

# 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 149(4) 977-1338 (2024)



**Cover**  
See Fei Feng, Yifei Zhong *et al.*,  
pp. 1074–1080.

Image reproduced by  
permission of Fei Feng and  
Lei Li from *Analyst*,  
2024, **149**, 1074.



**Inside cover**  
See Ata Khalid *et al.*,  
pp. 1081–1089.

Image reproduced by  
permission of Alper Demirhan,  
Iva Chianella,  
Samadhan B Patil, and  
Ata Khalid from *Analyst*,  
2024, **149**, 1081.

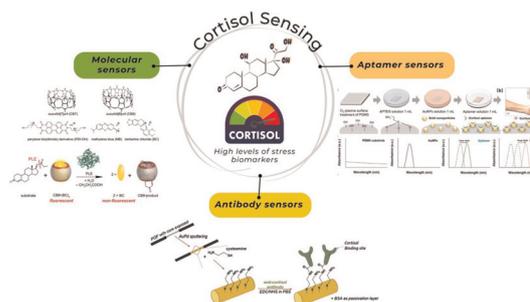
Created with BioRender.com.

## CRITICAL REVIEW

989

### Cortisol sensing by optical sensors

Rossella Santonocito, Roberta Puglisi, Alessia Cavallaro,  
Andrea Pappalardo and Giuseppe Trusso Sfrazzetto\*

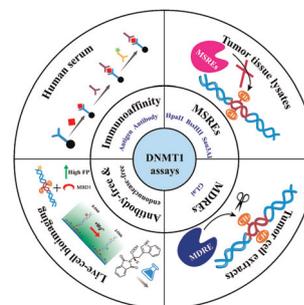


## TUTORIAL REVIEWS

1002

### A review on recent advances in assays for DNMT1: a promising diagnostic biomarker for multiple human cancers

Yang Yu, Wen Fu, Yaxing Xie, Xue Jiang, Hong Wang  
and Xiaolan Yang\*



# Environmental Science journals

One impactful portfolio for  
every exceptional mind

Harnessing the power of interdisciplinary  
science to preserve our environment

[rsc.li/envsci](https://rsc.li/envsci)

Fundamental questions  
Elemental answers

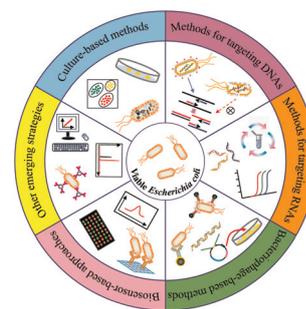


## TUTORIAL REVIEWS

1022

**Progress in methods for the detection of viable *Escherichia coli***

Linlin Zhuang, Jiansen Gong, Ying Zhao, Jianbo Yang, Guofang Liu, Bin Zhao, Chunlei Song, Yu Zhang\* and Qiuping Shen\*

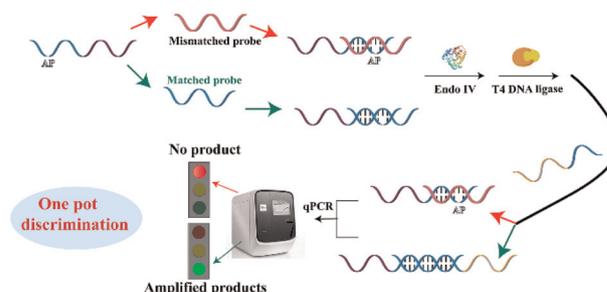


## COMMUNICATIONS

1050

**Endonuclease IV and T4 ligase enhanced detection of mutations in low abundance**

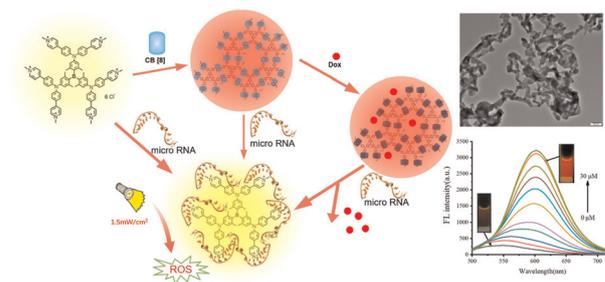
Bo Li and Chunyan Wang\*



1055

**CB[8]- and triarylboron-based supramolecular organic framework for microRNA detection, tumor-targeted drug delivery, and photodynamic therapy**

