

Tissue engineering concept is meaning the replacement of damaged tissues including the skin, bones, cartilage, lymph nodes, blood vessels, muscles, and other tissues. The electrospinning process is a very effective method and provides a simpler means for manufacturing tissue scaffold mesh of micron- to submicron-sized fibers (Fig. 7). Various types of scaffolds have been generated for human tissue and organ regeneration, including bones [116], cartilage [117], arterial blood vessels [118], nerves [119], heart [120], etc. The use of electrospinning techniques to create nanofibrous scaffolds for tissue engineering has been increased because these scaffolds positively enhance cell-cell and cell-matrix interactions with the cells having a normal phenotypic shape [115, 121]. The electrospun nanofibers, which are used in the scaffold preparation, need to be well prepared and must have dimension uniformity. In addition, other requirements such as large surface area, high porosity (better pore size distribution), perfect mechanical properties, biocompatibility, biodegradability, and non-toxicity to the cell are also remarkable factors when using electrospinning process in tissue engineering [122]. Both natural and synthetic polymers electrospun nanofibers have been used in making these scaffolds like collagen [47], Poly (lactic acid) [123], gelatin [29], polyurethane [61, 120], poly(ϵ -caprolactone)/Zein [124] and polyamide-6,6/chitosan [46]. Natural polymers are often used for preparing nanofibrous scaffolds more than synthetic polymer, because of their enhanced biocompatibility and bio-functional concepts, such as silk protein, collagen, fibrinogen, alginate, hyaluronic acid, starch and chitosan [26– 28]. Generally, the aligned scaffold produced by electrospinning with a rotational collector exhibits a characteristic fiber alignment when compared to the random fibrous mats generated with normal static collector [10