

IN THIS ISSUE

ISSN 0003-2654 CODEN ANALAO 148(8) 1623-1900 (2023)



Cover

See Lingqian Zhang,
Chengjun Huang et al.,
pp. 1672–1681.

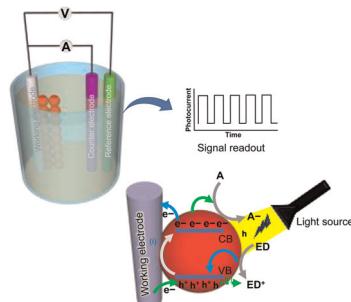
Image reproduced
by permission of Institute
of Microelectronics of the
Chinese Academy of
Sciences from *Analyst*,
2023, **148**, 1672.

CRITICAL REVIEW

1633

Semiconductor quantum dots in photoelectrochemical sensors from fabrication to biosensing applications

Anjum Qureshi,* Tayyaba Shaikh and Javed H. Niazi*

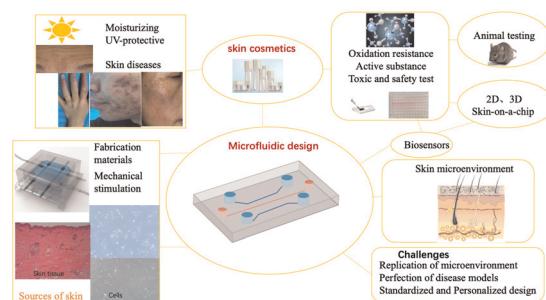


TUTORIAL REVIEW

1653

Advancements in microfluidics for skin cosmetic screening

Nianfang Hu, Kerun Cheng, Shuhan Zhang, Shan Liu, Lijun Wang, Xiaoxin Du, Yong Li* and Chenzhong Li*



Analyst

rsc.li/analyst

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

Editorial Board

Editor-in-Chief

Norman Dovichi, University of Notre Dame, USA

Hua-Zhong Yu, Simon Fraser University, Canada

Jun-Jie Zhu, Nanjing University, China

Associate Editors

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

Susan Lunte, University of Kansas, USA

Members

Advisory Board

Matthew Baker, University of Central Lancashire, UK

Robert T Kennedy, University of Michigan, USA

of Technology Kanpur, India
Howber Muhamadali, University of Liverpool, UK

Paul W Bohn, University of Notre Dame, USA

Kagan Kerman, University of Toronto, Canada

Takeaki Ozawa, University of Tokyo, Japan

Claudia Conti, CNR, Italy

Christine Kranz, Ulm University, Germany

Ashley Ross, University of Cincinnati, USA

R Graham Cooks, Purdue University, USA

Annamalai Senthil Kumar, Vellore Institute of Technology University, India

Muhammad Shiddiky, Griffith University, Australia

Jeffrey Dick, The University of North Carolina at Chapel Hill, USA

Xiujun Li, University of Texas at El Paso, USA

Debbie Silvester, Curtin University, Australia

Volker K. Deckert, University of Jena, Germany

Lanqun Mao, Institute of Chemistry, Chinese Academy of Sciences, China

Steven A. Soper, University of Kansas, USA

Joshua Edel, Imperial College London, UK

Maria Marín, University of East Anglia, UK

Dana Spence, Michigan State University, USA

Qun Fang, Zhejiang University, China

Pavel Matousek, Rutherford Appleton Laboratory, UK

Nick Stone, University of Exeter, UK

Facundo Fernandez, Georgia Institute of Technology, USA

Wei Min, Columbia University, USA

Evan Williams, University of California, USA

Roy Goodacre, University of Liverpool, UK

Boris Mizailkoff, University of Ulm, Germany

Chaoyong James Yang, Xiamen University, China

Duncan Graham, University of Strathclyde, UK

Prakash Chandra Mondal, Indian Institute

Yilun Ying, Nanjing University, China

Information for Authors

Full details on how to submit material for publication in Analyst are 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 for non-commercial purposes, or criticism or review, as permitted

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).

