

## IN THIS ISSUE

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### Cover

See Conor L. Evans *et al.*, pp. 1436–1446.

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### Inside cover

See Xue Zou, Qiang Zhou, Chengyin Shen *et al.*, pp. 1447–1454.

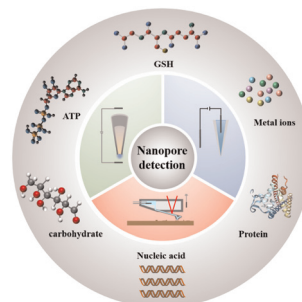
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## CRITICAL REVIEWS

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### Recent advances of nanopore technique in single cell analysis

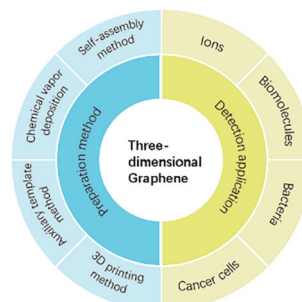
Xue Zhang, Zhuoqun Su,\* Yan Zhao, Di Wu, Yongning Wu and Guoliang Li\*



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### Recent advances in biological molecule detection based on a three-dimensional graphene structure

Shengyan Yin,\* Hanyu Yang, Yuyang Wu, Zhe Wang, Chenhao Yu, Ying Tang\* and Guangbin Wang\*



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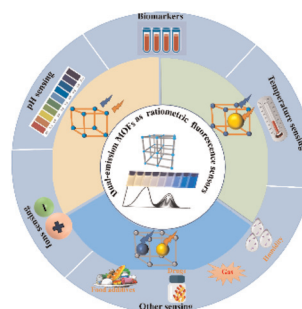
**Fundamental questions  
Elemental answers**

## CRITICAL REVIEWS

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### Design and application of dual-emission metal–organic framework-based ratiometric fluorescence sensors

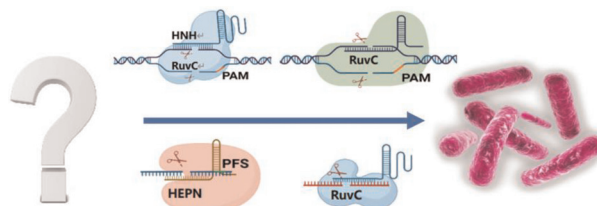
Shuxin Zhang, Jingyu Xiao, Geng Zhong, Tailin Xu\* and Xueji Zhang\*



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### Cas-based bacterial detection: recent advances and perspectives

Huatao Lan, Weitong Shu, Dan Jiang, Luxin Yu\* and Guangxian Xu\*

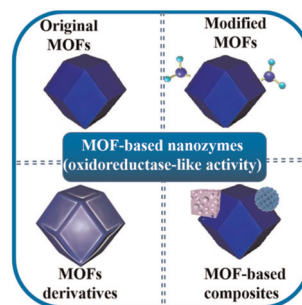


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### Recent progress of metal–organic framework-based nanozymes with oxidoreductase-like activity

Zhongmei Chi,\* Jiali Gu, Hui Li and Qiong Wang

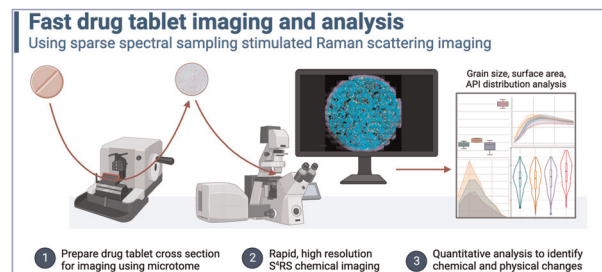


## PAPERS

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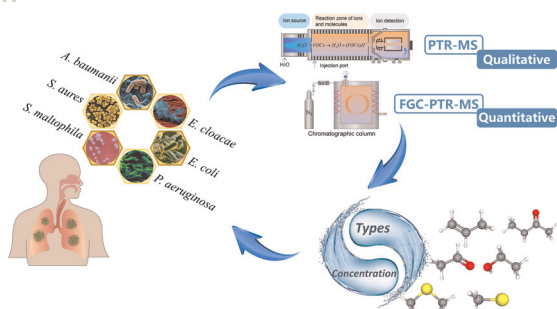
### Quantitative analysis of drug tablet aging by fast hyper-spectral stimulated Raman scattering microscopy

