

Nanofiber Fabrication and Sensing



Overview

In this review, we describe recent relevant advances in the fabrication of polymeric nanofibers to address challenges in conventional approaches such as electrospinning, namely low throughput and productivity with low size uniformity, assembly with a regulated structure and. In this review, we describe recent relevant advances in the fabrication of polymeric nanofibers to address challenges in conventional approaches such as electrospinning, namely low throughput and productivity with low size uniformity, assembly with a regulated structure and. Integrating polymer nanofibers with optical sensors takes advantage of the high sensitivity, fast response, and strong immunity to electromagnetic interference of optical sensors, enabling widespread use in biomedical science, environmental monitoring, food safety, and other fields.



Article Content

Advanced functional nanofibers: strategies to improve performance

We classify these strategies into three categories: design of nanofiber structures, tuning of nanofiber materials, and improvement of nanofibers assemblies. Finally, the optimization methods, materials,

Recent Development of Polymer Nanofibers in the Field of Optical

With the further development of various fabrication techniques, nanofiber sensors with excellent filtering, photocatalytic, and sensing properties have been produced, which can offer

Recent Development of Polymer Nanofibers in the Field

In recent years, owing to the continuous development of polymer nanofiber manufacturing technology, various nanofibers with different structural

Gradient nanofiber aerogels for extreme cryogenic and thermal ...

The dual-gradient nanofiber aerogels exhibit remarkable flexibility and recoverability, attributed to the flexibility of the nanofibers and the effective entanglement and sliding within the fiber ...

Fabrication and characterization of optical nanofiber tips

1 Introduction A tapered optical fiber with a sub-wavelength-diameter tip is defined as an optical nanofiber tip (ONFT). Due to high contrast between effective refractive indices of its core (silica) and

Fabrication and characterization of cellulose acetate-based nanofibers ...

The nanofiber and nanofilm-based sensors presented in this work exhibit a relatively excellent sensing performance compared with those studied previously. This is attributed to their

Crafting high-temperature stable and hydrophobic nanofiber

Electrospinning is chosen as a nanofiber fabrication method because of its high versatility, reliability, simplicity, and scalability.

Scalable Production of Functional Fibers with Nanoscale Features for ...

Functional fibers, retaining nanoscale characteristics or nanomaterial properties, represent a significant advance in nanotechnology. Notably, the combination of scalable

Flexible humidity sensors for diverse applications

Flexible humidity sensors, as pivotal sensing components in the Internet of Things and intelligent era, have achieved significant progress in

Advanced functional nanofibers: strategies to improve performance

We first introduce the common methods of preparing nanofibers, then summarize the advances in the field of nanofibers, especially up-to-date strategies for further enhancing their functionalities.

Micro-/Nanofiber Optics: Merging Photonics and Material Science on ...

Micro-/nanofibers (MNFs) are optical fibers with diameters close to or below the wavelength of the guided light. These tiny fibers can offer engineerable waveguiding properties

Electrospun Nanofibers for Sensing and Biosensing

Electrospun NFs can be used in different types of sensors and biosensors. This review presents recent studies concerning electrospun

Recent Progress of Electrospun Nanofiber-Based Composite

This work reviews recent advancements in electrospun nanofiber-based composite materials for monitoring physical, physiological, and body fluid signals, with a particular focus on the

(PDF) Fabrication, Microstructures and Sensor

This review focuses on the most recent development of micro/nanofiber fabrication technologies for fabricating wearable sensors,

Full article: Carbon nanofibers and their composites for

Notably, the sensing mechanism for each physical stimuli, the fabrication strategies, and structural design for CNF-based sensors were

Facile Fabrication of a Stretchable and Flexible Nanofiber Carbon Film ...

Finally, a stretchable and flexible nanofiber membrane-sensing electrode was successfully developed and applied in smart clothing for ECG and EMG monitoring.

Nanofibers in Biomedical Applications: Recent Developments and ...

Nanotechnology is advancing rapidly in the biomedical field, with nanofibers playing a pivotal role due to their exceptional mechanical properties, high surface-area-to-volume ratio, and

Recent Advances on Nanofiber Fabrications: Unconventional State-of

In this review, we explore several notable recent nanofiber fabrication techniques, and highlight novel and remarkable approaches which potentially offer more efficient and effective pathways towards

The status and perspectives of nanostructured materials and fabrication ...

The first part focuses on the different types of sensing nanomaterials, namely, zero-dimensional (0D), one-dimensional (1D), two-dimensional (2D), and three-dimensional (3D)

Fabrication Techniques and Sensing Mechanisms of Textile ...

The intelligent textile sensors based on fiber (1D) and fabric (2D) are the ideal candidates for wearable devices. Their flexible weaving and unique structure endow them with flexibility,

Fabrication and characterization of optical nanofiber tips

We demonstrate the fabrication of an optical nanofiber tip (ONFT) using a two-step chemical etching technique. This technique employs 30% and 24% hydrofluoric (HF) acid for the first

Nanofibers interfaces for biosensing: Design and applications

The crosslinking of the GOx provided a robust enzyme-nanofiber network, yielding a compatible microenvironment for preserving the enzyme activity and effectively suppressing enzyme

Versatile Carbon Nanofiber-Based Sensors | ACS Applied Bio Materials

Carbon nanofibers (CNFs) display colossal potential in different fields like energy, catalysis, biomedicine, sensing, and environmental science. CNFs have revealed extensive uses in

Recent Advances in Electrospun Nanofiber-Based Self

With ongoing advancements in nanomaterials, fabrication techniques, and system-level integration, electrospun nanofiber-based TENGs are expected

Facile Fabrication of a Stretchable and Flexible Nanofiber Carbon Film ...

In this study, a carbon electrode was synthesized from carbon black (CB), reduced graphene oxide (rGO), and polyurethane (PU) and subsequently used as the collector for

Electrospinning and Nanofiber Technology:

4.2.2 Catalysts Functionalization on Electrospun Nanofiber Supports for Enhanced Gas Sensing Electrospinning is a versatile method for fabricating

Micro-/Nanofiber Optics: Merging Photonics and

Here we review the recent progress in optical MNF sensors regarding their fabrication, waveguide properties, and sensing applications.

Micro/nanofiber fabrication technologies for wearable sensors: a

This review focuses on the most recent development of micro/nanofiber fabrication technologies for fabricating wearable sensors, including drawing, spinning, coating, and printing.

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