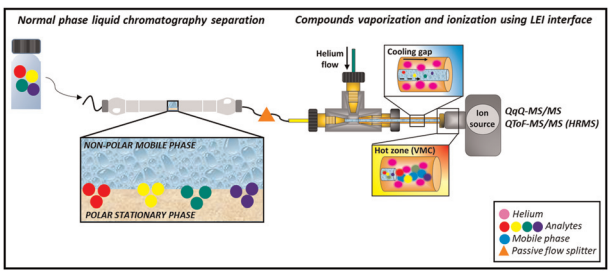
2655



Towards voltammetric point of care detection of leucovorin

Pui Hang Shum and Lynn Dennany*

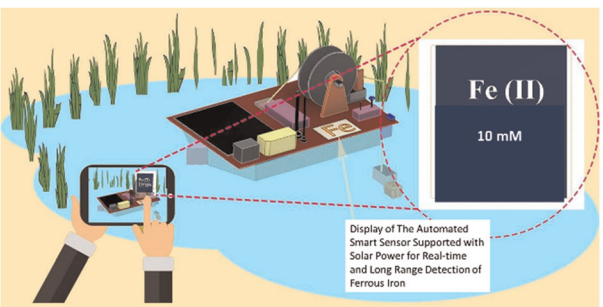
2664



Liquid electron ionization-mass spectrometry as a novel strategy for integrating normal-phase liquid chromatography with low and high-resolution mass spectrometry

Nicole Marittimo, Genny Grasselli, Adriana Arigò, Giorgio Famiglini, Marco Agostini, Caterina Renzoni, Pierangela Palma and Achille Cappiello*

2671



Water monitoring with an automated smart sensor supported with solar power for real-time and long range detection of ferrous iron

Tugba Ozer,* Ismail Agir and Thomas Borch*

This journal is © The Royal Society of Chemistry 2024

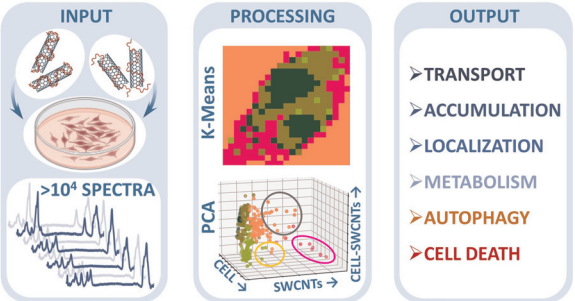
Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2680

Specificity of carbon nanotube accumulation and distribution in cancer cells revealed by K-means clustering and principal component analysis of Raman spectra

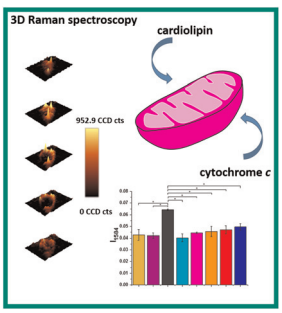
Lena Golubewa,* Igor Timoshchenko and Tatsiana Kulahava



2697

The role of cardiolipin and cytochrome *c* in mitochondrial metabolism of cancer cells determined by Raman imaging: *in vitro* study on the brain glioblastoma U-87 MG cell line

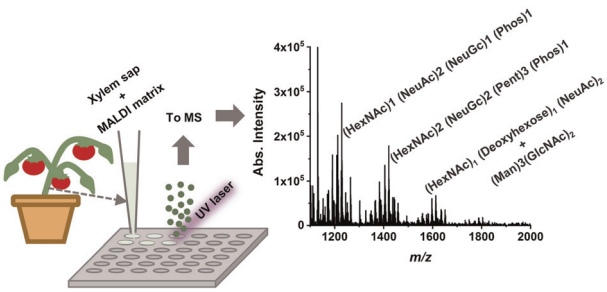
Monika Kopeć,* Aleksandra Borek-Dorosz, Karolina Jarczewska, Małgorzata Barańska and Halina Abramczyk



2709

Nutrient supplementation-induced metabolic profile changes and early appearance of free *N*-glycans in nutrient deficient tomato plants revealed by mass spectrometry

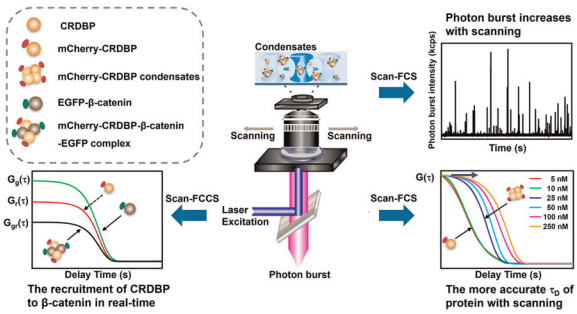
Marjan Dolatmoradi, Zsolt Sándor, Imre Vágó, Daniel A. Lowy, Akos Vertes* and Ida Kincses*