Registered charity number: 207890

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, Ziva Whitelock

Publishing Assistant

Andrea Whiteside

Editorial Assistant

Leo Curtis

Publisher

Jeanne Andres

For queries about submitted articles please contact

Jason 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

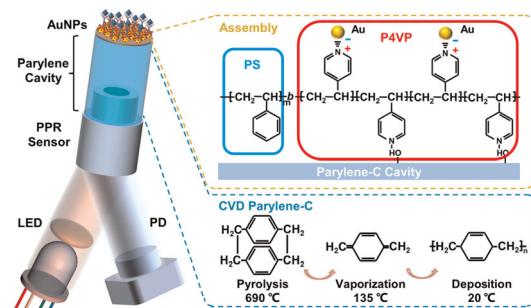


PAPERS

1672

A parylene-mediated plasmonic–photonic hybrid fiber-optic sensor and its instrumentation for miniaturized and self-referenced biosensing

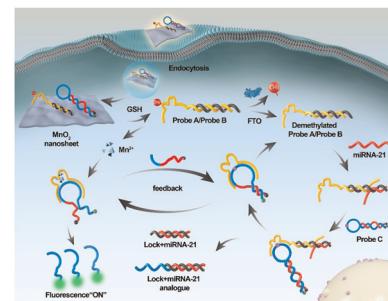
Xin Li, Nanxi Wang, Fei Wang, Jinlong Liu, Yimin Shi, Jiahong Jiang, Hongyao Liu, Mingxiao Li, Lina Zhang, Wenchang Zhang, Yang Zhao, Lingqian Zhang* and Chengjun Huang*



1682

High-fidelity imaging of intracellular microRNA via a bioorthogonal nanoprobe

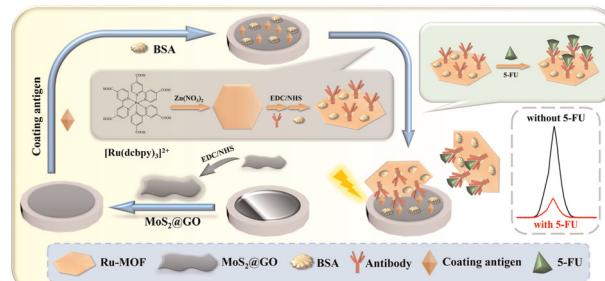
Hengyi Chen, Xiaohui Chen, Yi Chen, Chong Zhang, Zixin Sun, Jiaxi Mo, Yongzhong Wang, Jichun Yang,* Dongsheng Zou* and Yang Luo*



1694

Electrochemiluminescence immunoassay strategies based on a hexagonal Ru-MOF and MoS₂@GO nanosheets: detection of 5-fluorouracil in serum samples

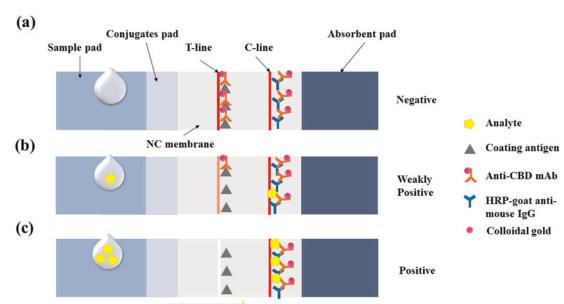
Guoyu Ma, Lu Peng, SunXiaoYi Zhang, Kang Wu,* Anping Deng* and Jianguo Li*



1703

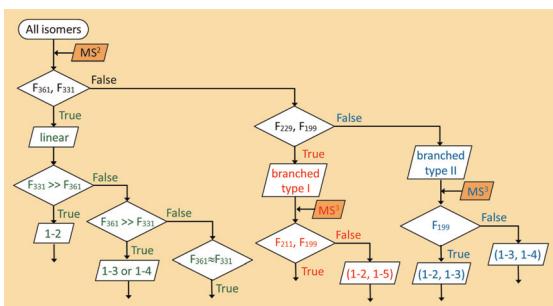
Development of a gold nanoparticle-based lateral-flow strip for the detection of cannabidiol in functional beverages

Shuai Lv, Xinxin Xu, Lingling Guo, Liguo Xu, Liqiang Liu,* Hua Kuang and Chuanli Xu*



PAPERS

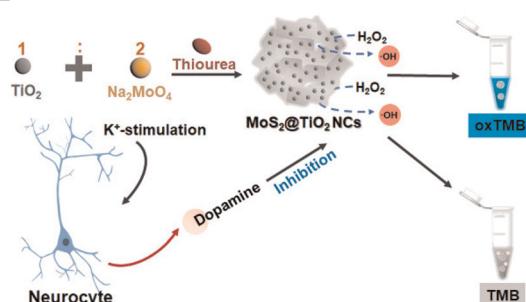
1712



A simple tandem mass spectrometry method for structural identification of pentose oligosaccharides

