

# Journal of Materials Chemistry B

Materials for biology and medicine

[rsc.li/materials-b](https://rsc.li/materials-b)

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 2050-750X CODEN JMCBDV 12(8) 1939–2208 (2024)



### Cover

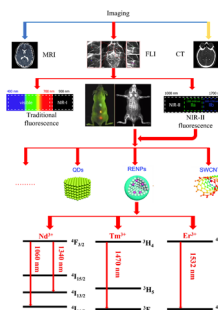
Image credit to Laguna  
Design/Science Photo  
Library via Getty Images

## REVIEWS

1947

### Preparation of rare earth-doped nano-fluorescent materials in the second near-infrared region and their application in biological imaging

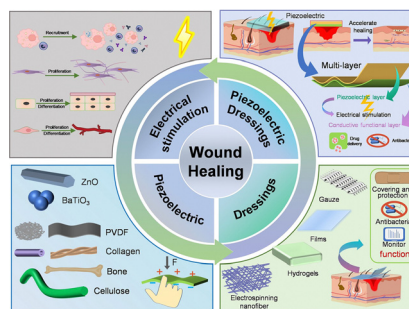
Hetong Zhu, Xin Ding, Chang Wang, Mengyu Cao, Bing Yu,\* Hailin Cong\* and Youqing Shen



1973

### Piezoelectric dressings for advanced wound healing

Jinjun Dai, Jin Shao, Yi Zhang, Ruiyue Hang, Xiaohong Yao,\* Long Bai\* and Ruiqiang Hang\*



# RSC Applied Interfaces

GOLD  
OPEN  
ACCESS

## Interfacial and surface research with an applied focus

### Interdisciplinary and open access



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

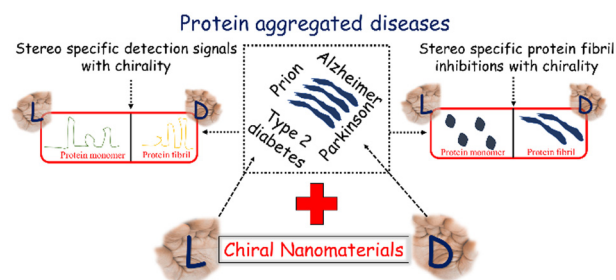
**Fundamental questions  
Elemental answers**

## REVIEWS

1991

## Chiral nanomaterial-based approaches for diagnosis and treatment of protein-aggregated neurodegenerative diseases: current status and future opportunities

Pranav,\* Abhishek Bajpai, Prabhat K. Dwivedi and Sri Sivakumar\*

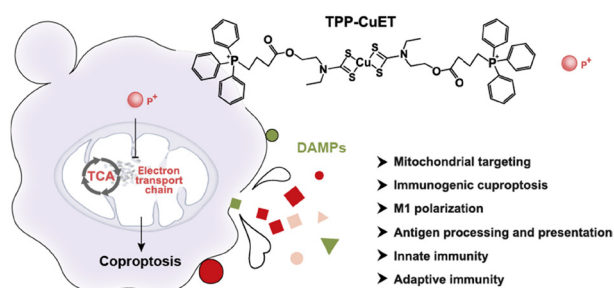


## COMMUNICATION

2006

## A mitochondria-targeted anticancer copper dithiocarbamate amplifies immunogenic cuproptosis and macrophage polarization

Yao Lu, Xi Fan, Qingqing Pan,\* Bin He\* and Yuji Pu\*

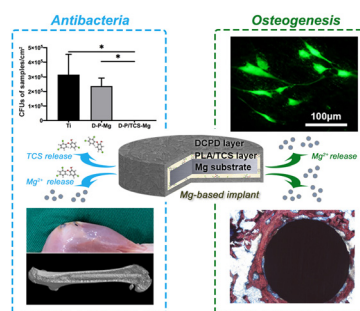


## PAPERS

2015

## Mg-based implants with a sandwiched composite coating simultaneously facilitate antibacterial and osteogenic properties

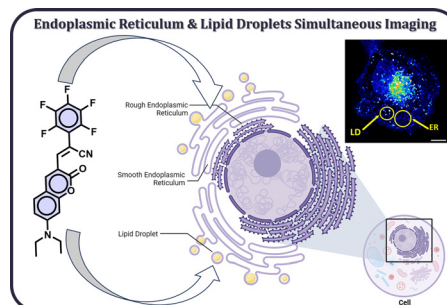
Han Wu, Mengjiao Yu, Shutao Zhang, Mingyu You, Ao Xiong, Boxuan Feng, Jialin Niu, Guangyin Yuan,\* Bing Yue\* and Jia Pei\*



2028

## A two-in-one probe: imaging lipid droplets and endoplasmic reticulum in tandem

Shabnam Mansuri, Paramasivam Mahalingavelar, Virupakshi Soppina\* and Sriram Kanvah\*