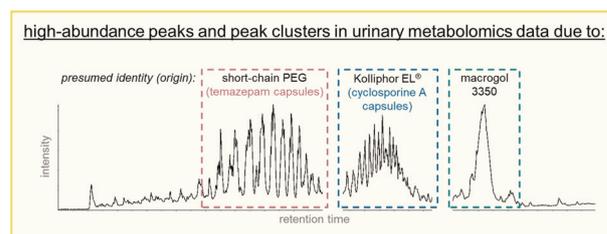
Xufeng Nie, Sijie Yan, Jian He, Yachuan Wang, Guowei Deng, Shilu Zhang,\* Hongyu Chen\* and Jun Liu\*



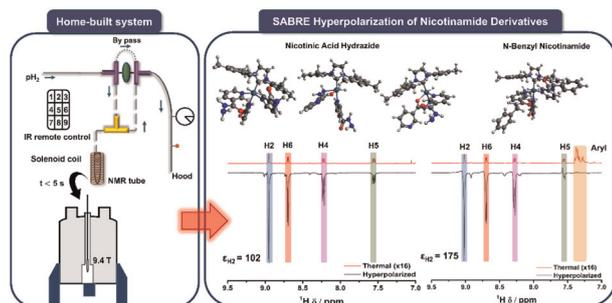
1061

**High-abundance peaks and peak clusters associate with pharmaceutical polymers and excipients in urinary untargeted clinical metabolomics data: exploration of their origin and possible impact on label-free quantification**

Frank Klont,\* Fleur B. Nijdam, Stephan J. L. Bakker, Pekka Keski-Rahkonen, Gérard Hopfgartner and TransplantLines Investigators



1068

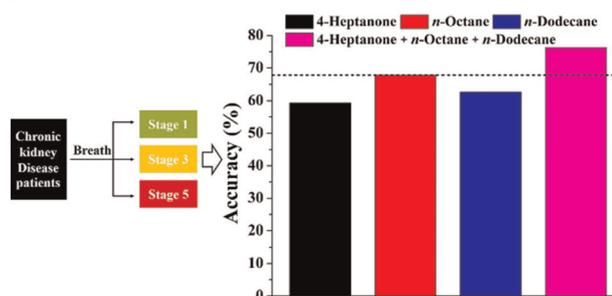


### SABRE hyperpolarization of nicotinamide derivatives and their molecular dynamics properties

Quy Son Luu, Quynh Thi Nguyen, Hung Ngo Manh, Seokki Yun, Jiwon Kim, Uyen Thi Do, Keunhong Jeong,\* Sang Uck Lee\* and Youngbok Lee\*

