Patent Search

Invention Title	NOVEL ORGANIC NANOMATERIALS FOR ULTRA-FAST AND ULTRA-SENSITIVE SENSING APPLICATIONS
Publication Number	42/2023
Publication Date	20/10/2023
Publication Type	INA
Application Number	202331056747
Application Filing Date	24/08/2023
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	PHYSICS
Classification (IPC)	G01N0027120000, G01N0027220000, B32B0017100000, G01N0027414000, G01N0027020000

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Abstract:

A novel organic nanomaterial is described, engineered specifically for sensing applications. The nanomaterial is designed to exhibit both ultra-fast response times an sensitivity across a broad spectrum of analytes. Derived from carbon-based structures, the nanomaterial is environmentally benign, scalable in production, and show stability and durability for seamless integration into various technological infrastructures, fulfilling the modern requirements of diverse sensing applications.

Complete Specification

Description:The present invention generally relates to the field of nanotechnology and, more specifically, to the development and utilization of novel organic nanom designed for ultra-fast and ultra-sensitive sensing applications. These nanomaterials can be utilized in a variety of sectors, including but not limited to, biomedical diagnostics, environmental monitoring, security, and industrial process control.

Background of the invention:

Nanotechnology, the science of manipulating matter on an atomic or molecular scale, has gained immense attention over the past few decades due to its transform potential in a plethora of applications. Among the diverse landscape of nanomaterials, organic nanomaterials have garnered significant interest due to their inherer biocompatibility, easy synthesis, tunable properties, and environmental friendliness. Organic nanomaterials, unlike their inorganic counterparts, offer the flexibility molecular design, enabling a vast space for structural and functional innovations.

The quest for advanced sensing systems that offer high sensitivity and speed is driven by the increasing need to detect and quantify low concentrations of analytes various fields. Traditional sensing systems, although reliable, often fall short in terms of sensitivity, selectivity, or response times. As our world becomes more interconnected and data-driven, there is a compelling demand for sensors that can provide real-time or near-real-time feedback with minimal error margins.

Enter organic nanomaterials. These materials, with their unique surface-to-volume ratio and the ability to interface with biological and non-biological systems at the nanoscale, present a promising avenue for next-generation sensors. The inherent properties of organic nanomaterials, such as their optical, electronic, and mechar characteristics, can be deftly exploited to produce ultra-sensitive and ultra-fast responses to external stimuli or analytes. For example, their quantum confinement e can lead to distinct optical and electronic behaviors, which can be harnessed for sensing applications. Furthermore, the potential for molecular-level customization

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