

Sustainable Agriculture Reviews 24

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Nanoscience in Food and Agriculture 4

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Chapter 2

Nanopackaging in Food and Electronics

Nabeel Ahmad, Sharad Bhatnagar, Shyam Dhar Dubey, Ritika Saxena,
Shweta Sharma, and Rajiv Dutta

Abstract Nanoscience has induced a profound revolution in all industrial domains, notably in the food and electronic industries. The food industry has constantly augmented the quality, shelf life, safety and traceability of products. This has led to development of nanomaterials for food packaging and nanosensors to detect contaminations. Nanomaterials are to develop 'improved', 'active' and 'intelligent food packaging'. Nanomaterials have also been conjugated with biobased polymers to develop environmentally friendly nanocomposites. This article reviews nanopackaging of food with emphasis on carbon nanotubes, nanosensors, nanowires, nanolaminates, nanocomposites, nanocrystals, biobased fillers for nanocomposite, and antimicrobial nanoparticles.

Keywords Nanotechnology • Food packaging • Electronic packaging • Nanocomposites • Carbon nanotubes

2.1 Introduction

As the population of the world keeps on increasing, the issues of food security, safety and preservation are steadily being thrust into the spotlight. Advances in food packaging technology have become one of the important tools to ensure the safety of the produced food worldwide. A large amount of food is being wasted annually on account of microbial contamination and exposure to deleterious components of

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