Shang-Ting Tsai, Hsu-Chen Hsu and Chi-Kung Ni*

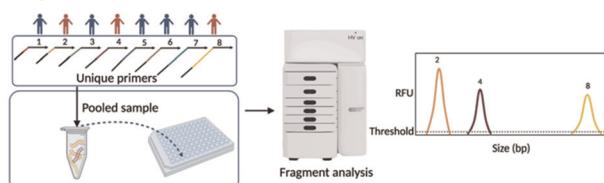
1732



Controllable synthesis of $\text{MoS}_2@\text{TiO}_2$ nanocomposites for visual detection of dopamine secretion with highly-efficient enzymatic activity

Chonghui Wei, Xuan Xie, Yue Mou, Shiqi Cheng, Jin Yang, Kaixin Xue, Kewei Yu, Xinru Lin, Chunfen Zhang, Yujie Zhao,* Xingyu Luo* and Yilin Wang

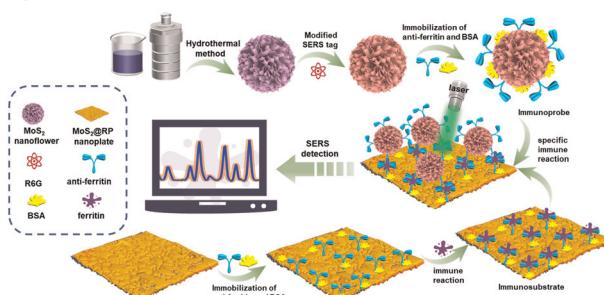
1743



Efficient large-scale screening of viral pathogens by fragment length identification of pooled nucleic acid samples (FLIPNAS)

Xianzhen Feng, Xinyu Zhuang, Grace Lui and I-Ming Hsing*

1752



A non-metallic SERS-based immunoassay founded by light-harvesting effect and strengthened chemical enhancement

Jiali Ma, Wenxin Dong, Tao Xu, Guodong Wei, Chenjie Gu* and Tao Jiang*

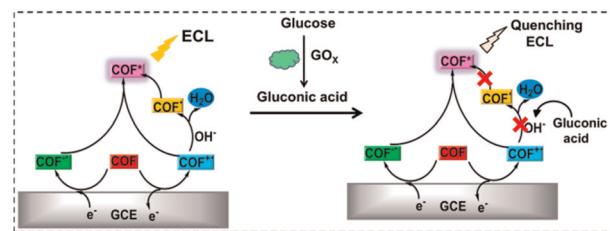


PAPERS

1764

Development of an exogenous coreactant-free electrochemiluminescent sensor for sensing glucose

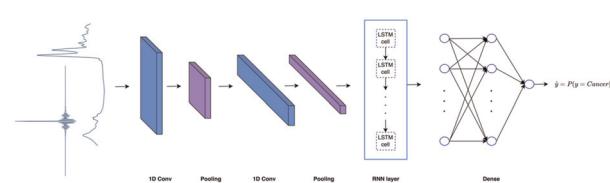
Maoding Zuo, Lin Cui,* Shuangwen Wang, Wengui Wei, Wenqiang Gao* and Chun-yang Zhang*



1770

Recurrent neural networks for time domain modelling of FTIR spectra: application to brain tumour detection

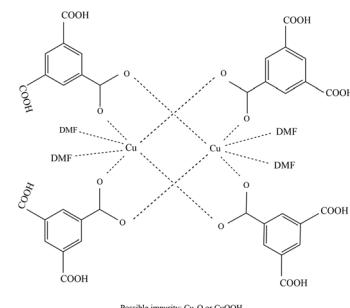
Georgios Antoniou, Justin J. A. Conn, Benjamin R. Smith, Paul M. Brennan, Matthew J. Baker and David S. Palmer*



1777

Sensing interface based on electrodeposited Cu-BTC microporous film for electrochemical detection of the painkiller paracetamol

