

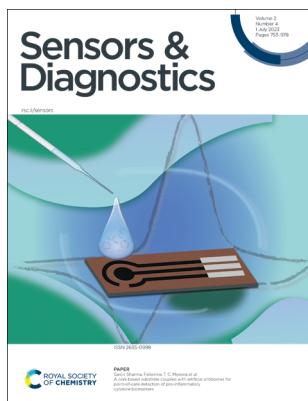
# Sensors & Diagnostics

rsc.li/sensors

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 2635-0998 CODEN SDEIAR 2(4) 753-978 (2023)



### Cover

See Bárbara Correia, Daniela Oliveira, Sanjiv Sharma, Felismina T.C. Moreira et al. pp. 956–963.  
Image reproduced by permission of Bárbara Correia and Daniela Oliveira from *Sens. Diagn.*, 2023, 2, 956.



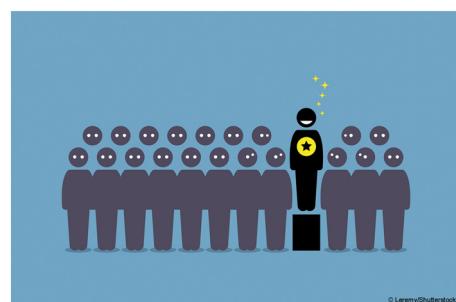
### Inside cover

See Milica Jovic, Denis Prim, Marc E. Pfeifer et al. pp. 964–975.  
Image reproduced by permission of Davor Radisic, Marc E. Pfeifer and HES-SO Valais-Wallis from *Sens. Diagn.*, 2023, 2, 964.

## EDITORIAL

762

### Outstanding Reviewers for *Sensors & Diagnostics* in 2022

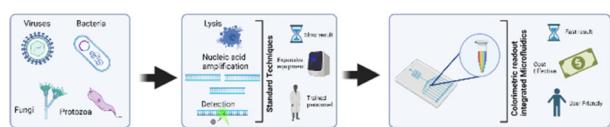


## CRITICAL REVIEWS

763

### Microfluidic-based colorimetric nucleic acid detection of pathogens

Sripadh Guptha Yedire, Haleema Khan, Tamer AbdelFatah, Roozbeh Siavash Moakhar and Sara Mahshid\*



# Sensors & Diagnostics

rsc.li/sensors

Sensors & Diagnostics is a gold open access journal for critical advances in sensors, sensing devices and systems that apply to monitoring and medical diagnostics.

## Editorial Board

### Editors-in-Chief

Sabine Szunerits, University of Lille, France  
Xueji Zhang, Shenzhen University, China

### Associate Editors

Ilka Engelmann, Montpellier University and Montpellier University Hospital, France  
Carlos D. Garcia, Clemson University, USA  
Wei Gao, California Institute of Technology, USA  
Quan Yuan, Hunan University, China  
Lisa Hall, University of Cambridge, UK  
Mei Tian, Fudan University, Shanghai, China

### Members

Sahika Inal, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

## Advisory Board

Agata Michalska, University of Warsaw, Poland  
Ali Yetisen, Imperial College London, UK  
Ambra Giannetti, IFAC-CNR, Italy  
Elena Benito-Peña, Universidad Complutense de Madrid, Spain  
Elisa Michelin, University of Bologna, Italy  
Eva Toth, Centre for Molecular Biophysics, CNRS, France  
Igor Medintz, U.S. Naval Research Laboratory, USA  
Mahesh Kumar, Indian Institute of Technology Jodhpur, India

Nianqiang "Nick" Wu, University of Massachusetts Amherst, USA  
Raffaele Velotta, University of Naples "Federico II", Italy  
Sabrina Conoci, University of Messina, Italy  
Sankarasekaran Shannugaraj, Indian Institute of Technology Palakkad, India  
Silvana Andreescu, Clarkson University, USA  
Daniel Roxbury, The University of Rhode Island, USA  
Sierin Lim, Nanyang Technological University, Singapore

Suresh Kumar Kailasa, Sardar Vallabhbhai National Institute of Technology, India  
Sylvia Dauner, University of Miami, USA  
Tony James, University of Bath, UK  
Yingfu Li, McMaster University, Canada

## Information for Authors

Full details on how to submit material for publication in Sensors & Diagnostics 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/sensors](http://rsc.li/sensors).