Yuxiao Wei, Isaac J. Pence, Anna Wiatrowski, Julia B. Slade and Conor L. Evans\*



## PAPERS

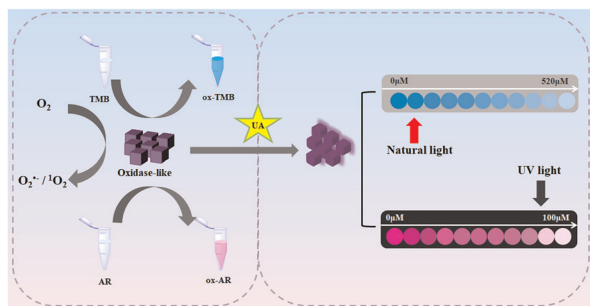
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### Qualitative and quantitative rapid detection of VOCs differentially released by VAP-associated bacteria using PTR-MS and FGC-PTR-MS

Wei Xu, Xue Zou,\* Yueting Ding, Qi Zhang, Yulan Song, Jin Zhang, Min Yang, Zhou Liu, Qiang Zhou,\* Dianlong Ge, Qiangling Zhang, Wencheng Song, Chaoqun Huang, Chengyin Shen\* and Yannan Chu

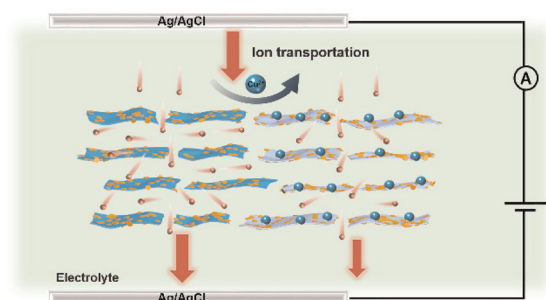
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### Simple enzyme-free detection of uric acid by an *in situ* fluorescence and colorimetric method based on Co-PBA with high oxidase activity

Lu Liu, Guang Liu, Xiaomei Mu,\* Shulin Zhao and Jianniao Tian\*

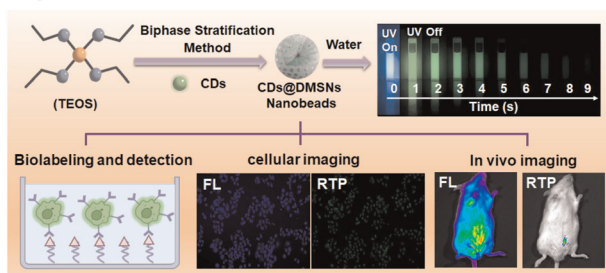
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### Superassembled MXene-carboxymethyl chitosan nanochannels for the highly sensitive recognition and detection of copper ions

Xiaomeng Hu, Shan Zhou, Xin Zhang, Hui Zeng, Yaxin Guo, Yeqing Xu, Qirui Liang, Jinqiang Wang, Lei Jiang and Biao Kong\*

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### Covalently hybridized carbon dots@mesoporous silica nanobeads as a robust and versatile phosphorescent probe for time-resolved biosensing and bioimaging

Zixuan Liao, Yuhui Wang,\* Yu Lu, Ruoxi Zeng, Lin Li, Hao Chen, Qingwei Song, Kaizhe Wang and Jianping Zheng\*



