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(11) 2405-2646 (2023)



Cover See Eliana Gianolio, Nunzia laccarino *et al.*, pp. 2415–2424.

Image reproduced by permission of Antonio Randazzo from *Analyst*, 2023, **148**, 2415.

PAPERS

CROYAL SOCIETY Barra Garo

2415

Comparison of the biological effects of gadodiamide (Omniscan) and gadoteridol (ProHance) by means of multi-organ and plasma metabolomics

Francesca Romano, Enza Di Gregorio, Gelsomina Riccardi, Chiara Furlan, Nicola Cavallini, Francesco Savorani, Anna Di Porzio, Stefano De Tito, Antonio Randazzo, Eliana Gianolio* and Nunzia laccarino*

2425

Trivalent metal ion sensor enabled bioimaging and quantification of vaccine-deposited Al³⁺ in lysosomes

Kavyashree P., Ajmal Roshan Unniram Parambil, Akshay Silswal, Anup Pramanik and Apurba Lal Koner*





 Bioimaging & quantifying vaccine-deposited lysosomal Al³⁺

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, Emma Stephen, 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

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

Editor-in-Chief

Norman Dovichi, University of Notre Dame, USΔ

Associate Editors

Gei

Ios

UK

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

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

Hua-Zhong Yu, Simon Fraser University, Canada

Jun-Jie Zhu, Nanjing University, China

Members Susan Lunte, University of Kansas, USA

Advisory Board

Matthew Baker, University of Central	Robert T Kennedy, University of Michigan,	of Technology Kanpur, India
Lancashire, UK	USA	Howbeer Muhamadali, University of
Paul W Bohn, University of Notre Dame, USA	Kagan Kerman, University of Toronto,	Liverpool, UK
Claudia Conti, CNR, Italy	Canada	Takeaki Ozawa, University of Tokyo, Japan
R Graham Cooks, Purdue University, USA	Christine Kranz, Ulm University, Germany	Ashley Ross, University of Cincinnati, USA
Jeffrey Dick, The University of North	Annamalai Senthil Kumar, Vellore Institute	Muhammad Shiddiky, Griffith University,
Carolina at Chapel Hill, USA	of Technology University, India	Australia
Volker K. Deckert, University of Jena,	Xiujun Li, University of Texas at El Paso, USA	Debbie Silvester, Curtin University, Australia
Germany	Langun Mao, Institute of Chemistry,	Steven A. Soper, University of Kansas, USA
Joshua Edel, Imperial College London, UK	Chinese Academy of Sciences, China	Dana Spence, Michigan State
Qun Fang, Zhejiang University, China	María Marín, University of East Anglia, UK	University, USA
Facundo Fernandez, Georgia Institute of	Pavel Matousek, Rutherford Appleton	Nick Stone, University of Exeter, UK
Technology, USA	Laboratory, UK	Evan Williams, University of California, USA
Roy Goodacre, University of Liverpool, UK	Wei Min, Columbia University, USA	Chaoyong James Yang, Xiamen University,
Duncan Graham, University of Strathclyde,	Boris Mizaikoff, University of Ulm, Germany	China
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 under the Copyright, Designs and Patents Act 1988 and the 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

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)



2438

Wet nitrocellulose membrane for the level 3 feature visualization of various latent fingerprints and gender determination

Lu Tian, Hongyu Chen, Xiangyu Sun, Lu Liu and Meiqin Zhang*



2449

Hapten synthesis and a colloidal gold immunochromatographic strip assay to detect nitrofen and bifenox in fruits

Peng Wang, Xinxin Xu, Lingling Guo, Liqiang Liu, Hua Kuang, Jing Xiao* and Chuanlai Xu*



2459

Self-constrained DNAzyme for aptamer-based and sensitive label-free fluorescent assay of sarafloxacin *via* signal amplification cascades

Qianying Wang, Junyi Zhang, Ruo Yuan and Yun Xiang*



2465

A near-infrared fluorescent probe for *in situ* imaging of SO₂ flux in drug-induced liver injury

Xingwei Li, Huming Yan, Fangjun Huo,* Yongbin Zhang, Le Zhang, Haixian Ren and Caixia Yin*







Fabrication of molecularly-imprinted gold nanoparticle-embedded Fe-MOFs for highly selective SERS detection of 17β-estradiol in milk

