

# 10

## *Nanotechnology in Biomaterials: Nanofibers in Tissue Engineering*

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### 10.1 Biomaterials

Devices made of synthetic or natural materials have been used in the medical area and introduced into the human body to improve human health since ancient times. Romans, Chinese, and Aztecs used gold wires in dentistry more than 2,000 years ago. Ancient Egyptians and Greeks sutured wounds with plant fibers and animal-derived materials and used wood for prosthetic limbs. Since then, scientists have continued their research to find bioactive agents to cure illnesses and to improve the quality of human life by using artificial prostheses.

There are various definitions of biomaterials expressed in different ways given in the literature, but more or less they have the same meaning. One of the very early definitions came from the Clemson University Advisory Board for Biomaterials (1976), which described a biomaterial as “a systemically and pharmacologically inert substance designed for implantation within or incorporation with living systems (Park, 1981).” Another definition of biomaterials is “materials of synthetic as well as of natural origin in contact with tissue, blood, and biological fluids, and intended for use for prosthetic, diagnostic, therapeutic, and storage applications without adversely affecting the living organism and its components” (Bruck, 1980). Biomaterials can be defined as materials to be used to