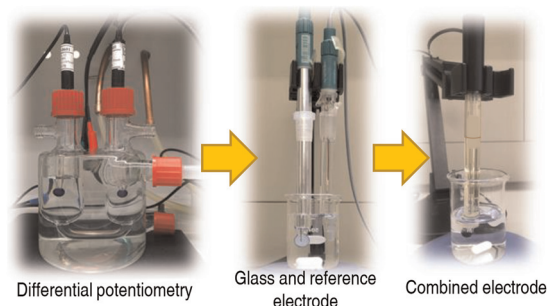


## PAPERS

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**Improved pH measurement of mobile phases in reversed-phase liquid chromatography**

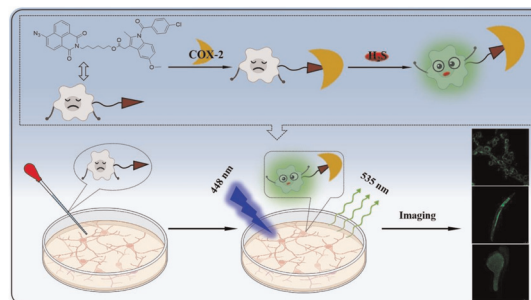
Agnes Heering,\* Markus Lahe, Martin Vilbaste, Jaan Saame, John Paulo Samin and Ivo Leito\*



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**A COX2-targeting cancer-specific fluorescent probe for hydrogen sulfide detection in living cells, *Caenorhabditis elegans*, and zebrafish**

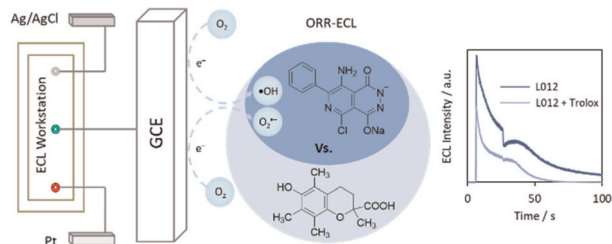
Fengying Yuan, Qiao Zhao, Yanyan Zeng, Xu Fang Liao, Jiali Li, Bo Liu, Jun Feng Kou, Xiaolin Zhong, Xiang Hua Wu,\* Jun Feng Zhang\* and Wen Xiu Ren\*



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**Cathodic electrochemiluminescence of L012 and its application in antioxidant detection**

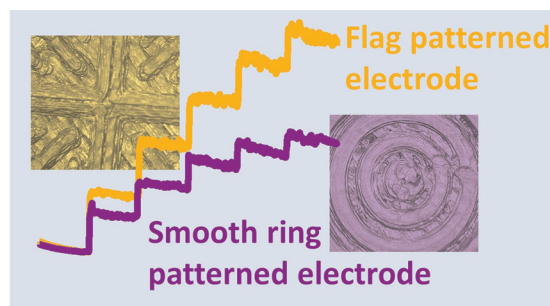
Mingqian Tan, Yafeng Wang, Ziying Hong, Ping Zhou, Jie Jiang and Bin Su\*



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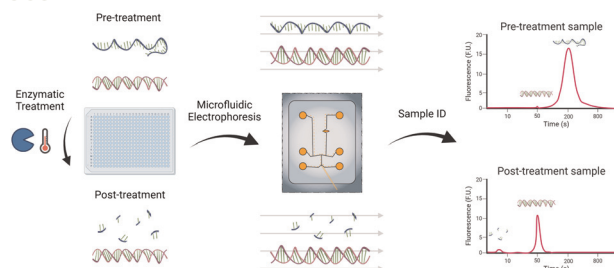
**Evaluating diverse electrode surface patterns of 3D printed carbon thermoplastic electrochemical sensors**