**ZIF-8@CAH/PLANF**

- $\text{Zn}^{2+}$  Live bacteria
- ROS Dead bacteria

ECM-like structure

$\text{Zn}^{2+}$ /ROS antibacterial effect

Reinforced mechanical property

Wound exudate management

**Wound healing**

Hongju Cheng, Md All Amin Newton, Mia Rajib,  
Qinchen Zhang, Weihong Gao, Zan Lu,  
Yuansheng Zheng, Zijian Dai\* and Jie Zhu\*

The diagram illustrates the synthesis and application of Ag@BOMs. The synthesis process starts with the Self Assembly of BOMs (Blue Organic Monomers), followed by reaction with ClCH<sub>2</sub>COOH/NaOH to form UMOPs (Unimolecular Organic Polymers). This is followed by reaction with AgNO<sub>3</sub>/NaOH to form UMOPs-COOH, and finally Ag@BOMs (Silver-coated Blue Organic Monomers). The application of Ag@BOMs is shown on a bacteria surface, where they accumulate and cause various effects: Membrane damage, DNA damage, Enzyme inactivation, mRNA inhibition, and Cytoplasmic leakage. The bacteria are shown in a state of 'Live bacteria' and 'Dead bacteria'.

Yu Zhang,\* Yunxin Tang, Qian Liao, Yiduo Qian,  
Linglin Zhu, Deng-Guang Yu, Yixin Xu, Xiuhong Lu,  
Il Kim\* and Wenliang Song\*

**Inflammation phase**

**Wound microenvironment self-adaptation**

**Wound healing**

● M1 macrophages    ★ ROS↓  
● M2 macrophages    ★ ROS↑

I shape self-adaption  
II glucose responsive drug release  
III complex diabetic microenvironment self-adaption

● Metformin  
● L-arginine  
● L(+)-ascorbic acid

IL-1β↓    ROS↓    Angiogenesis↑

Jingjing Li, Xin Gao, Shaochun Li, Xinyu Zhang,  
Jiamin Guo, Bei Wang, Yi Jin, Jinchao Zhang,  
Xinjian Yang\* and Enjun Wang\*

**Characterization**

*Lingua Anatina*  
(natural Nanopillar)

**Nonstructured Coatings**

Ionized Jet Deposition

**Submicrometric, biometric films**  
Thickness 650 nm

**Antibacterial activity is demonstrated for the first time**

**Stability > 21 days**

**% Inhibition**  
*Escherichia coli*: 88.83%  
*Staphylococcus aureus*: 99%

**Growth Curves:**

- E. coli*: MIC = 40-100 mg/ml
- S. aureus*: MIC = 20-40 mg/ml

**Antibacterial Activity Data:**

Coating	Log CFU	CFU	Log CFU	CFU
Control	6.8	321	1.1	1.2
Target	0.6	0.3	0.5	1.7

**Stability Data:**

Coating	Log CFU	CFU	Log CFU	CFU
Control	6.3	10.0	3.1	10.0
Control	6.3	10.0	3.1	10.0

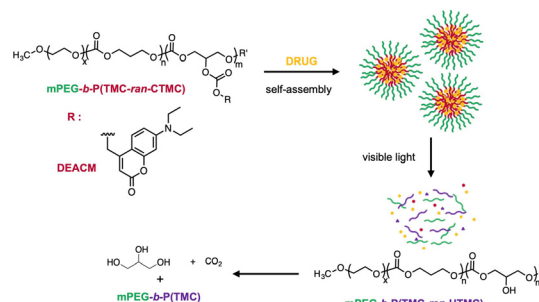
Gabriela Graziani,\* Daniele Ghezzi,\* Fabio Nudelman,  
Enrico Sassoni,\* Fraser Laidlaw, Martina Cappelletti,  
Marco Boi, Giorgia Borciani, Silvia Milita, Michele Bianchi,  
Nicola Baldini\* and Giuseppe Falini\*

## PAPERS

2099

## Visible light degradable micelles for intraocular corticosteroid delivery

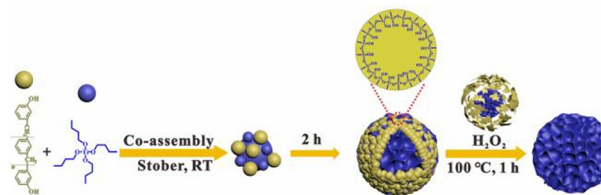
Ronghui Qi, Emily Mundy and Brian G. Amsden\*



2114

Controllable synthesis of flower-like hierarchical porous TiO<sub>2</sub> at room temperature and its affinity application

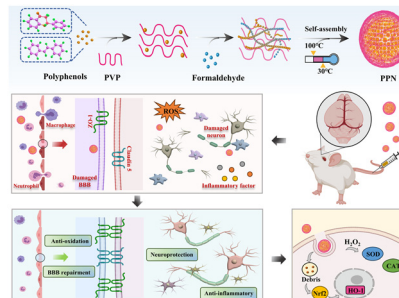
Jinhua Xu, Wenmin Zhang, Hui Chen, Qingqing Ding, Shiye Xie and Lan Zhang\*



