



Mini Review

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Possible Route for Carbon Nanotube Alignment for Application in Biosensors: A Minireview

Carson Minor*

Department of Material Science, University of Utah, USA

*Corresponding author: Carson Minor, Department of Material Science, University of Utah, USA.

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Abstract

The next big revolution in medicine is likely to be individualized healthcare. Essential to this is data on individuals. Biosensors will be essential in collecting data on the health and functions of individuals. Carbon Nanotubes (CNTs) have great potential for applications in biosensors. One of the more significant challenges in bringing CNT biosensors to market is the scalability of their production. CNT alignment is a major obstacle in the implementation of CNTs in biosensors. Electrophoretic methods have been used to align CNTs in computer chip synthesis. Electrophoretic alignment is highly scalable and should be studied further for its use in biosensor synthesis.

Introduction

Medicine has seen several revolutions. Vaccines, anesthetics and germ theory each played significant roles in preventing premature death. The next medical revolution could be spurred by advancements in biosensors. Biosensors have the potential to collect mass amounts of data on the health and functions of individuals. This data can be used by doctors to diagnose and treat individuals based on real-time precise data, rather than generalizations made from studies on large groups of people. Sensors detect variances, usually by measuring electrical signals. CNTs have rapid electron transfer rates [1]. Because they are so conductive, CNTs could make more precise sensors and measure signals on a smaller scale than currently feasible. CNTs are anisotropic and conduct electricity best from end to end. This means their alignment is necessary when creating sensors that use them [2]. CNT alignment at a large scale is important to production of reliable biosensors. CNTs have been aligned using electrophoresis [3-6]. Electrophoretic CNT alignment has been used in computer chip applications and has potential in production of biosensors. More research must be done in this area in order to create effective production methods for CNT biosensors.

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