**Submissions:** The journal welcomes submissions of manuscripts for publication as Full Papers, Communications, Reviews, Perspectives, Tutorial Reviews. Full Papers and Communications should describe original work of high quality and impact.

Additional details are available from the Editorial Office or <http://www.rsc.org/authors>

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.

Registered charity number: 207890

## Editorial Staff

### Executive Editor

Anna Rulka

### Deputy Editor

Audra Taylor

### Editorial Production Manager

Viktoria Titmus

### Assistant Editors

Angelica-Jane Kechinyere Onyekwere, Shwetha Krishna, Michael Whitelaw, Alexander Whiteside

### Editorial Assistant

Samantha Campos

### Publishing Assistant

Brittany Hanlon

### Publisher

Neil Hammond

For queries about submitted papers, please contact Viktoria Titmus, Editorial Production Manager in the first instance.

E-mail: [sensors@rsc.org](mailto:sensors@rsc.org)

For pre-submission queries please contact Anna Rulka, Executive Editor. E-mail: [sensors-rsc@rsc.org](mailto:sensors-rsc@rsc.org)

Sensors & Diagnostics (electronic: ISSN 2635-0998) is published 6 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

Sensors & Diagnostics is a Gold Open Access journal and all articles are free to read. Please email [orders@rsc.org](mailto:orders@rsc.org) to register your interest or contact 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](mailto:orders@rsc.org)

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](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

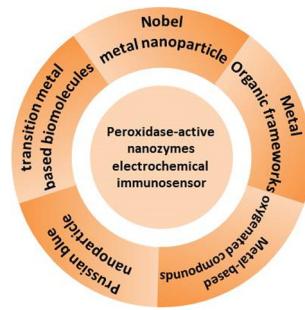


## CRITICAL REVIEWS

781

## Recent advances of peroxidase-active nanozymes in electrochemical immunoassays

Jiejie Feng, Tao Yao and Zhanfang Ma\*

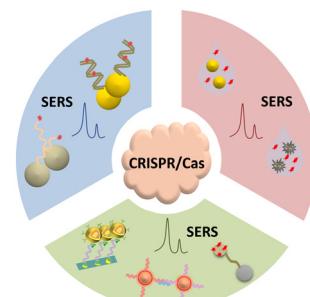


## TUTORIAL REVIEWS

792

## Current advance of CRISPR/Cas-based SERS technology

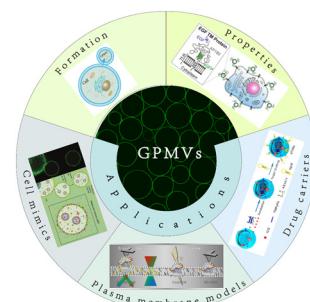
Huimin Wang, Ailing Su, Jingjing Chang, Xiangguo Liu, Chongyang Liang and Shuping Xu\*



806

## Formation of giant plasma membrane vesicles for biological and medical applications: a review

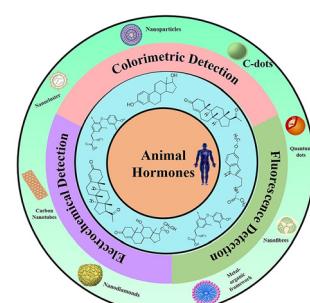
Yang Li, Songyang Liu, Wanyu Xu, Kemin Wang, Fengjiao He\* and Jianbo Liu\*



815

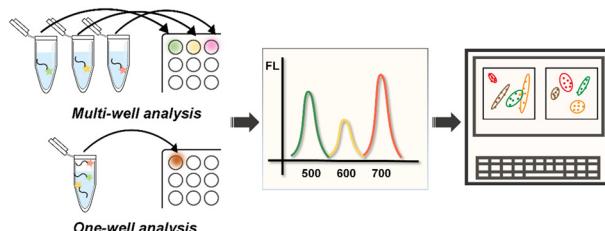
## Functional nanostructures in analytical chemistry: new insights into the optical and electrochemical sensing of animal hormones in food, environmental and biological samples