2719

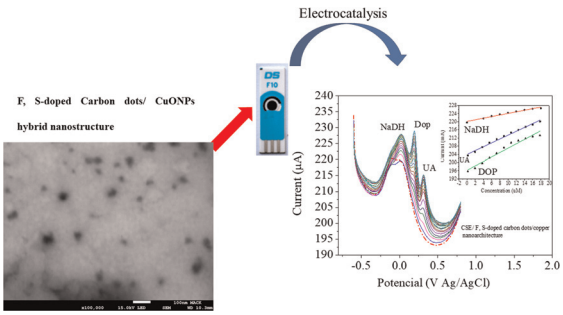
Objective scanning-based fluorescence cross-correlation spectroscopy (Scan-FCCS) for studying the fusion dynamics of protein phase separation

Jian Liu, Wenxin Yu, Chaoqing Dong, Xiangyi Huang* and Jicun Ren*



Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

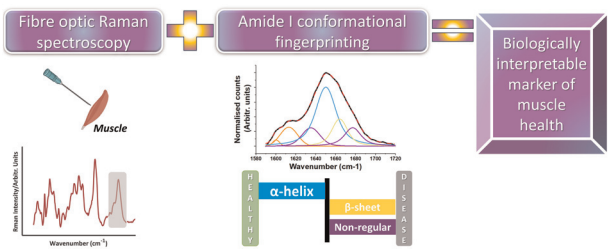
2728



Non-enzymatic biosensor based on F,S-doped carbon dots/copper nanoarchitecture applied in the simultaneous electrochemical determination of NADH, dopamine, and uric acid in plasma

Octávio P. L. de Souza, Daniel Y. Tiba, Joao H. A. Ferreira, Laura C. Lieb and Thiago C. Canevari*

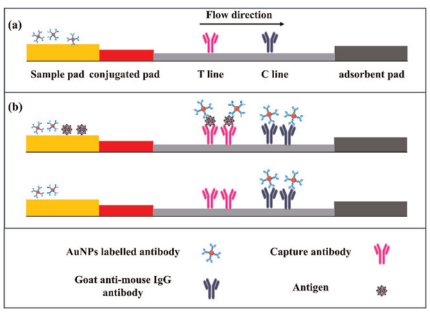
2738



Conformational fingerprinting with Raman spectroscopy reveals protein structure as a translational biomarker of muscle pathology

James J. P. Alix,* Maria Plesia, Alexander P. Dudgeon, Catherine A. Kendall, Channa Hewamadduma, Marios Hadjivassiliou, Gráinne S. Gorman, Robert W. Taylor, Christopher J. McDermott, Pamela J. Shaw, Richard J. Mead and John C. Day

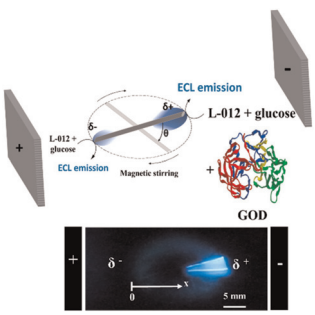
2747



Establishment and application of a gold nanoparticle-based immunochromatographic test strip for the detection of avian leukosis virus P27 antigen in egg white samples

Chunhao Wei, Hua Kuang, Xinxin Xu, Lingling Guo, Aihua Qu, Aihong Wu, Chuanlai Xu* and Liqiang Liu*

2756



Wireless rotating bipolar electrochemiluminescence for enzymatic detection

Chunguang Li, Minghui Feng, Dalibor Stanković, Laurent Bouffier, Feifei Zhang,* Zonghua Wang and Neso Sojic*

This journal is © The Royal Society of Chemistry 2024

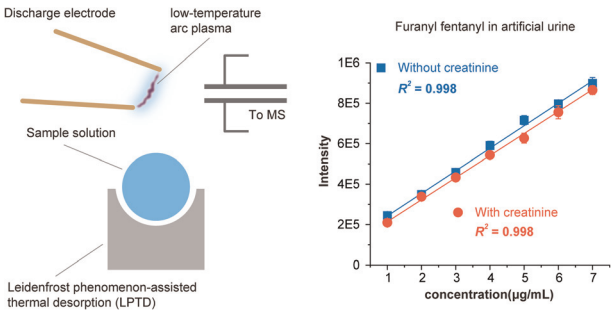
Open Access Article. Published on 29 April 2024. Downloaded on 1/1/2026 7:09:45 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2762

Rapid detection of furanyl fentanyl in complex matrices using Leidenfrost desorption-assisted low-temperature arc plasma ionization mass spectrometry

Wei Zhang, Zhongbao Han, Zhongyu Zhao, Jianjun Shi, Liyan Liu, Dan Wang* and Zhan Yu*



CORRECTION

2769

Correction: A label-free and immobilization-free approach for constructing photoelectrochemical nucleic acid sensors utilizing DNA–silver nanoparticle affinity interactions

Jing Yi, Jiayao Dong, Yawen Zheng, Liu Liu, Ji Zhu and Hongwu Tang*