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 148(7) 1389-1622 (2023)



Cover See Chan Yeong Park, Tae Jung Park *et al.*, pp. 1442–1450.

Image reproduced by permission of Tae Jung Park from *Analyst*, 2023, **148**, 1442.



Inside cover See K. Giribabu *et al.*, pp. 1451–1459.

Image reproduced by permission of K. Giribabu from *Analyst*, 2023, **148**, 1451.

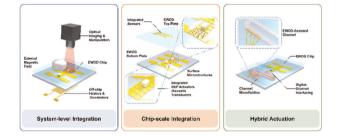
CRITICAL REVIEWS

CROYAL SOCIETY OF CHEMISTRY PAPER That have first and for the first state of the second society of the second

1399

Combining sensors and actuators with electrowetting-on-dielectric (EWOD): advanced digital microfluidic systems for biomedical applications

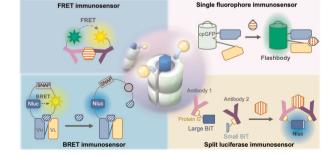
Zhaoduo Tong, Chuanjie Shen, Qiushi Li, Hao Yin and Hongju Mao*



1422

Recent progress in homogeneous immunosensors based on fluorescence or bioluminescence using antibody engineering

Abdul Qawee Rani, Bo Zhu, Hiroshi Ueda and Tetsuya Kitaguchi*



Editorial Staff

Executive Editor

Philippa Ross **Deputy Editor**

Alice Smallwood

Editorial Production Manager

Jason Woolford Development Editor

Celeste Brady

Publishing Editors

Gabriel Clarke, Derya Kara-Fisher, Cara Sutton, Ziva Whitelock Publishing Assistant

Andrea Whiteside

Editorial Assistant Leo Curtis

Publisher

Jeanne Andres

This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

Open Access Article. Published on 27 March 2023. Downloaded on 9/8/2025 4:27:50 PM.

For queries about submitted articles please contact Iason Woolford, Editorial production manager, in the first instance. E-mail analyst@rsc.org

For pre-submission queries please contact Philippa Ross, Executive editor, E-mail analyst-rsc@rsc.org

Analyst (electronic: ISSN 1364-5528) is published 24 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2372; US\$4152. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017; E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Analyst rsc.li/analyst

The home of premier fundamental discoveries, inventions and applications in the analytical and bioanalytical sciences

Karen Faulds , University of Strathclyde, UK

Editorial Board

Advisory Board

Claudia Conti, CNR, Italy

Carolina at Chapel Hill, USA

Germany

UK

Technology, USA

Editor-in-Chief

Norman Dovichi, Univeristy of Notre Dame, USΔ

Associate Editors

Damien Arrigan, Curtin University, Australia Ryan Bailey, University of Michigan, USA Jaebum Choo, Chung-Ang University, South Korea

Matthew Baker, University of Strathclyde, UK USA

R Graham Cooks, Purdue University, USA

Joshua Edel, Imperial College London, UK

Facundo Fernandez, Georgia Institute of

Roy Goodacre, University of Liverpool, UK

Jeffrey Dick, The University of North

Volker K. Deckert, University of Jena,

Oun Fang, Zhejiang University, China

Hideaki Hisamoto, Osaka Metropolitan University, Japan Baohong Liu, Fudan University, China Nicole Pamme, Stockholm University, Sweden

Canada

Laboratory, UK

Hua-Zhong Yu, Simon Fraser University, Canada

Jun-Jie Zhu, Nanjing University, China

Members

Susan Lunte, University of Kansas, USA

Howbeer Muhamadali, University of Paul W Bohn, University of Notre Dame, USA Kagan Kerman, University of Toronto, Liverpool, UK Takeaki Ozawa, University of Tokyo, Japan Ashley Ross, University of Cincinnati, USA Christine Kranz, Ulm University, Germany Annamalai Senthil Kumar, Vellore Institute Muhammad Shiddiky, Griffith University, of Technology University, India Australia Xiujun Li, University of Texas at El Paso, USA Debbie Silvester, Curtin University, Australia Langun Mao, Institute of Chemistry, Steven A. Soper, University of Kansas, USA Chinese Academy of Sciences, China Dana Spence, Michigan State María Marín, University of East Anglia, UK University, USA Pavel Matousek, Rutherford Appleton Nick Stone, University of Exeter, UK Evan Williams, University of California, USA Chaoyong James Yang, Xiamen University, Wei Min, Columbia University, USA Boris Mizaikoff, University of Ulm, Germany China Prakash Chandra Mondal, Indian Institute Yilun Ying, Nanjing University, China of Technology Kanpur, India

Duncan Graham, University of Strathclyde, Robert T Kennedy, University of Michigan,

Information for Authors

given in the Instructions for Authors (available from http://www.rsc.org/authors). Submissions should be made via the

journal's homepage: rsc.li/analyst

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)-Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study Registered charity number: 207890 for non-commercial purposes, or criticism or review, as permitted

Full details on how to submit material for publication in Analyst are under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