Juhi Bhadresh Raval, Vaibhavkumar N. Mehta, Sanjay Jha, Rakesh Kumar Singhal, Hirakendu Basu and Suresh Kumar Kailasa\*



## COMMUNICATION

837

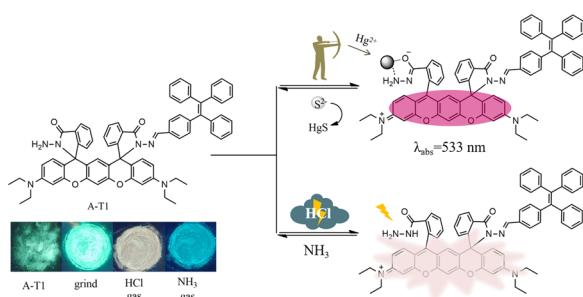


**Rapid identification of molecular subtyping of breast cancer cell lines using a multi-channel sensor array**

Yuyao Jin, Yuanjie Sun, Nan Du, Wei-Tao Dou, Ying Tan, Xiao-Peng He, Naihan Xu\* and Chunyan Tan\*

## PAPERS

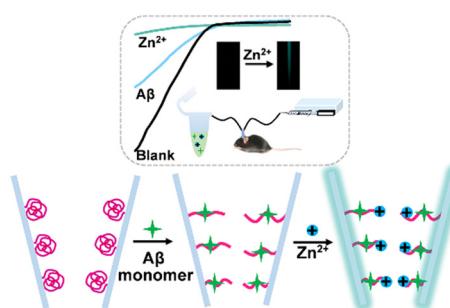
842



**Tetraphenylethene-capped aminobenzopyranoxanthene hydrazone probes for colorimetric recognition of  $\text{Hg}^{2+}$  and fluorescent sensing of HCl gas**

Yang Yang,\* Chang Pei, Chao-Ying Gao and Jinglin Liu\*

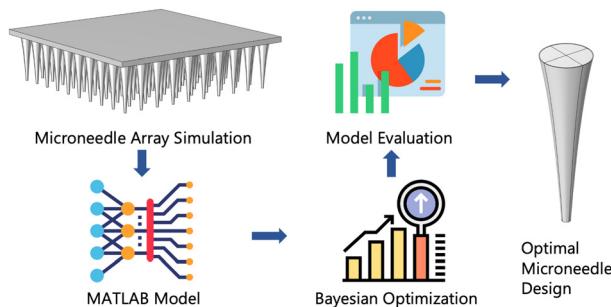
851



**A stimuli-responsive polymer modified nanopore for measuring  $\beta$ -amyloid peptide and zinc ions in brains of live mice with Alzheimer's disease**

Shushu Ding, Yue Zhu, Anwei Zhu and Guoyue Shi\*

858



**Bayesian machine learning optimization of microneedle design for biological fluid sampling**

Ceren Tarar, Erdal Aydin, Ali K. Yetisen and Savas Tasoglu\*

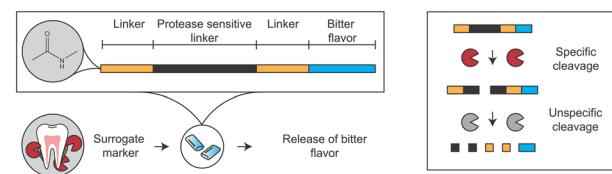


## PAPERS

867

**The development of matrix-metalloproteinase responsive sensors for the machine-independent detection of oral inflammation**

