



Textile Research Journal

Volume 81
Issue 7
May 2011

<http://trj.sagepub.com>

 SAGE Publications

Contents

Original articles

Fabrication of carbon fibers from electrospun poly(vinyl alcohol) nanofibers <i>UK Fatema, AJ Uddin, K Uemura and Y Gotoh</i>	659
Investigation of the sound-absorbing behavior of fiber assemblies <i>S Yang, W Yu and N Pan</i>	673
An upgraded Cottonscan™ instrument for measuring the average fiber linear density (fineness) of cotton lint samples <i>AM Abbott, GJ Higginson, SR Lucas and GRS Naylor</i>	683
Knitting of basalt filament yarn <i>H Hu and Q He</i>	690
A new approach to improve the bulkiness of worsted grade wool yarn <i>AA Merati</i>	698
Printed fabric computerized automatic color separating system <i>C-F Jeffrey Kuo and C-Y Shih</i>	706
Yarn simulations with sharp edges <i>S De Meulemeester, P Puissant and L Van Langenhove</i>	714
Performance of viscose rayon based activated carbon fabric modified by sputtering silver and continuous plasma treatment <i>C-I Su, C-C Peng and C-Y Lee</i>	730
Yarn geometry in woven fabrics <i>B Ozgen and H Gong</i>	738
Determination of 3D necklines from scanned human bodies <i>HQ Huang, PY Mok, YL Kwok and JS Au</i>	746
Abstracts	757

Introduction

Research and development of nanofibers has gained much prominence in recent years due to the heightened awareness of their potential applications in many fields including textiles, chemical synthesis, medicine, agriculture and defense.¹ Among several methods for nanofiber production, electrospinning (ES) has been a pioneer technology for the production of ultra-fine membranes consisting of 1D nanostructured fibers from a rich variety of materials, including polymers, composites, and ceramics.² Nowadays, research on the production methods and conditions of the ES technique have been reconsidered on account of its simplicity and versatility.³ Electrospun ultrathin fibers possess high porosity and a high surface area to volume ratio, which has contributed to the potential applications of electrospun fibers in carbon and graphite nanofiber manufacturing.⁴

Carbon nanofibers derived from ES have further expanded the possible applications of nanofibers. For instance, high performance materials and high functional prepared from carbon nanofibers and nanotubes

have attracted significant attention, due to their outstanding characteristics of high modulus, high strength, high electrical and thermal conductivity, chemical and bio-inertness, and unique morphology over conventional fibrous nanomaterials.⁵⁻⁷

Poly(vinyl alcohol) (PVA) is a semi-crystalline fiber with comparatively high carbon content (ca. 54 PVA) and easily melts without prompt in the polymer chain make PVA favorable for use as a precursor for the production of carbonaceous materials. To date, poly(butene dioxide),⁸ poly(vinylidene fluoride),⁹ polyamide,¹⁰ polyacrylonitrile (PAN),¹¹ polyethylene diacrylate,¹² polystyrene,¹³ poly(vinyl alcohol),¹⁴ and phenol resin¹⁵ have been used as starting polymer materials

Faculty of Textile Science and Technology, Aichi University, Japan

Corresponding author:
Yasu Gotoh, Faculty of Textile Science and Technology, Aichi University, 1-1 Tokon, Umezaki-cho, Nagoya 466-0292, Japan.
E-mail: ygotoh@tst.ait.ac.jp