Chloe Miller, Oliver Keattch, Ricoveer S. Shergill and Bhavik Anil Patel\*



## PAPERS

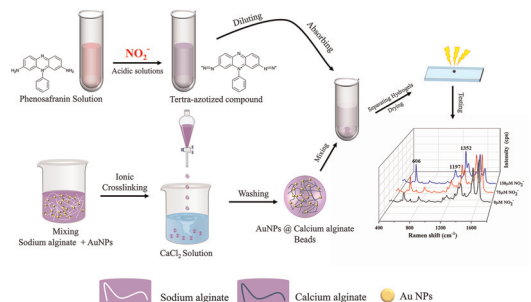
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### Enzymatic isolation and microfluidic electrophoresis analysis of residual dsRNA impurities in mRNA vaccines and therapeutics

Adriana Coll De Peña, Matei Vaduva, Nina S. Li, Shreyas Shah, Menel Ben Frej and Anubhav Tripathi\*

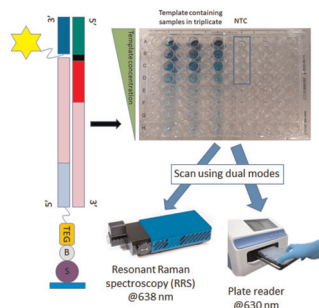
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### A simple and efficient alginate hydrogel combined with surface-enhanced Raman spectroscopy for quantitative analysis of sodium nitrite in meat products

Fengnian Liang, Yiqun Huang, Junjian Miao and Keqiang Lai\*

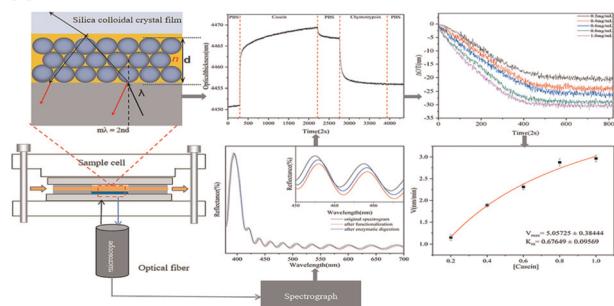
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### Multiplex detection of the big five carbapenemase genes using solid-phase recombinase polymerase amplification

Christopher L. Johnson, Matthew A. Setterfield, Waleed A. Hassanain, Anil Wipat, Matthew Pocock, Karen Faulds, Duncan Graham and Neil Keegan\*

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### Measurement of enzyme activity of insoluble substrates based on ordered porous layer interferometry and the application in evaluation of thrombolytic drugs

Qianqian Su,\* Yu Sun, Yanhua Tang, Na Ni and Nian Ding

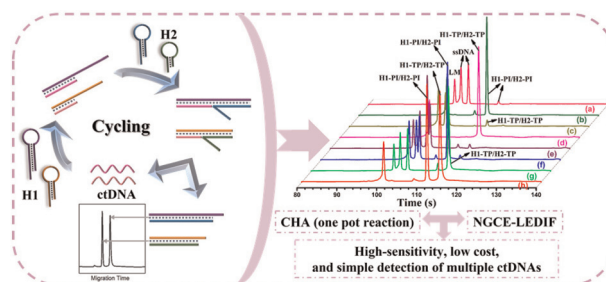


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# A novel label-free capillary electrophoresis LED-induced fluorescence platform based on catalytic hairpin assembly for sensitive detection of multiple circulating tumor DNA

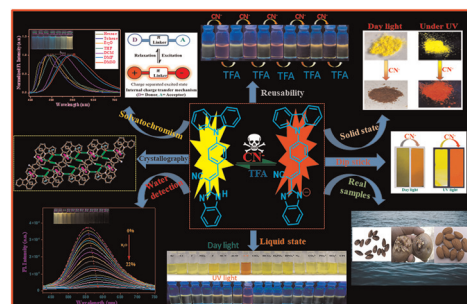
Yanyan Sun, Si He, Yufei Peng, Min Liu and Danke Xu\*



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# Efficient solid- and solution-state emissive reusable solvatochromic fluorophores for colorimetric and fluorometric detection of $\text{CN}^-$