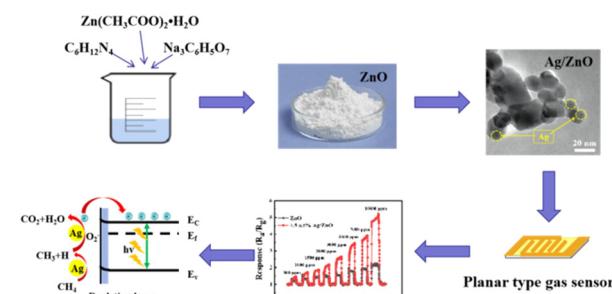
Björn ter Mors, Marc D. Driessens, Axel Seher, Imme R. Haubitz, Martina Raschig, Magdalena Nowak, Yvonne Jockel-Schneider, Christian Linz and Lorenz Meinel\*



878

**Light-driven room temperature methane gas sensor based on Ag modified flower-like ZnO microsphere**

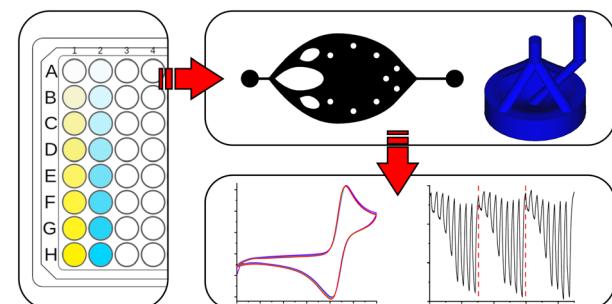
Mengwei Li, Xueya Sun, Yihui Wang, Cong Qin, Jianliang Cao and Yan Wang\*



887

**A three-dimensional microfluidic flow cell and system integration for improved electrochemical substrate detection in HRP/TMB-based immunoassays**

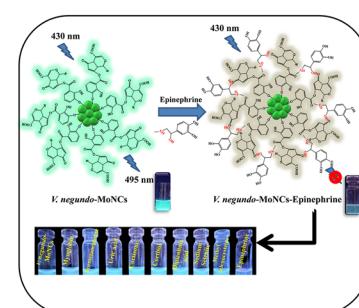
Alexander Ecke, Jérémie Bell\* and Rudolf J. Schneider\*

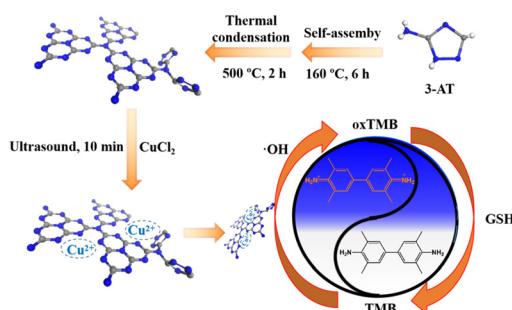


893

**Synthesis of molybdenum nanoclusters from *Vitex negundo* leaves for sensing epinephrine in a pharmaceutical composition**

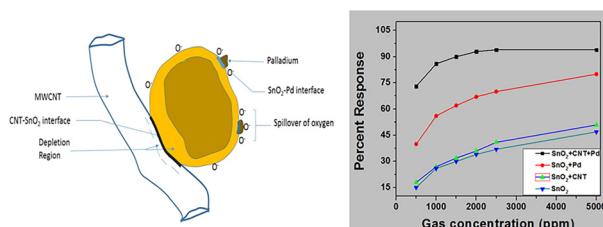
Harshita, Sanjay Jha, Tae-Jung Park and Suresh Kumar Kailasa\*





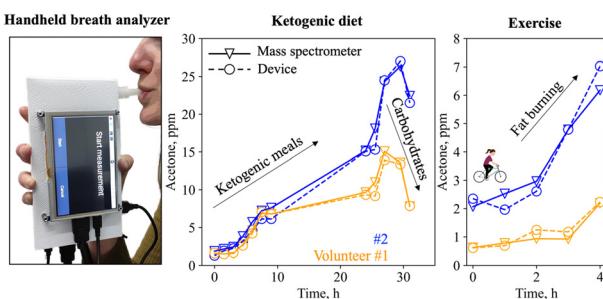
## Graphitic carbon nitride with $\text{Cu}^{2+}$ and triazole group co-doping for enhanced peroxidase-like activity and its application for glutathione detection

