

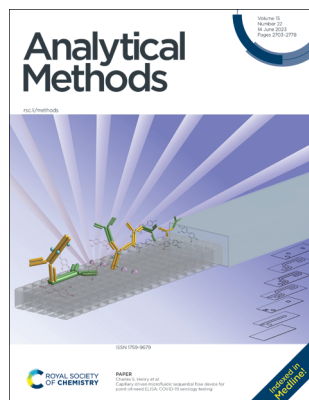
# Analytical Methods

rsc.li/methods

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 1759-9679 CODEN AMNECT 15(22) 2703–2778 (2023)



### Cover

See Charles S. Henry *et al.*, pp. 2721–2728. Image reproduced by permission of Charles S. Henry from *Anal. Methods*, 2023, 15, 2721. Image created by Cody Carrel, Ilhoon Jang, Brian Geiss, Chuck Henry, David Dandy.



### Inside cover

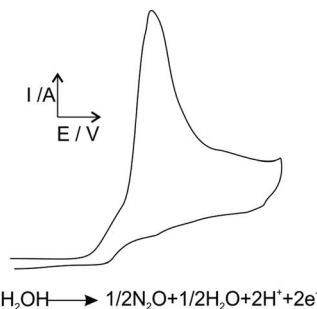
See Jacquelyn R. Jhingree *et al.*, pp. 2729–2735. Image reproduced by permission of Jacquelyn R. Jhingree from *Anal. Methods*, 2023, 15, 2729. Image Copyright Medicago Inc.

## MINIREVIEW

2709

### Electroanalytical overview: the sensing of hydroxylamine

Prashanth S. Adarakatti, Robert D. Crapnell and Craig E. Banks\*

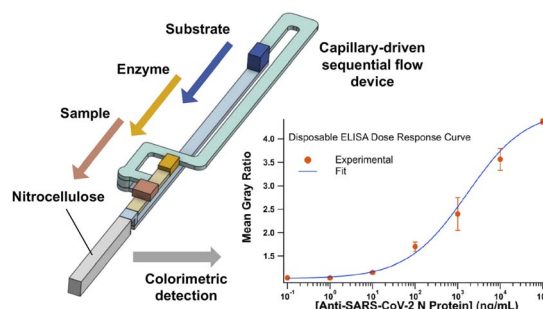


## PAPERS

2721

### Capillary driven microfluidic sequential flow device for point-of-need ELISA: COVID-19 serology testing

Cody Carrell, Ilhoon Jang, Jeremy Link, James S. Terry, Zachary Call, Yosita Panraksa, Orawon Chailapakul, David S. Dandy, Brian J. Geiss and Charles S. Henry\*



## 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 [methods@rsc.org](mailto:methods@rsc.org)

For pre-submission queries please contact  
Philippa Ross, Executive editor.  
E-mail [methods-rsc@rsc.org](mailto:methods-rsc@rsc.org)

Analytical Methods (electronic: ISSN 1759-9679) is published  
48 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](mailto:orders@rsc.org)

2023 Annual (electronic) subscription price: £2416; US\$4255.  
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](http://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](mailto:advertising@rsc.org)

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

# Analytical Methods

[rsc.li/methods](http://rsc.li/methods)

Early applications of new analytical methods with clear societal impact.

## Editorial Board

### Editor-in-Chief

Scott Martin, St. Louis University, USA

Juan García-Reyes, Jaén University, Spain  
Tony Killard, University of the West of  
England, UK

Fiona Regan, Dublin City University, Ireland  
Michael Roper, Florida State University, USA  
Jill Venton, University of Virginia, USA

### Associate Editors

Jonas Bergquist, Uppsala University, Sweden  
Wendell Coltro, Federal University of Goiás,  
Brazil

Zhen Liu, Nanjing University, China  
Chao Lu, Beijing University of Chemical  
Technology, China

## Advisory Board

Jailson de Andrade, Federal University of  
Bahia, Brazil  
Lane Baker, Indiana University, USA  
Craig Banks, The Manchester Metropolitan  
University, UK  
Emanuel Carrilho, University of São Paulo,  
Brazil  
Yi Chen, Chinese Academy of  
Sciences, China  
Christopher Easley, Auburn University, USA

Anthony Gachanja, Jomo Kenyatta University  
of Agriculture and Technology, Kenya  
Amanda Hummon, Ohio State University,  
USA  
Lauro Kubota, Instituto de Química, Brazil  
Ally Lewis, University of York, UK  
Juewen Liu, University of Waterloo, Canada  
Susan Lunte, University of Kansas, USA  
Jim Luong, Dow Chemical Canada ULC,  
Canada

Susheel Mittal, Thapar University, India  
Antonio Molina-Díaz, University of Jaén,  
Spain  
Koji Otsuka, Kyoto University, Japan  
Brett Paull, University of Tasmania, Australia  
Zachary Schultz, Ohio State University, USA  
Guobao Xu, Changchun Institute of Applied  
Chemistry, China

