Polymer Sciences
ISSN: 2471-9935

Open access Short Communication

Advancements of Nano-fibers in Various Fields

Arvind Dandotia*
Department of Nanoscience and Nanotechnology, Mahatma Gandhi University, India

INTRODUCTION

One of the most advanced areas of science and technology presently being studied in both academia and business is nanotechnology. In terms of academic financing, one of the major fields has been the study of science and technology at the nanoscale. Because of features like biocompatibility, adaptability, and molecular design diversity, peptides are increasingly being used as building blocks in nanotechnology. Aromatic dipeptide chiral diphenylalanine (FF or PhePhe) as well as N-tert-butoxycarbonyl diphenylalanine (Boc-L-phenylalanine-L-phenylalanine-OH, Boc-PhePhe), possess in their crystal structures phenylalanine molecules associated by directional covalent bonds voluntarily self-assembled through stable Nanotubes (NT) and different nanostructures in either of organic solvents and aqueous solutions. Due to their possible use as optoelectronic materials for energy harvesting devices in the area of materials science, nanostructured dipeptide self-assemblies that show quantum confinement are of great interest. A new and remarkable class of ring-shaped dipeptides called cyclic dipeptides self-assembles into supramolecular structures with various shapes that exhibit quantum confinement and fluorescence as a result of numerous interactions. Chiral cyclic dipeptides may exhibit pyroelectricity and piezoelectricity as well, with possible uses in novel nano-energy sources. Among them, wide-band gap semiconductors with high mechanical rigidity, photoluminescence, and piezoelectric characteristics to be used in power production include aromatic cyclo-dipeptides containing the amino acid tryptophan. In this study, we describe the creation of hybrid systems based on the incorporation of chiral cyclo-dipeptide L-Tryptophan-L-Tryptophan into electrospun biopolymer fibres [1].

DESCRIPTION

More recently, quantum confinement and photoluminescence were observed in biocompatible organic materials based on CDPs that self-assembled into supramolecular frameworks with various shapes. By choosing particular amino acid side chains or through chemical changes that provide several non-covalent contacts, such as hydrophobic interactions, interactions, and electrostatic forces, CDPs can self-assemble into a variety of nanostructures. The creation of different nanostructures including Nanospheres (NS), Nanotubes (NT), and nanofibers is made possible by the influence of exterior variables including pH, substrate, solvent, and temperature (NF). As straightforward, real-time, and efficient instruments for clinical diagnosis, dietary analysis, and environmental tracking, biosensors are analytical tools. Nanoscale functional materials are advantageous for biological diagnostics because they have special qualities, like a high surface-to-volume ratio. Biosensors now use more useful nanoscale materials as a consequence of nano-engineering. Numerous 1D, 2D and 3D nanostructures have been used to improve the selectivity, limit of detection, sensitivity, and rapidity of reaction time to show findings of biosensors. Carbon nanotubes and nanofibers in particular have been widely used in electrochemical biosensors, which have emerged as a multidisciplinary frontier among material science and the discovery of viral diseases. The development of new health-related issues has been the price that modern society has paid for the enormous technological developments that have led to, among other advantages, a decline in mortality rates. Ironically, there are a number of new viral strains that are constantly appearing and wreaking devastation on the human population. One such virus is COVID-19, which is currently mutating and becoming more deadly. One of the greatest defences a body can provide is the production of antibodies against any illness. The body produces antibodies or hormones that serve as indicators for precise, repeatable, and objective disease assessment by creating a patient connection with a clinical end point. According to demographic, physiological, pathological, and medicinal data, the clinical end point may be an infection, stroke, cancer, heart disease, HIV, or another condition [2-4].

Received:	01-March-2023	**Manuscript No:**	IPPS-23-15975
Editor assigned:	03-March-2023	**PreQC No:**	IPPS-23-15975 (PQ)
Reviewed:	17-March-2023	**QC No:**	IPPS-23-15975
Revised:	22-March-2023	**Manuscript No:**	IPPS-23-15975 (R)
Published:	29-March-2023	**DOI:**	10.36648/2471-9935.23.8.006

Corresponding author Arvind Dandotia, Department of Nanoscience and Nanotechnology, Mahatma Gandhi University, India, E-mail: arvindd8878@gmail.com

Citation Dandotia A (2023) Advancements of Nano-fibers in Various Fields. J Polymer Sci. 8:006.

CONCLUSION

A summary of current research initiatives in nanofiber-based electrochemical biosensors for diagnostic use is given in this study. Along with a talk of the potential uses for these materials in diagnostics in the future, the clinical applications of these nano-biosensors are also emphasised. The goal of this study is to pique a greater interest in creating electrochemical biosensors based on nanofibers and enhancing their capabilities for disease detection. In this study, we provide an overview of some of the most recent developments in Point-of-Care (PoC) electrochemical biosensor applications, with a particular emphasis on novel bio-recognition enabled materials and modifiers that have increased sensitivity, specificity, stability, and reaction time.

ACKNOWLEDGEMENT

Authors do not have acknowledgments currently.

CONFLICT OF INTEREST

There are no conflicts of interest.

REFERENCES

1. Novales B, Navailles L, Axelos M, Nallet F, Douliez JP (2008) Self-assembly of fatty acids and hydroxyl derivative salts. J Langm 24: 62-68.
2. Luis JP, Laukhin V, del Pino AP, Gancedo JV, Rovira C, et al. (2007) Supramolecular conducting nanowires from organogels. Chem Int Ed 46: 238-241.
3. Diaz DD, Kuhbeck D, Koopmans R (2011) Stimuli-responsive gels as reaction vessels and reusable catalysts. J Chem Soc Rev 40: 427-48.
4. Jang Y, Champion JA (2016) Self-assembled materials made from functional recombinant proteins. Acc Chem Res 49: 2188-2198.