Mengmeng Zhang, Zhouya Wu, Yunhan Yang, Jing Ye, Sheng Han* and Yuanting Li*

2482



Sensing platform for nucleic-acid detection based on a 2-aminopurine probe sheared by transcleavage activity of the CRISPR/Cas12a system

Xiaolong Chen, Chaowang Huang, Qiao Hu, Jing Zhang, Dan Wang, Qianyi You and Mingdong Hu*



An activatable nanoprobe based on nanocomposites of visible-light-excitable europium(III) complex-anchored MnO₂ nanosheets for bimodal time-gated luminescence and magnetic resonance imaging of tumor cells

Bo Song,* Huinan Yan, Jiao Jiang, Jin Yu, Shengjun Huang and Jingli Yuan*

2501



All-electrical antibiotic susceptibility and resistance profiling of electrogenic Pseudomonas aeruginosa

Zahra Rafiee and Seokheun Choi*

2511

Electrochemiluminescence imaging of a membrane carcinoembryonic antigen at single tissue sections

Junwei Shi, Dongni Han, Zengyu Feng, Dechen Jiang and Depeng Jiang*



2518

In vivo Raman spectroscopy in the diagnostics of colon cancer

Markéta Fousková,* Jan Vališ, Alla Synytsya, Lucie Habartová, Jaromír Petrtýl, Luboš Petruželka and Vladimír Setnička



2527

Carboxylated mesoporous carbon hollow spheres for the efficient solid-phase microextraction of aromatic amines

Shixiang Chen, Zejun Yu, Wenmin Zhang, Hui Chen, Qingqing Ding, Jinhua Xu, Qidong Yu and Lan Zhang*



2536

Construction of a rapid electrochemical biosensor consisting of a nanozyme/aptamer conjugate for waterborne microcystin detection

Jeong Ah Park, Yein Kwon, Xuan Ai Le, Trung Hieu Vu, Hanbin Park, Hoseok Lee, Hye Kyu Choi, Chulhwan Park, Moon II Kim* and Taek Lee*





Inner filter effect-based near-infrared fluorescent probe for detection of metronidazole on a smartphone-integrated analytical platform

Shaojie Wang, Yongbo Wang,* Yuanna Ning and Qiming Liu

2553



Tunable graphene oxide for the low-fouling electrochemical sensing of uric acid in human serum

Gang Li, Chunying Xu,* Hui Xu, Liju Gan, Kai Sun and Baiqing Yuan*

2564



Nitrogen-doped orange emitting carbon dots for β -carotene detection and lysosomal imaging

Xinlu Li, Tongtong Zhu, Yuwei Du, Haiyang Yan, Ruhong Yan,* Wen-Fei Dong* and Li Li*





CRISPR Cas12a-enabled biosensors coupled with commercial pregnancy test strips for the visible point-of-care testing of SARS-CoV-2

Peijie Shen, Zhenjun Si, Di Huang, Zhipeng Xu,* Ziyi Wang, Mengjun Fang and Zhinan Xu*

2582

Synthesis of a trinuclear zinc(II) cluster composed of [4.4.3.0^{1,5}]tridecane cages: a rapid detection and degradation probe for the chemical warfare agent simulant diethyl cyanophosphonate in protein-rich food products

Sahil Thakur, Jyoti Rohilla, Keshav Kumar, Harender Kumar, Raghubir Singh,* Varinder Kaur,* Raman Kamboj and Ravneet Kaur

2594

Understanding radiation response and cell cycle variation in brain tumour cells using Raman spectroscopy

Iona E. Hill, Marie Boyd, Kirsty Milligan, Cerys A. Jenkins, Annette Sorensen, Andrew Jirasek, Duncan Graham and Karen Faulds*

2609

"Lighting up" fluoride: cellular imaging and zebrafish model interrogations using a simple ESIPT-based mycophenolic acid precursor-based probe

Neha Jain, Prasad M. Sonawane, Haoyan Liu, Arkaprava Roychaudhury, Youngseob Lee, Jongkeol An, Donghyeon Kim, Dongwook Kim, Yunsu Kim, Yeu-Chun Kim, Kyung-Bin Cho, Hee-Sung Park, Cheol-Hee Kim* and David G. Churchill*

2616

Development of a modularized aptamer targeting the nuclear T-cell suppressor PAC1

Zixi Hu, Zhongyu Jiang, Zeliang Yang, Liang Liu, Zhenyu Zhu, Yan Jin and Yuxin Yin*