## PAPERS

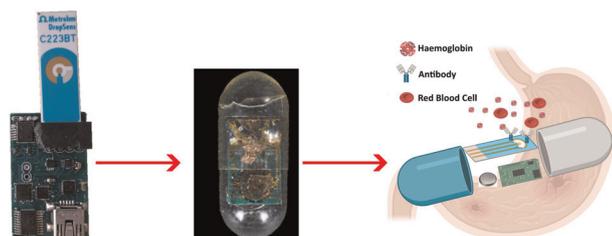
1074



### Breath volatile organic compounds for chronic kidney disease progression monitoring

Lei Li, Jue Wang, Fei Feng,\* Jiayi Yan, Bin Zhao, Xinxin Li and Yifei Zhong\*

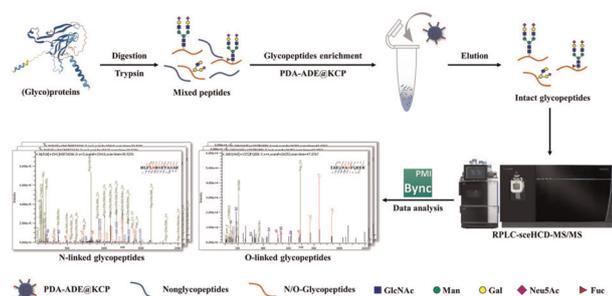
1081



### A low-cost miniature immunosensor for haemoglobin as a device for the future detection of gastrointestinal bleeding

Alper Demirhan, Iva Chianella, Samadhan B. Patil and Ata Khalid\*

1090



### An efficient strategy with a synergistic effect of hydrophilic and electrostatic interactions for simultaneous enrichment of N- and O-glycopeptides

Zhonghan Hu, Wenqing Gao,\* Rong Liu, Jiaqian Yang, Renlu Han, Junhui Li, Jiancheng Yu, Danhua Ma\* and Keqi Tang\*

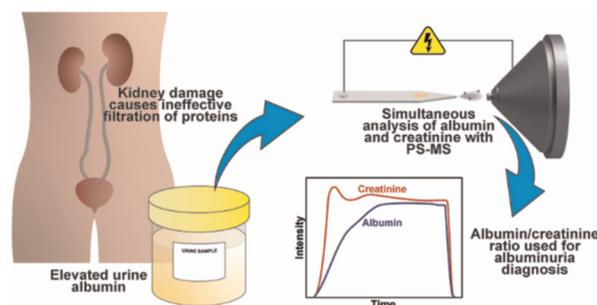


## PAPERS

1102

### Simultaneous quantitation of urinary albumin and creatinine for rapid clinical albuminuria diagnostics using high-throughput paper spray mass spectrometry

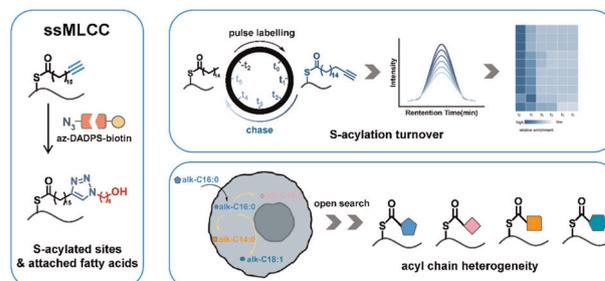
Igor Pereira, Jason L. Robinson and Chris G. Gill\*



1111

### Simultaneous and site-specific profiling of heterogeneity and turnover in protein S-acylation by intact S-acylated peptide analysis with a cleavable bioorthogonal tag

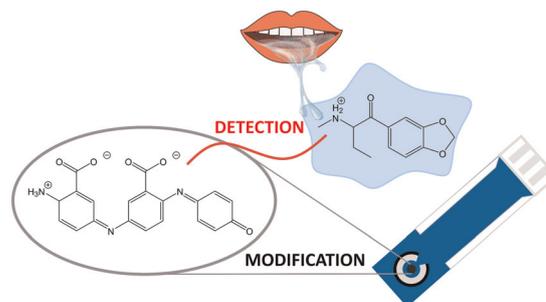
Roujun Wu, Guanghui Ji, Weiyu Chen, Lei Zhang, Caiyun Fang\* and Haojie Lu\*



1121

### Zwitterionic oligomers of 3-aminobenzoic acid on screen-printed electrodes: structure, properties and forensic application

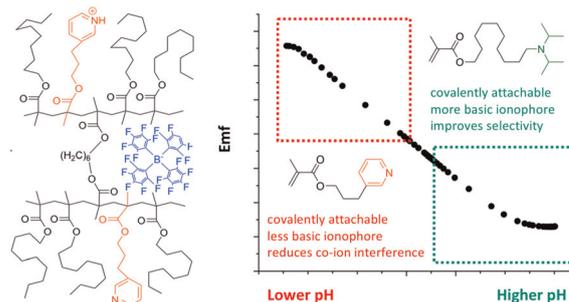
Tatiana V. Shishkanova, Eva Pospíšilová,\* Miroslava Trchová and Gabriela Broncová