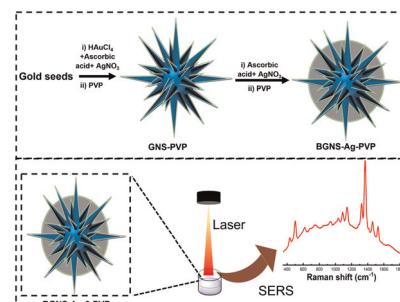
Nguyen Tien Dat, Nguyen Ngoc Tien, Nguyen Thi Thanh Ngan and Vu Thi Thu*



1786

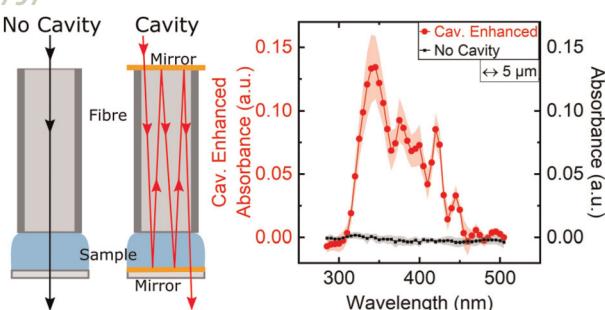
A hybrid plasmonic nanoprobe using polyvinylpyrrolidone-capped bimetallic silver–gold nanostars for highly sensitive and reproducible solution-based SERS sensing

Supriya Atta and Tuan Vo-Dinh*



PAPERS

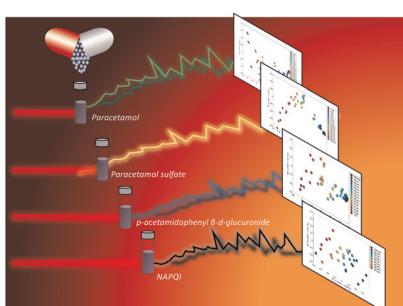
1797



Broadband cavity enhanced UV-VIS absorption spectroscopy for picolitre liquid samples

Imogen M. Fermor-Worth and Catalin Chimerel*

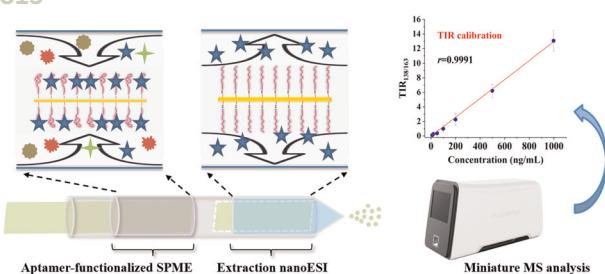
1805



Rapid detection and quantification of paracetamol and its major metabolites using surface enhanced Raman scattering

Najla AlMasoud, Taghrid S. Alomar, Yun Xu, Cassio Lima and Royston Goodacre*

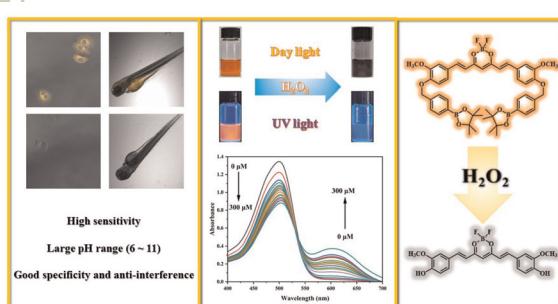
1815



Online hyphenation of in-capillary aptamer-functionalized solid-phase microextraction and extraction nanoelectrospray ionization for miniature mass spectrometry analysis

Yueguang Lv, Yuhuan Shang, Linsen Li, Ying Zhang and Qiang Ma*

1824

A highly effective "naked eye" colorimetric and fluorimetric curcumin-based fluorescent sensor for specific and sensitive detection of H_2O_2 *in vivo* and *in vitro*

Wenhai Du, Zheyu Shen, Yueying Liang, Shuai Gong, Zhiyuan Meng, Mingxing Li, Zhonglong Wang* and Shifa Wang*

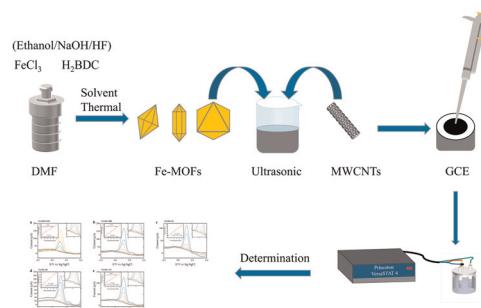


PAPERS

1838

A series of ultrasensitive electrocatalysts Fe-MOF/MWCNTs for fentanyl determination

