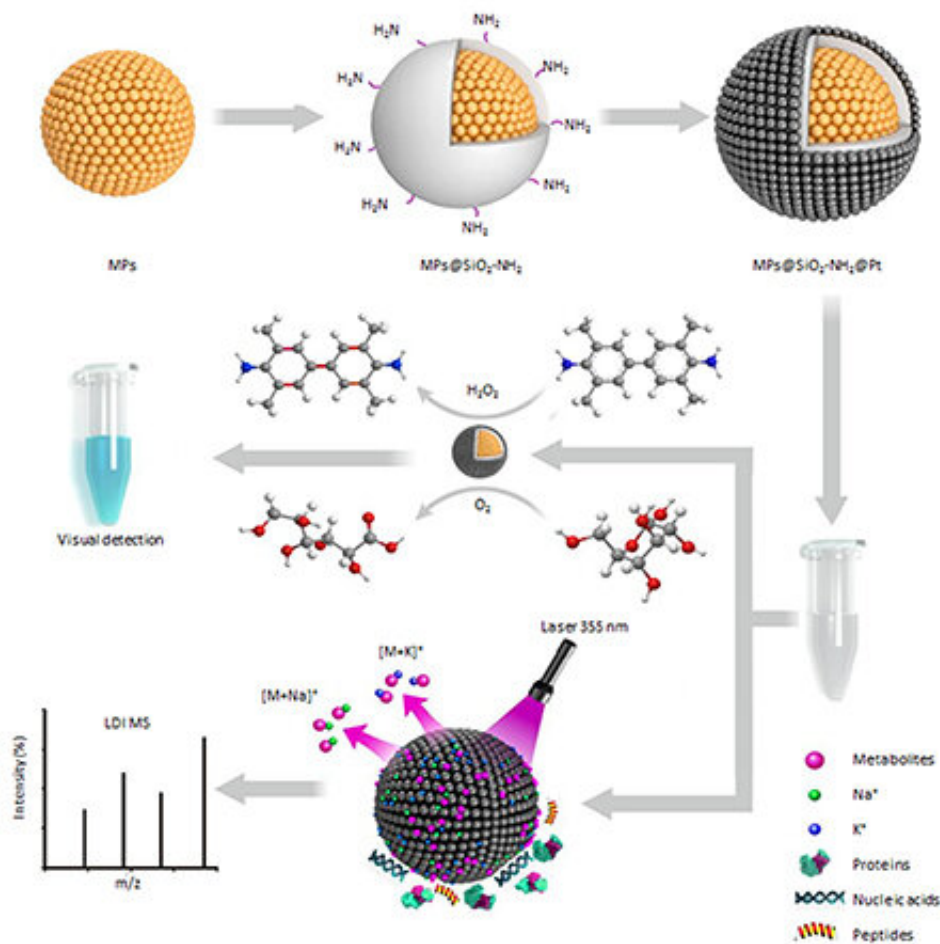


Scientists improve pancreatic cancer diagnosis with multifunctional platinum nanoreactor

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A schematic workflow of the multifunctional Pt platform. Credit: Huang Lin

Metabolic analysis involves ongoing biological pathways and can be more distal than proteomic/genomic approaches to in vitro diagnostics (IVD). However, point-of-care (POC) metabolic analysis needs special designed materials to detect target biomarkers of low concentration in complex biosystems.

Scientists from Shanghai Jiao Tong University, University of Surrey and the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences (CAS) have developed a multifunctional platinum (Pt) nanoreactor geared towards POC metabolic analysis that performs visual detection and [mass spectrometry](#) (MS) fingerprinting simultaneously. Their findings were published in *Matter* on October 2.

The Pt nanoreactor was designed with a controlled core-shell structure and morphology for the visual detection of metabolic biomarkers and direct laser desorption/ionization MS fingerprinting of the native serum. The molecular mechanism of efficient catalytic processes only takes 5 min for visual quantitation of metabolic biomarkers was also investigated. In particular, the platform enabled biopsy-free diagnosis of pancreatic cancer patients with a sensitivity of 84 percent and specificity of 92 percent.

The scientists further identified a potential panel of five biomarkers, which may shed light on progression monitoring in response to therapy.

"It is a minimally invasive, high throughput and fast platform, improving accessibility to disease diagnosis," said Prof. QIAN Kun.

"This development of on-site and on-time diagnostics based on these nanoreactors may enhance the performance of POC devices geared towards personalized medicine and diverse diseases in the near future," Prof. LIU Jian added.

Provided by Chinese Academy of Sciences

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