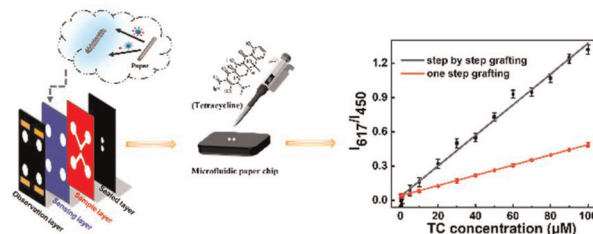
Atanu Maji, Krishnendu Aich, Amitav Biswas, Saswati Gharami, Biswajit Bera and Tapan K. Mondal\*



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# A paper-based ratiometric fluorescence sensor based on carbon dots modified with $\text{Eu}^{3+}$ for the selective detection of tetracycline in seafood aquaculture water

Jialu Zhang, Yuanyuan Chen, Ji Qi,\* Qinglan Miao, Dongmei Deng,\* Haibo He, Xiaoxia Yan and Liqiang Luo\*

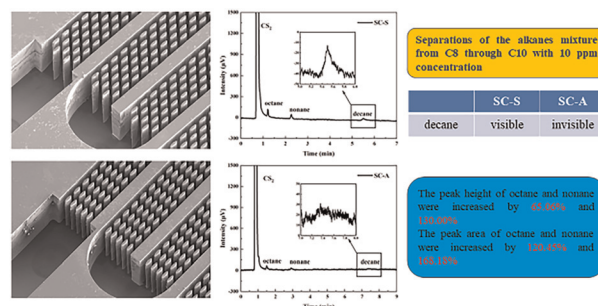


A novel paper-based ratiometric fluorescence sensor is constructed for tetracycline determination using CDs-Eu.

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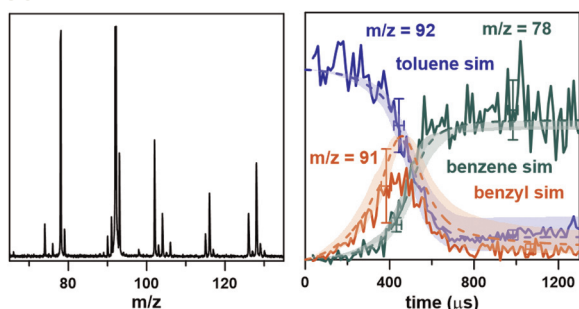
# A semi-packed gas chromatographic column with staggered elliptic cylindrical post arrays

Boxin Chen, Yuchen Zhu, Shaojie Ma, Bin Zhao and Fei Feng\*



## PAPERS

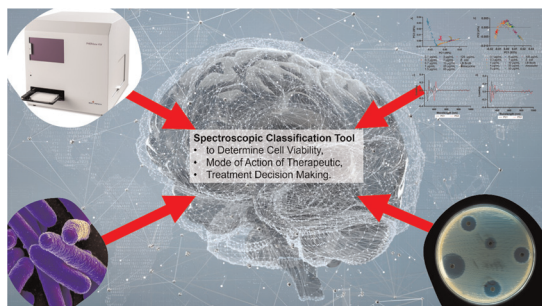
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### External standard calibration method for high-repetition-rate shock tube kinetic studies with synchrotron-based time-of-flight mass spectrometry

Fabian E. Cano Ardila, Sharath Nagaraju, Robert S. Tranter, Gustavo A. Garcia, Anthony Desclaux, Anthony Roque Ccacya, Nabiha Chaumeix and Andrea Comandini\*

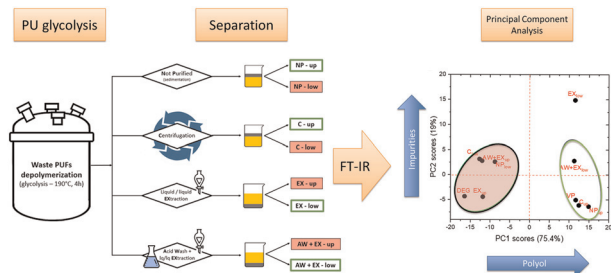
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### Rapid screening of bacteriostatic and bactericidal antimicrobial agents against *Escherichia coli* by combining machine learning (artificial intelligence) and UV-VIS spectroscopy

