

## Surface Plasmon Resonance Based Sensors Springer Series On Chemical Sensors And Biosensors

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### Surface Plasmon Resonance Based Sensors

Over the last two decades, surface plasmon resonance (SPR) sensors have attracted a great deal of attention. This volume of Springer Series on Chemical Sensors and Biosensors provides a comprehensive treatment of the field of SPR sensors. The book is divided into three parts. Part I introduces readers to the fundamental principles of surface plasmon resonance (bio)sensors and covers the electromagnetic theory of surface plasmons, the theory of SPR sensors and molecular interactions at sensor ...

### Surface Plasmon Resonance Based Sensors | SpringerLink

Surface plasmon resonance is the resonant oscillation of conduction electrons at the interface between negative and positive permittivity material stimulated by incident light. SPR is the basis of many standard tools for measuring adsorption of material onto planar metal surfaces or onto the surface of metal nanoparticles. It is the fundamental principle behind many color-based biosensor applications, different lab-on-a-chip sensors and diatom photosynthesis.

### Surface plasmon resonance - Wikipedia

Surface plasmon resonance (SPR)-based sensors are the subject of a growing scientific and practical interest mainly due to their high sensitivity and versatility, as well as their ability to perform the label-free detection of bio-particles or bio-molecules.

### Sensors | Special Issue : Surface Plasmon Resonance (SPR ...

3. Surface Plasmon Resonance-Based Sensors. The propagation of the surface plasmon wave at the metal/dielectric interface is very sensitive to variations in the refractive index of the dielectric properties of its background (Dostálek et al., 2001, Homola et al., 1999), which enables the SPR application to investigate biochemical reactions that occurs close to the metal surface.

### Surface Plasmon Resonance (SPR) for Sensors and Biosensors ...

The newly grown 2D nanomaterials like black phosphorus transition metal dichalcogenides (TMDCs) or graphene have excellent properties for sensing devices' fabrication. This paper summarizes the progress in the area of the 2D nanomaterial-based surface plasmon resonance (SPR) sensor during last decade.

### 2D Nanomaterial-Based Surface Plasmon Resonance Sensors ...

Fabrication and characterization of a surface plasmon resonance (SPR)-based fiber optic sensor using graphene-carbon nanotubes/poly(methyl methacrylate) (GCNT/PMMA) hybrid composites for the detection of methane gas have been carried out. Four kinds of probes with different over-layers on the silver-coated unclad core of the fiber have been fabricated to achieve the best performance of the sensor.

### Surface Plasmon Resonance-Based Fiber Optic Methane Gas ...

We analyze surface plasmon resonance-based fiber-optic sensor for sensing of small concentrations of hydrogen gas in the visible region of the electromagnetic spectrum. One of the two probes considered has multilayers of zinc oxide (ZnO) and palladium (Pd) while the other has layer of their composite over a silver coated unclad core of the fiber.

### OSA | Surface plasmon resonance-based fiber-optic hydrogen ...

surface plasmon resonance (PSPR) sensors and localized surface plasmon resonance (LSPR) sensors. PSPR is typically propagated continuously by prism coupling or grating on a thin metal film surface while LSPR can propagate along the metal/dielectric surface. In the present paper, we are discussing

### 2D Nanomaterial-Based Surface Plasmon Resonance Sensors ...

In this study, we developed a gold-silver alloy film based surface plasmon resonance (AuAg-SPR) sensor with wavelength interrogation to detect cancer antigen 125 (CA125) using a sandwich immunoassay.

### Gold-silver alloy film based surface plasmon resonance ...

The resonance occurs when the wave vectors of surface plasmons (charge density oscillation at metal/sensing layer) and the evanescent wave (exponentially decay wave at core/metal region due to total internal reflection) in optical fiber configuration match.

### Surface plasmon resonance based fiber optic ethanol sensor ...

Tailor-made Escherichia coli (E. coli) receptors were created with microcontact imprinted technique and binding events of E. coli were carried out by a surface plasmon resonance (SPR) sensor in aqueous solution and in urine mimic in real time and label-free.

### Surface plasmon resonance based biomimetic sensor for ...

University of Limerick Institutional Repository Enhanced sensitivity of heterocore structure surface plasmon resonance sensors based on local microstructures

### Enhanced sensitivity of heterocore structure surface ...

In this paper, a novel multifunctional four-layer SPR structure (prism-metal- electro-optic crystal- external layer) is proposed which can not only me...

### Performance analysis of multifunctional SPR sensor based ...

Journals. All Journals; Mechanical Engineering Magazine Select Articles; Applied Mechanics Reviews; ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering

### High-Speed Surface Plasmon Resonance (SPR) Reflectance ...

An effort for the fabrication and characterization of a fiber optic sensor based on surface plasmon resonance for the detection of ascorbic acid utilizing molecularly imprinted (MIP) polyaniline film has been reported.

### Surface Plasmon Resonance-Based Fiber Optic Sensor for the ...

We report on the design, fabrication, and characterization of mass-producible, sensitive, intensity-detection-based planar waveguide sensors for rapid refractive index (RI) sensing; the sensors comprise suspended glass planar waveguides on glass substrates, and are integrated with microfluidic channels. They are facilely and cost-effectively constructed via vacuum-less processes.

### OSA | Low-cost planar waveguide-based optofluidic sensor ...

Surface plasmon resonance (SPR), characterized by its high sensitivity to variations in the refractive index of the surrounding dielectric, and has been implemented in numerous sensing structures, from the classical prism configuration to waveguide based structures, from planar metallic layers to metallic coating around fibers.

### Surface Plasmon Resonance Temperature Sensor Based on ...

Surface Plasmon Resonance based Sensor: Principle Surface plasmon polaritons (SPPs) are defined as electromagnetic waves coupled with charge oscillations of free electrons in a metal that propagate along the boundary between the metal and a dielectric medium. When SPP excitation is optically induced, it is referred to as SPR.

### Overview of the Characteristics of Micro- and Nano ...

We developed a surface plasmon resonance sensor based on two-dimensional nanomaterial of antimonene for the specific label-free detection of clinically relevant biomarkers such as miRNA-21 and...