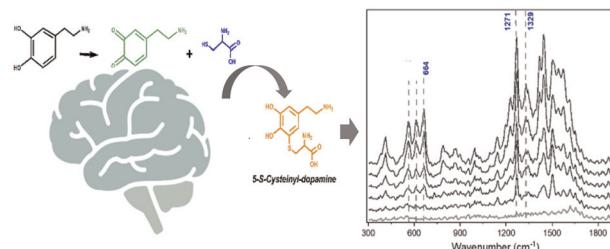
Zhidong Zhao, Yuan He, Xingrui Qi, Nian Li, Zijian He, Yufang Chen and Tao Jin*



1848

SERS-based detection of 5-S-cysteinyl-dopamine as a novel biomarker of Parkinson's disease in artificial biofluids

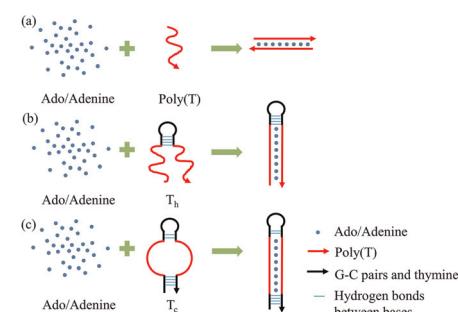
Isidro Badillo-Ramírez,* Bruno Landeros-Rivera, José M. Saniger, Jürgen Popp and Dana Cialla-May



1858

Enriching adenosine by thymine-rich DNA oligomers

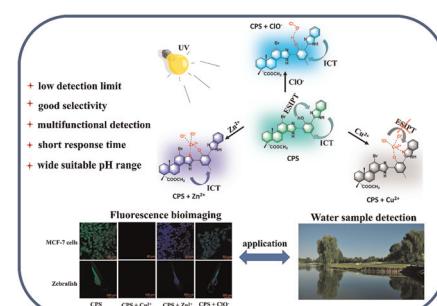
Mingchun Liu, Huaiqing Chen, Yuhang Huang, Jian Liu, Qianfeng Chen, Hua Zuo, Liang Fang* and Chengde Mao*



1867

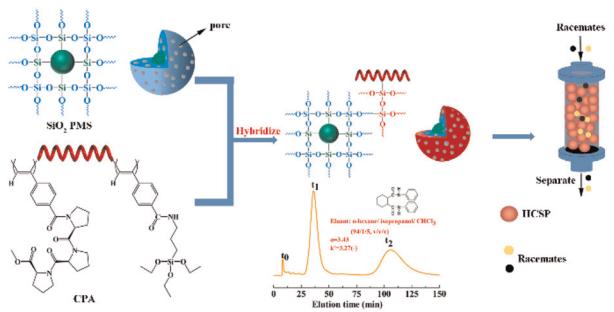
A novel dehydroabietic acid-based multifunctional fluorescent probe for the detection and bioimaging of Cu²⁺/Zn²⁺/ClO⁻

Lu Sun, Zhonglong Wang, Linlin Chen, Xuebao Sun, Zihui Yang and Wen Gu*



PAPERS

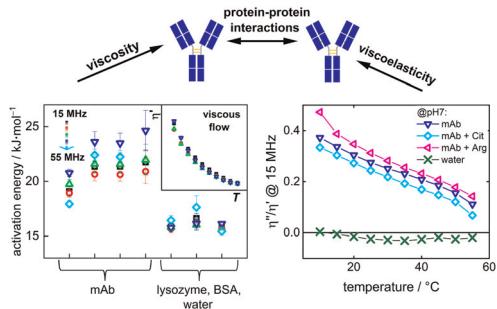
1877



Hybridization of helical poly(phenylacetylene)s bearing L-proline tripeptide pendants into porous silica microspheres as a solvent-tolerable chiral stationary phase for liquid chromatography

Jiahe Huang, Zhengjin Zhou, Chunhong Zhang,* Chao Wang, Yanli Zhou, Lijia Liu,* Junqing Li,* Toshifumi Satoh and Yoshio Okamoto

1887



Protein–protein interactions in solutions of monoclonal antibodies probed by the dependence of the high-frequency viscosity on temperature and concentration

Emily Rott, Christian Leppin,* Tim Diederichs, Patrick Garidel and Diethelm Johannsmann