R. Orrell-Trigg, M. Awad, S. Gangadoo, S. Cheeseman, Z. L. Shaw, V. K. Truong, D. Cozzolino and J. Chapman\*

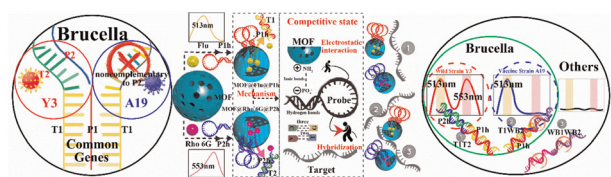
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### Toward chemical recycling of PU foams: study of the main purification options

Eleonora Conterosito,\* Marco Monti, Maria Teresa Scrivani, Irene Kociolek, Ilaria Poncini, Chiara Ivaldi, Michele Laus and Valentina Gianotti

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### Gated nanoprobe utilizing metal–organic frameworks for identifying and distinguishing between the wild strains and the vaccine strains of brucella

Dong Li, Shuna Ren, Xiaotong Wang, Lili Chen, Shuang You, Yan Tang\* and Lihua Chen\*



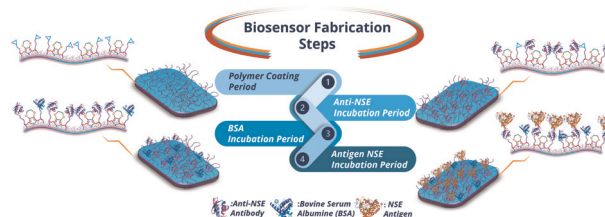


## PAPERS

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# Ultrasensitive detection of NSE employing a novel electrochemical immunosensor based on a conjugated copolymer

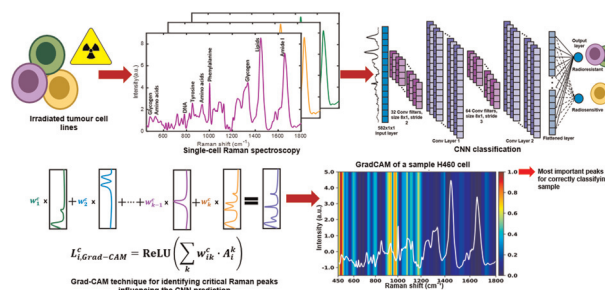
Muhammet Aydın,\* Elif Burcu Aydın and Mustafa Kemal Sezgintürk



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# Stratification of tumour cell radiation response and metabolic signatures visualization with Raman spectroscopy and explainable convolutional neural network

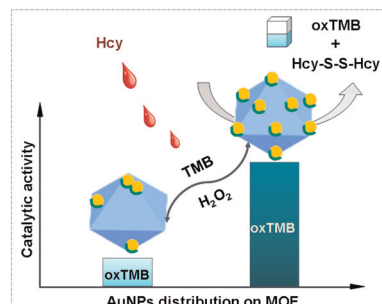
Alejandra M. Fuentes, Kirsty Milligan, Mitchell Wiebe, Apurva Narayan, Julian J. Lum, Alexandre G. Brolo, Jeffrey L. Andrews and Andrew Jirasek\*



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# MOF–polymer composites with well-distributed gold nanoparticles for visual monitoring of homocysteine

Yutong Liu, Cheng Cheng, Zhenwen Zhao, Wei Liu and Li Qi\*



## CORRECTION

1665

# Correction: Smartphone-read phage lateral flow assay for point-of-care detection of infection

Maede Chabi, Binh Vu, Kristen Brosamer, Maxwell Smith, Dimple Chavan, Jacinta C. Conrad,\* Richard C. Willson\* and Katerina Kourentzi\*