1132

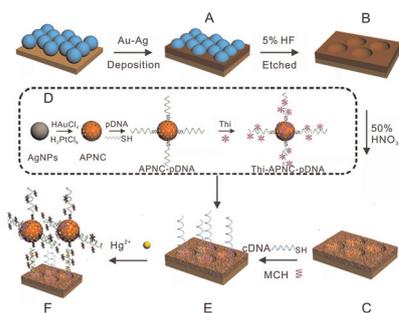
### Covalently attached ionophores extend the working range of potentiometric pH sensors with poly(decyl methacrylate) sensing membranes

Kwangrok R. Choi, Madeline L. Honig and Philippe Bühlmann\*



## PAPERS

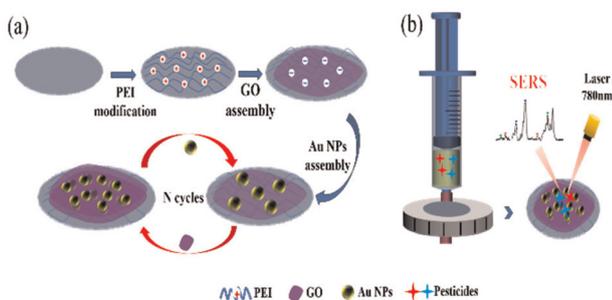
1141



### Unique three-dimensional ordered macroporous dealloyed gold–silver electrochemical sensing platforms for ultrasensitive mercury(II) monitoring

Nan Jiang, Chengzhou Zhang, Lingna Ge, Shan Huang\* and Xiaojun Chen\*

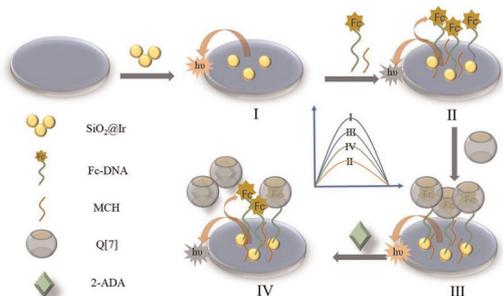
1151



### Constructing graphene oxide/Au nanoparticle cellulose membranes for SERS detection of mixed pesticide residues in edible chrysanthemum

Zhilei Zhao, Mingshuo Cao, Dizhe Wei, Xiangyang Li, Meng Wang\* and Wenlei Zhai\*

1160



### Electrochemiluminescence of an iridium complex doped with SiO<sub>2</sub> nanoparticles to detect 2-adamantanamine based on the host–guest interaction of cucurbit[7]uril

Yahui Zhang, Haifeng Yao and Yongping Dong\*

1169



### Metabolomics-derived biomarkers for biosafety assessment of Gd-based nanoparticle magnetic resonance imaging contrast agents

Chen Xu, Jie Sun, Chenhao Zhang, Lu Yang, Hong Kan, Daguang Zhang, Guan Xue and Kai Dong\*

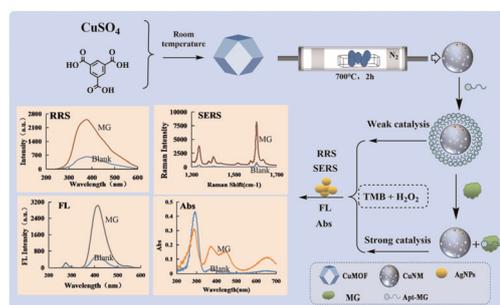


## PAPERS

1179

### A new and highly efficient CuMOF-based nanoenzyme and its application to the aptamer SERS/FL/RRS/Abs quadruple-mode analysis of ultratrace malachite green

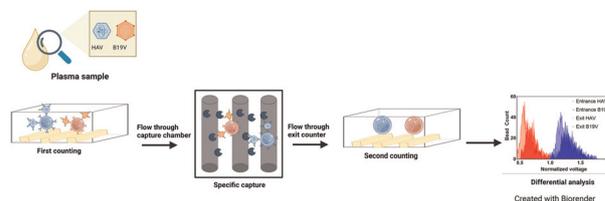
Shuxin Chen, Yue Liu, Zhiyu Qin, Guiqing Wen\* and Zhiliang Jiang\*