## Information for Authors

Full details on how to submit material for publication in  
Analytical Methods 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/methods](http://rsc.li/methods)

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

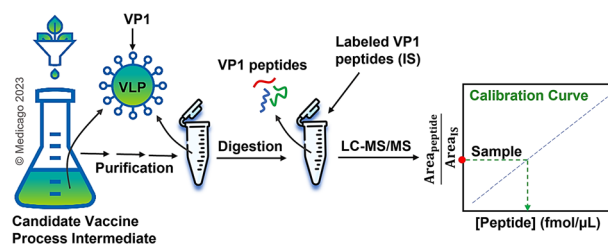


## PAPERS

2729

## An isotope dilution mass spectrometry assay to track Norovirus-like particles in vaccine process intermediates by quantifying capsid protein VP1

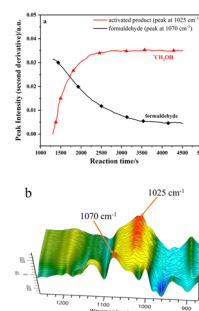
Jacquelyn R. Jhingree,\* Julie Boisvert and Geneviève Mercier



2736

## Application of *in situ* ATR-IR spectroscopy for the synthesis of bisphenol F: optimization, mechanistic and kinetics studies

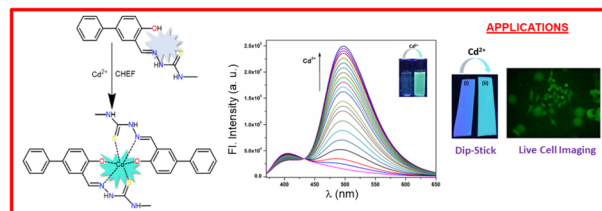
Yun Zhao,\* Xinkai Zhang, Yanxia Chen, Pingyi Zhang and Haifang Mao\*



2745

## A biphenyl thiosemicarbazide based fluorogenic chemosensor for selective recognition of Cd<sup>2+</sup>: application in cell bioimaging

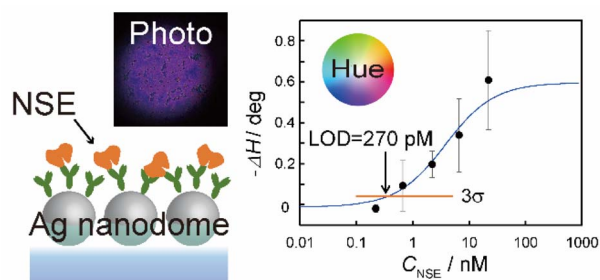
Amitav Biswas, Debarpan Mitra, Rahul Naskar, Atanu Maji, Akash Das, Nabendu Murmu and Tapan Kumar Mondal\*



2755

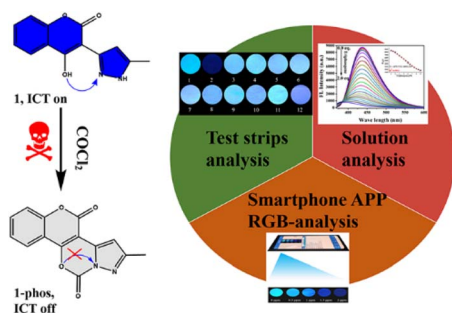
## Direct detection of neuron-specific enolase using a spectrometer-free colorimetric plasmonic biosensor

Mana Toma,\* Shinnosuke Namihara and Kotaro Kajikawa



## PAPERS

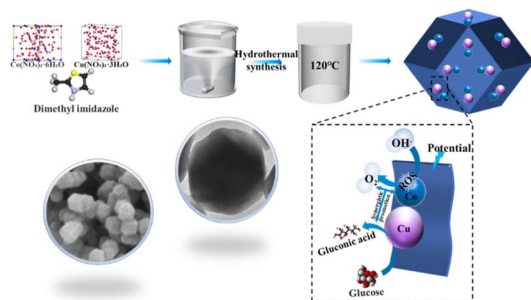
2761



### A coumarin-pyrazole-based probe for the fluorescence detection of phosgene with high selectivity and sensitivity

Qiang Hu, Yu-Fei Song, Wei-Na Wu,\* Xiao-Lei Zhao, Yuan Wang\* and Yun-Chang Fan

2766



### Enhanced electrochemical glucose sensing of Co/Cu-MOF by hydroxyl adsorption induced reactive oxygen species

Zhenlu Zhao,\* Peihan Wang and Shuping Hou

## TECHNICAL NOTE

2773



### Reducing biofouling on optical oxygen sensors; a simple modification enabling sensor cleaning via water splitting

Klaus Koren,\* Fabian Steininger and Christina M. McGraw