> ⊗ The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992

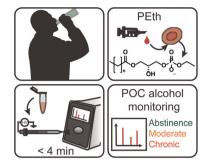
(Permanence of Paper)



1430

Miniature mass spectrometer-based point-of-care assay for measuring phosphatidylethanol in blood

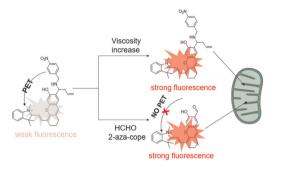
Sangeeta Pandey, Yanyang Hu, Peter L. Anderson, Jennifer J. Kiser* and R. Graham Cooks*



1437

A NIR fluorescent probe for dual imaging of mitochondrial viscosity and FA in living cells and zebrafish

Feng Liang, Wanyun Huang, Lei Wu, Yihong Wu, Tingrui Zhang, Xiaolong He, Zhouyu Wang, Xiaoqi Yu, Yuzhi Li* and Shan Qian*

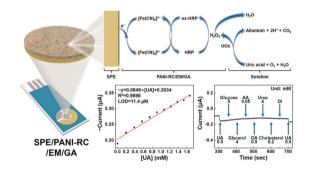


PAPERS

1442

Transition metal complex-incorporated polyaniline as a platform for an enzymatic uric acid electrochemical sensor

Ruth Stephanie, Dae Yeon Lee, Chan Yeong Park* and Tae Jung Park*

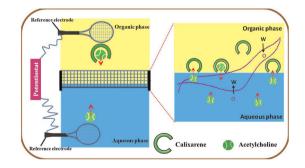


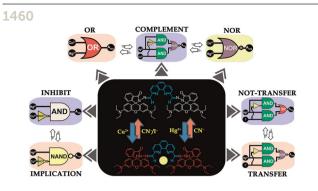
1451

Disposable-micropipette tip supported electrified liquid-organogel interface as a platform for sensing acetylcholine

S. Sudalaimani, S. Arun, A. Esokkiya, K. Sanjeev Kumar,

C. Sivakumar and K. Giribabu*

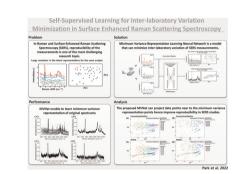




Differential response for multiple ions: a smart probe to construct optically tunable molecular logic systems

Monaj Karar, Rikitha S. Fernandes and Nilanjan Dey*

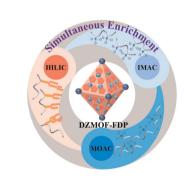
1473



Self-supervised learning for inter-laboratory variation minimization in surface-enhanced Raman scattering spectroscopy

Seongyong Park, Abdul Wahab, Minseok Kim and Shujaat Khan*

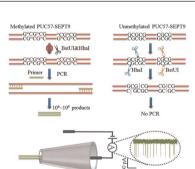
1483



Simultaneous enrichment optimization of glycopeptides and phosphopeptides with the highly hydrophilic DZMOF-FDP

Xiaoyu Zhou, Hongyan Zhang, Li
 Wang, Liting Lv and Ren'an Wu $\!\!\!\!$

1492



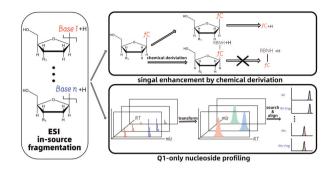
A nanopore counter for highly sensitive evaluation of DNA methylation and its application in *in vitro* diagnostics

Jiahai Wang, Lanfang Chen, Cenlin Gui, Jianji Zhu, Baian Zhu, Zhuobin Zhu, Yunhui Li and Daqi Chen*

1500

In-source fragmentation of nucleosides in electrospray ionization towards more sensitive and accurate nucleoside analysis

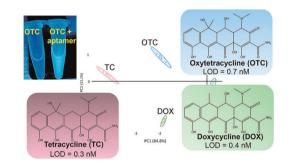
Yu-Nan Chen, Xu-Yang Shen, Yue Yu, Chen-Yu Xue, Ying-Lin Zhou* and Xin-Xiang Zhang



1507

An aptamer array for discriminating tetracycline antibiotics based on binding-enhanced intrinsic fluorescence

Yichen Zhao, Biwen Gao, Yijing Chen and Juewen Liu*



1514

Mobile multi-configuration clinical translational Raman system for oral cancer application

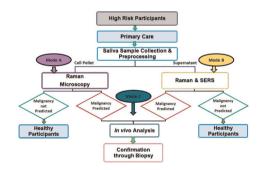
Siddra Maryam,* Sanathana Konugolu Venkata Sekar, M. Daniyal Ghauri, Edward Fahy,

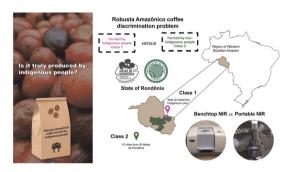
Marcelo Saito Nogueira, Huihui Lu, Flavien Beffara, Georges Humbert, Richeal Ni Riordain, Patrick Sheahan, Ray Burke, Kiang Wei Kho, Rekha Gautam and Stefan Andersson-Engels