1190

### Multiplexed electrical detection of whole viruses from plasma in a microfluidic platform

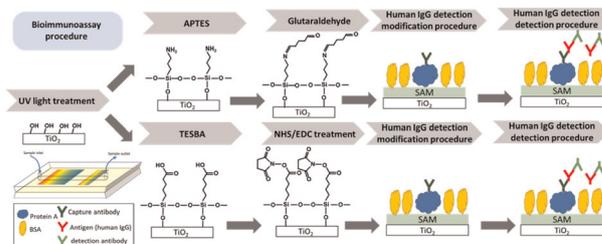
Aaron Jankelow, Chih-Lin Chen, Thomas W. Cowell, Javier Espinosa de los Monteros, Zheng Bian, Victoria Kindratenko, Katherine Koprowski, Sriya Darsi, Hee-Sun Han, Enrique Valera\* and Rashid Bashir\*



1202

### 4-(Triethoxysilyl)butanoic acid as a self-assembled monolayer for surface modification of titanium dioxide

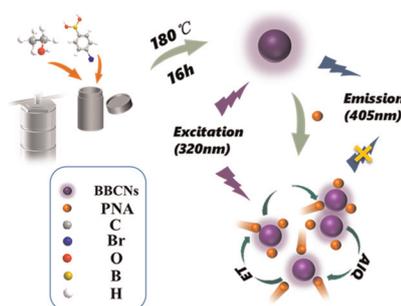
Yu-Hsing Lai, Yan-Chang Lee, Hsun-Yuan Li and Wen-Hsin Hsieh\*



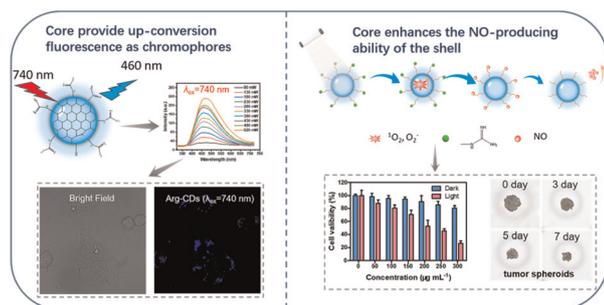
1212

### Selective identification of *p*-nitroaniline by bromine-mediated polarization of carbon dots

Feng Li, Kai-Qi Liu, Wen-Juan Wang,\* Zhen-Tao Jiang, Fen-Ying Kong, Heng-Ye Li, Zhong-Xia Wang\* and Wei Wang\*



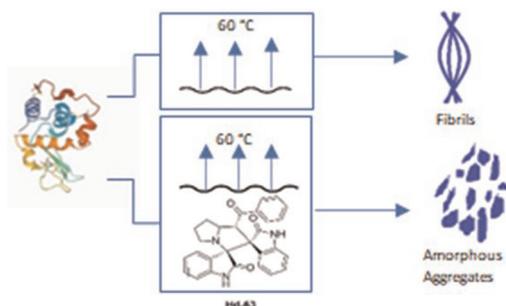
1221



### Core-shell structured carbon dots with up-conversion fluorescence and photo-triggered nitric oxide-releasing properties

Xiaoyan Wu, Meiyang Wang, Feng Yu, Hao Cai, Antonio Claudio Tedesco, Zijian Li and Hong Bi\*