2123

## Polyphenolic oligomer-derived multienzyme activity for the treatment of ischemic Stroke through ROS scavenging and blood–brain barrier restoration

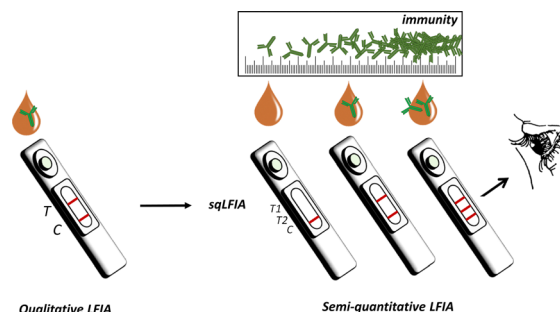
Wei Meng, Zhifang Ma,\* Hongbo Ye, Lei Liu, Qiaoyi Han and Qiang Shi\*



2139

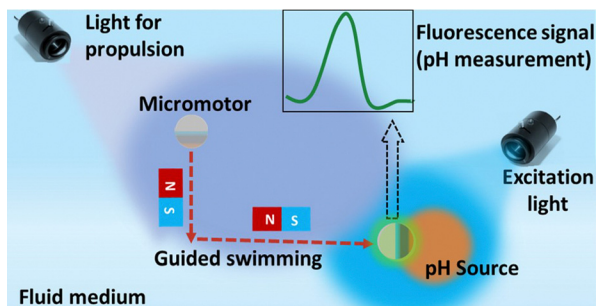
## A semi-quantitative visual lateral flow immunoassay for SARS-CoV-2 antibody detection for the follow-up of immune response to vaccination or recovery

Simone Cavallera, Fabio Di Nardo,\* Thea Serra, Valentina Testa, Claudio Baggiani, Sergio Rosati, Barbara Colitti, Ludovica Brienza, Irene Colasanto, Chiara Nogarol, Domenico Cosseddu, Cristina Guiotto and Laura Anfossi



## PAPERS

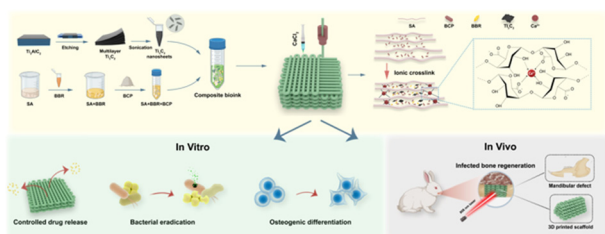
2150



### Light-driven micromotors for on-demand and local pH sensing applications

Srikanta Debata, Shivani Sahu, Suvendu Kumar Panda and Dhruv Pratap Singh\*

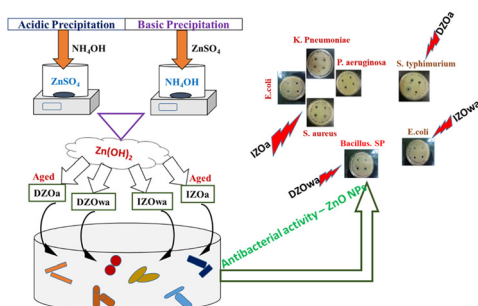
2158



### Study on 3D printed MXene-berberine-integrated scaffold for photo-activated antibacterial activity and bone regeneration

Yi Tan, Huan Sun, Yuanchen Lan, Haider Mohammed Khan, Hui Zhang, Linli Zhang, Fengying Zhang, Yujia Cui, Lan Zhang, Dingming Huang, Xinmei Chen, Changchun Zhou, Jianxun Sun\* and Xuedong Zhou

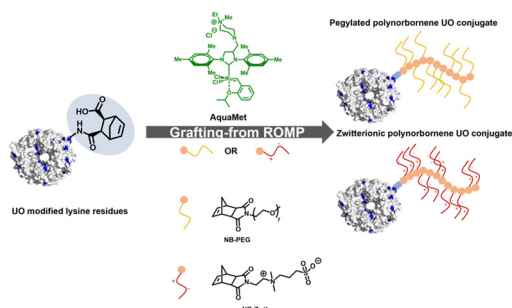
2180



### Investigating the effect of acidic and basic precipitation on the antibacterial activity of ZnO nanoparticles against Gram-negative and Gram-positive bacteria

Sreekanth R.,\* S. Naveen Kumar, Madhusudhan Reddy M., Jayadev Pattar and Damodar Reddy B. V.

2197



### Study of uricase-polynorbornene conjugates derived from grafting-from ring-opening metathesis polymerization

Elizabathe Davis, Adam A. Caparco, Elizabeth Jones, Nicole F. Steinmetz and Jonathan K. Pokorski\*