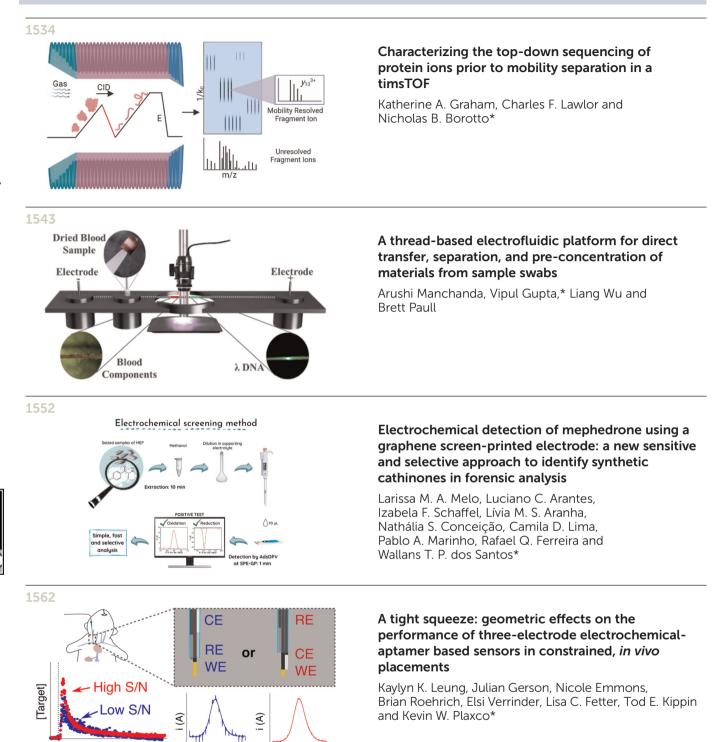


Discrimination of Robusta Amazônico coffee farmed by indigenous and non-indigenous people in Amazon: comparing benchtop and portable NIR using ComDim and duplex

Michel Rocha Baqueta, Patrícia Valderrama, Enrique Anastácio Alves, Juliana Azevedo Lima Pallone* and Federico Marini*







Time

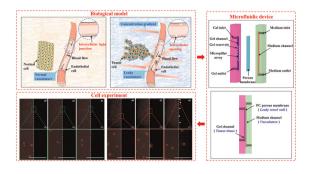
E (V)

E(V)

1570

A microfluidic device inspired by leaky tumor vessels for hematogenous metastasis mechanism research

Shuqing Yin, Ruoyu Lu, Yang Li, Dexian Sun, Chong Liu, Bo Liu* and Jingmin Li*



1579

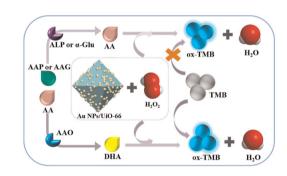
Self-enhanced peroxidase-like activity in a wide pH range enabled by heterostructured Au/MOF nanozymes for multiple ascorbic acid-related bioenzyme analyses

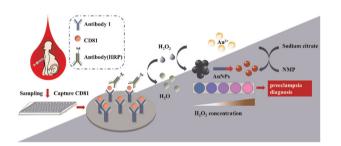
Wendong Liu, Dingding Zhang, Fanghua Zhang, Zhe Hao, Yuyan Li, Mingzheng Shao, Ruizhong Zhang,* Xiyan Li* and Libing Zhang*

1587

A dichromatic plasmonic ELISA CD81 protein sensor for ultrasensitive detection of preeclampsia

Kexuan Chen, Nan Ma, Haobo Sun, Xueji Zhang and Jinming Kong*

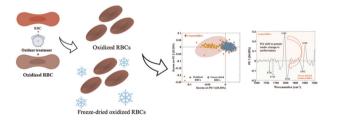


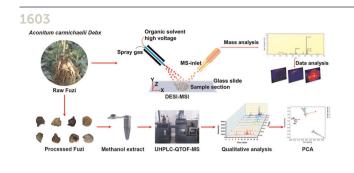


1595

Characterization of freeze-dried oxidized human red blood cells for pre-transfusion testing by synchrotron FTIR microspectroscopy live-cell analysis

Thulya Chakkumpulakkal Puthan Veettil, Diana Alves, Jitraporn Vongsvivut, Rosemary L. Sparrow, Bayden R. Wood* and Gil Garnier*





Spatial distribution and comparative analysis of *Aconitum* alkaloids in Fuzi using DESI-MSI and UHPLC-QTOF-MS

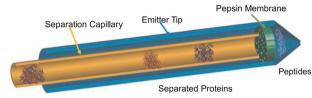
Online protein digestion in membranes between

capillary electrophoresis and mass spectrometry

Kendall A. Ryan and Merlin L. Bruening*

Zhenhui Ren, Huixia Zhang, Liu Yang, Xin Chen, Shuai Zhang, Shiqi Chen, Daowen Li, Cun Li and Haiyang Jiang*

1611



Protein Mixture