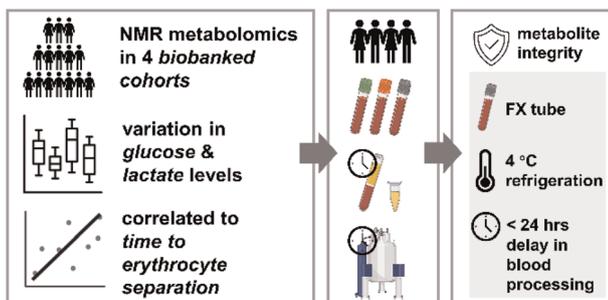
1229



### Characterizing fibril morphological changes by spirooxindoles for neurodegenerative disease application

Anthony Dahdah, Nilamuni H. de Silva, Subashani Maniam and Ewan W. Blanch\*

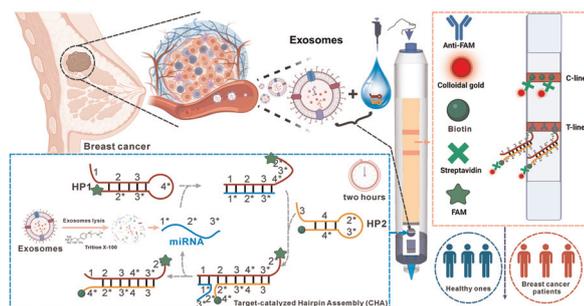
1238



### Sodium fluoride preserves blood metabolite integrity for biomarker discovery in large-scale, multi-site metabolomics investigations

Wenzheng Xiong, Daniel C. Anthony, Suzie Anthony, Thi Bao Tien Ho, Edouard Louis, Jack Satsangi and Daniel E. Radford-Smith\*

1250



### All-in-one detection of breast cancer-derived exosomal miRNA on a pen-based paper chip

Song Guo, Han Xie, Xudong Zhao, Honghao He, Xiaojun Feng, Yiwei Li, Bi-Feng Liu and Peng Chen\*

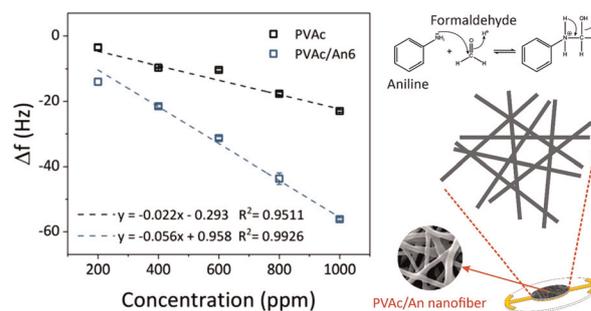


## PAPERS

1262

### Formaldehyde gas sensors based on a quartz crystal microbalance modified with aniline-doped polyvinyl acetate nanofibers

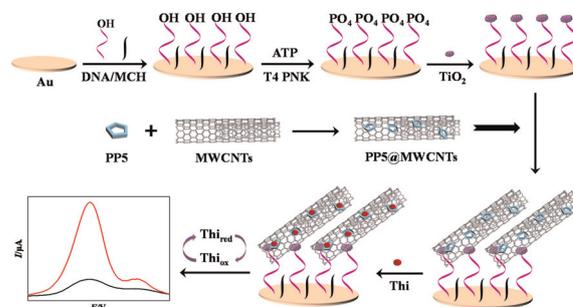
Sintia Ainus Sofa, Roto Roto,\* Rizky Aflaha, Taufik Abdillah Natsir, Nur Aisyah Humairah, Ahmad Kusumaatmaja, Kuwat Triyana and Ruchi Gupta



1271

### An electrochemical biosensor for T4 polynucleotide kinase activity assay based on host-guest recognition between phosphate pillar[5]arene@MWCNTs and thionine

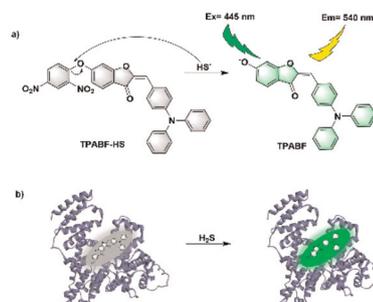
Aiwen Su, Dan Luo, Shixuan Li, Yanli Zhang,\* Hongbin Wang, Lijuan Yang,\* Wenrong Yang and Pengfei Pang\*