Xiaotao Liu, Xueyi Zheng, Chunqiu Xia and Liangqia Guo\*



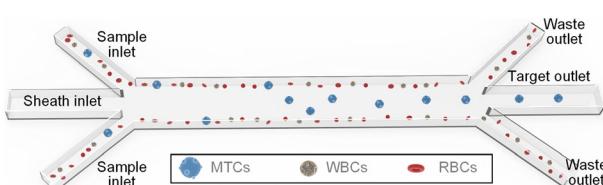
## Beneficial effect of Pd and MWCNT co-loading in $\text{SnO}_2$ nanoparticles towards the low temperature detection of *n*-butane gas: synergistic effect on sensing performance

P. Rana, M. Narjinary, A. Sen and M. Pal\*



## Handheld device quantifies breath acetone for real-life metabolic health monitoring

Grégoire M. G. B. H. Bastide, Anna L. Remund, Dina N. Oosthuizen, Nina Derron, Philipp A. Gerber and Ines C. Weber\*



## High-throughput and high-purity separation of malignant tumor cells in pleural and peritoneal effusions using interfacial elasto-inertial microfluidics

Nan Xiang,\* Zhonghua Ni and Dan Wu\*

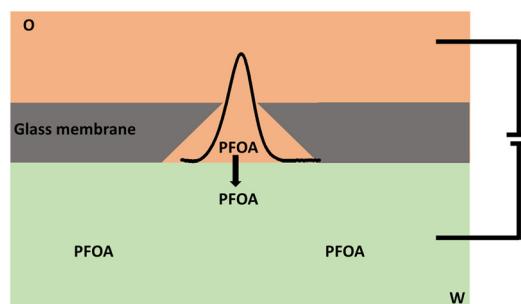


## PAPERS

938

**Ion-transfer electroanalytical detection of perfluorooctanoic acid at a liquid–liquid micro-interface array**

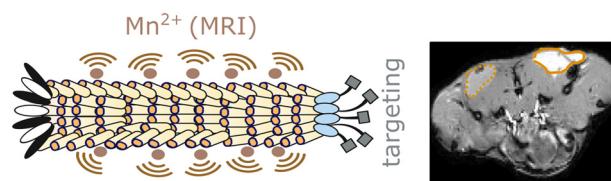
Hum Bahadur Lamichhane and Damien W. M. Arrigan\*



948

**Genetically engineered filamentous phage for bacterial detection using magnetic resonance imaging**

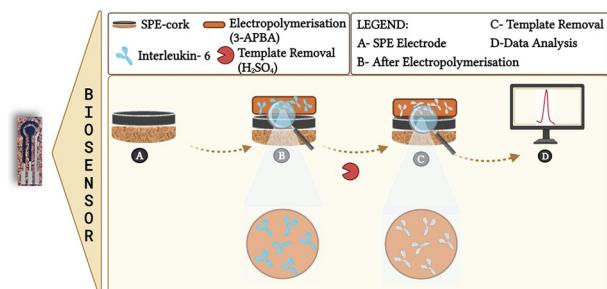
Raymond E. Borg, Harun F. Ozbakir, Binzhi Xu, Eugene Li, Xiwen Fang, Huan Peng, Irene A. Chen\* and Arnab Mukherjee\*



956

**A cork based substrate coupled with artificial antibodies for point-of-care detection of pro-inflammatory cytokine biomarkers**

Bárbara Correia, Daniela Oliveira, Georgeta Vulpe, Ana P. M. Tavares, M. Goreti F. Sales, Abel J. Duarte, Sanjiv Sharma\* and Felismina T. C. Moreira\*



964

**A novel point-of-care diagnostic prototype system for the simultaneous electrochemiluminescent sensing of multiple traumatic brain injury biomarkers**

Milica Jović, Denis Prim, Ophélie Righini, David Tagan, Mélanie Stäuble, Marc Pignat, Steve Gallay, Martial Geiser and Marc E. Pfeifer\*

