

# Sensors & Diagnostics

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## IN THIS ISSUE

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### Cover

See Prakash Seenu and Sathiyarayanan Kulathu Iyer, pp. 973–983.

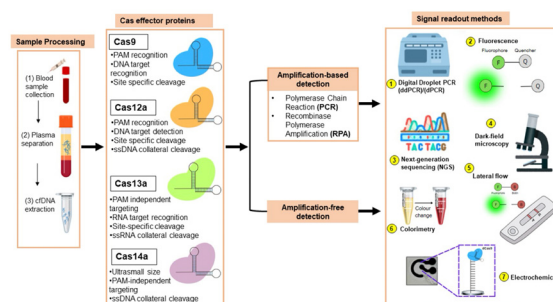
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## CRITICAL REVIEW

925

### CRISPR-based diagnostics for circulating cell-free DNA: a paradigm shift in precision oncology

Sakshi Seth\* and K. Sudhakara Prasad\*

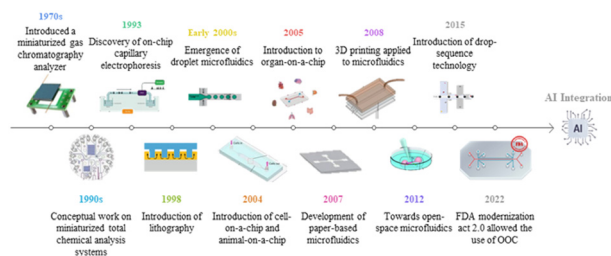


## TUTORIAL REVIEW

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### Lab on chip for medical and clinical applications

Bhagyashree Gupte, Umesh Jadhav, Suresh Gosavi\* and Shweta Jagtap\*



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## Towards electrochemical sensing of gemcitabine release from hybrid nanoparticles in pancreatic cancer cells

**Heat Trigger Release**

**ECL off / Drug Attached**

**ECL on / Drug Released**

The diagram illustrates a heat-triggered drug release mechanism. On the left, a quantum dot (black circle) is attached to a polymer chain (blue and red) that is bound to a drug molecule (green). Upon heating (indicated by a red lightning bolt), the drug molecule is released, and the polymer chain is cleaved, resulting in a quantum dot with a red shell and a free polymer chain. Below the schematic are two plots: the left plot shows ECL intensity (A.U.) vs. ECL A210 (V) with a flat baseline, and the right plot shows ECL intensity (A.U.) vs. ECL A210 (V) with a sharp peak.

## PAPERS

## An imidazole-based fluorescent sensor for selective detection of Cu<sup>2+</sup> and BF<sub>3</sub> with environmental applications

[illegible]

# Surface-modified titanium carbide MXene as an effective platform for the immobilization of toluidine blue and H<sub>2</sub>O<sub>2</sub> biomarker detection in biological samples

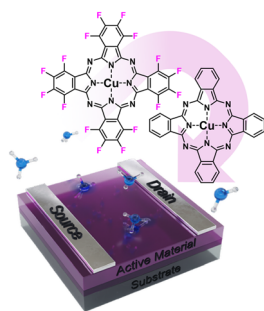
The schematic diagram illustrates the TB/Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>/GCE electrode setup for H<sub>2</sub>O<sub>2</sub> detection. The electrode, consisting of a glassy carbon electrode (GCE) modified with a layer of thionin blue (TB) and Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>, is immersed in a pH 7.0 buffer solution. The chemical structure of TB is shown as a quinonoid dicationic dye. The Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> structure is depicted as a layered material with surface functional groups. The electrode is connected to a potentiostat, and the cyclic voltammogram (CV) is shown, indicating the redox reaction of TB. The inset shows the detection of H<sub>2</sub>O<sub>2</sub> in a milk sample, with a color change from blue to colorless and a corresponding decrease in the anodic peak current.

## Use of cobalt(II) and chromium(III) metal-based Schiff base complexes for the preparation of potentiometric sensors to determine bromide at ultra-low concentrations

The diagram illustrates a potentiometric sensor for cyanide detection. A hand holds a digital voltmeter displaying 100.0 mV. Two electrodes are shown: a yellow reference electrode and a blue sensing electrode. The sensing electrode is immersed in a solution containing various ions:  $\text{Br}^-$ ,  $\text{CN}^-$ ,  $\text{NO}_3^-$ , and  $\text{Cl}^-$ . A green arrow points from the sensing electrode towards the  $\text{CN}^-$  ions, indicating selectivity. Three callout boxes highlight the sensor's characteristics:

- High Sensitivity**: Near-Nernstian potentiometric slopes 59.2 mV decade<sup>-1</sup>
- Wide Linear Range**:  $1 \times 10^{-2}$  to  $8.7 \times 10^{-7}$  mol L<sup>-1</sup>
- Low Detection Limit**:  $6.5 \times 10^{-7}$  mol L<sup>-1</sup>

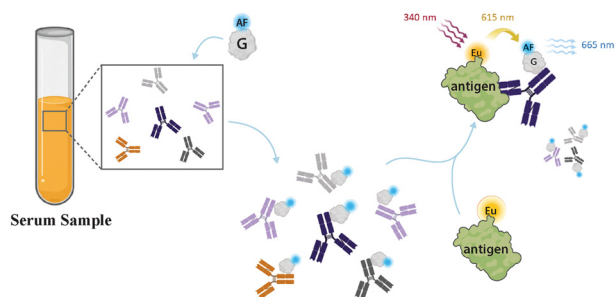
1006



### Gate voltage effect on fluorinated and non-fluorinated copper phthalocyanine OTFT-based ammonia sensors

Sofia Gallardo-Pascual, Benjamin King, Sujithkumar Ganesh Moorthy and Benoît H. Lessard\*

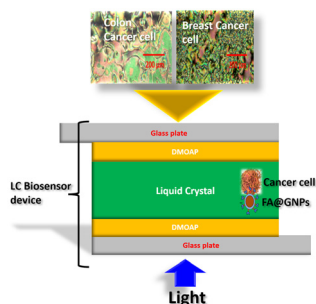
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### Development of a broadly adaptable TR-FRET serological assay for sensitive and specific detection of infectious disease antibodies in human sera

Walaa A. Bedewy, Claudia C. dos Santos, Marc J. Adler, Guennadi Saiko and Dustin J. Little\*

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### Liquid crystal-based optical platform for the detection of colon and breast cancer cell lines using folic acid-conjugated gold nanoparticles

Anupama Kadam, Rajendra Patil, Sneha Mahalunkar, Muthupandian Ashokkumar, Ratna Chauhan\* and Suresh Gosavi\*