1280

### A human serum albumin-binding-based fluorescent probe for monitoring hydrogen sulfide and bioimaging

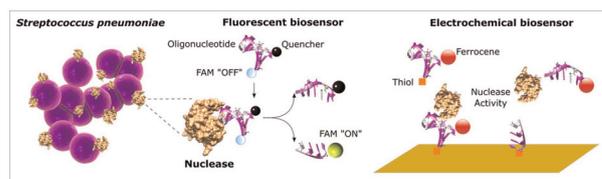
Meng-Ya Guo, Xiao-Jing Liu, Yun-Zhang Li, Bao-Zhong Wang,\* Yu-Shun Yang\* and Hai-Liang Zhu\*



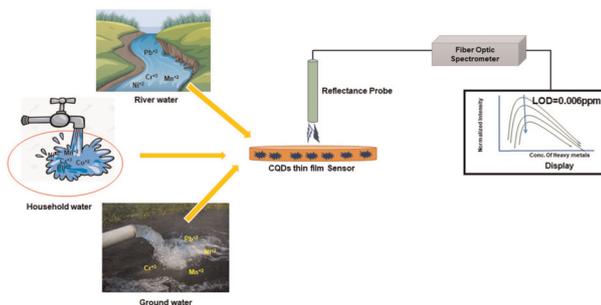
1289

### Fluorescent and electrochemical detection of nuclease activity associated with *Streptococcus pneumoniae* using specific oligonucleotide probes

Garazi Goikoetxea, Khadija-Tul Kubra Akhtar, Alona Prysiazhniuk, Baris A. Borsa, Mehmet Ersoy Aldag, Murat Kavruk, Veli C. Ozalp and Frank J. Hernandez\*



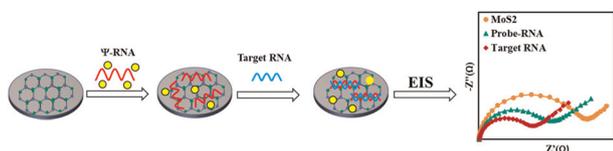
1297



### Chemical sensor thin film-based carbon quantum dots (CQDs) for the detection of heavy metal count in various water matrices

Tanmay Vyas and Abhijeet Joshi\*

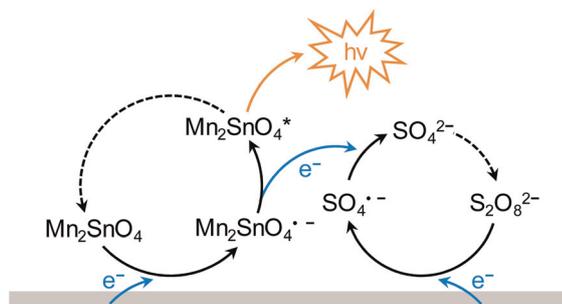
1310



### Pseudouridine-modified RNA probe for label-free electrochemical detection of nucleic acids on 2D MoS<sub>2</sub> nanosheets

Prabhangshu Kumer Das, Omair Adil, Anthony P. DeGregorio, Minako Sumita and Mohtashim Hassan Shamsi\*

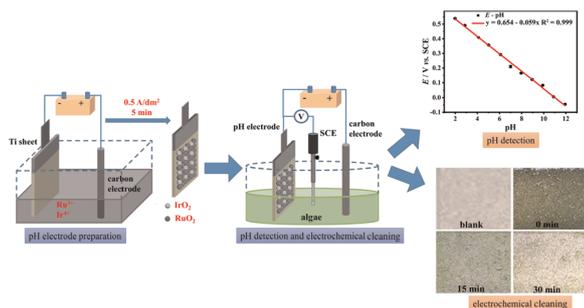
1318



### A simplified molecularly imprinted ECL sensor based on Mn<sub>2</sub>SnO<sub>4</sub> nanocubes for sensitive detection of ribavirin

Kaida Kuang, Ya Li, Yang Chen,\* Yu Ji and Nengqin Jia\*

1327



### An electrochemically cleanable pH electrode based on an electrodeposited iridium oxide–ruthenium oxide–titanium composite

Guangxing Hu, Yongxing Diao, Shuang Cui, Hongda Wang, Yan Shi\* and Zhuang Li\*

