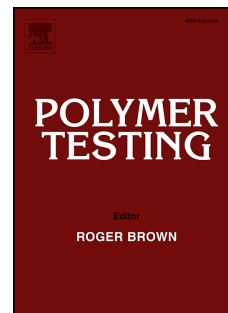


Accepted Manuscript

A comparison of automated and manual techniques for measurement of electrospun fibre diameter

J.J. Stanger, N. Tucker, N. Buunk, Y.B. Truong



PII: S0142-9418(14)00175-5

DOI: [10.1016/j.polymertesting.2014.08.002](https://doi.org/10.1016/j.polymertesting.2014.08.002)

Reference: POTE 4282

To appear in: *Polymer Testing*

Received Date: 30 June 2014

Accepted Date: 6 August 2014

Please cite this article as: J. Stanger, N Tucker, N Buunk, Y. Truong, A comparison of automated and manual techniques for measurement of electrospun fibre diameter, *Polymer Testing* (2014), doi: 10.1016/j.polymertesting.2014.08.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Test Method

A comparison of automated and manual techniques for measurement of electrospun fibre diameter

J J Stanger^a, N Tucker^a, N Buunk^b, Y B Truong^c

^a*The New Zealand Institute for Plant & Food Research Limited, Christchurch, New Zealand*

^b*Electrospinz Ltd., Blenheim, New Zealand*

^c*CSIRO Fibre Science Research Program, Melbourne, Australia*

Abstract

Electrospinning is a fibre manufacturing process, and fibre diameter is a fundamental property. We compare diameter measurements made by human operators against two automated algorithms (FibreQuant™ and SEMAnalyser™). The effects of scanning electron microscopy (SEM) preparation by iridium, gold and carbon coating on fibre diameter are also examined.

A human takes 2.2 hours to make 150 measurements. Automated analysis produces 9000 measurements less than 5 minutes. The automated method produces results without researcher bias and with greater consistency, but will occasionally include incorrect measurements because of the simple heuristics used. The manual method used by human operators shows larger variation in reported averages and is labour intensive.

Before obtaining SEM images, the fibre samples require a conductive coating to prevent charging and burning of the fibres; the effects of SEM preparation methods such as iridium, gold and carbon coating showed that iridium coating had the least impact on fibre diameter.\

Key words: electrospinning; nano fibre; fibre diameter; image analysis

Download English Version:

<https://daneshyari.com/en/article/5206143>

Download Persian Version:

<https://daneshyari.com/article/5206143>

[Daneshyari.com](https://daneshyari.com)