

EFFECT OF PROCESSING PARAMETERS ON NANOFIBERS VIA WATER VORTEX AND CONVENTIONAL ELECTROSPINNING

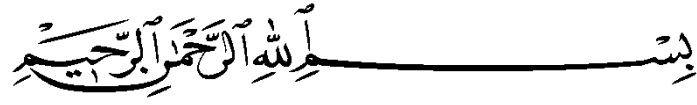
MUHAMMAD HAZIQ BIN MOHD IZHAR

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SHAH ALAM**

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ABSTRACT

Electrospinning is recognized to be flexible process which able to produce fibers made of any compositions with desired diameter from microns to several nanometers. Many methods have been developed for improvement and to overcome the limitations regarding the produced fibers. In this work, water vortex was use as one of the method to produce nanofibers in form of a yarn. The aim of this work was to produce nanofibers from conventional and water vortex electrospinning technique. The morphological structure for both produced fibers were characterized using scanning electron microscope (SEM). The structures were compared for any differences.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

The development of nanotechnology has given a huge advantage to many sectors such as energy, health, textile, defence system. Many of the sectors have incorporate the use of nanotechnology in their new development to produce a material, devices or system in nano size. The novel chemical, physical and biological properties of nanomaterial size can be attributed to its unique shape and morphology to be applied in the industries.

Tissue engineering is one of the example that has attract attention as a fusion technology that enable the regeneration of tissues and organs lost cause by disease or accident. Even though there are many other methods to replace the lost of tissue such as autografts and allografts, there are still problem arise such as the availability of suitable harvest sites and rejection from mismatched donor – recipient pairs. The problem can be overcome by manufacturing of artificial porous structures called scaffolds (Park, Lee, Na, & Kim, 2013).

Numerous production of scaffolds from variety of materials and methods have been used in the field in attempts to fabricate and generate different tissues and organs in the body. The manufactured scaffolds should have considered the important keys to