Editorial

Nanofiber Manufacture, Properties, and Applications

Tong Lin,¹ David Lukas,² and Gajanan S. Bhat³

¹ *Australian Future Fibres Research and Innovation Centre, Institute for Frontier Materials, Deakin University, Geelong, VIC 3217, Australia*

² *Faculty of Textile Engineering and Centre for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec, 461 17 Liberec, Czech Republic*

³ *Nonwovens Research Laboratory, The University of Tennessee, 1321 White Avenue, Knoxville, TN 37996, USA*

Correspondence should be addressed to Tong Lin; tong.lin@deakin.edu.au

Received 17 December 2012; Accepted 17 December 2012

Copyright © 2013 Tong Lin et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Nanofibers have shown many unique characteristics and enormous application potential in widely diverse areas. While considerable research has been conducted on exploring the properties and applications of nanofibers over the decade, the technology development for large-scale production of nanofibers has been hampered, which slows down the wide applications of nanofibers in practice.

This special issue focuses on the recent progress in emerging nanofiber production techniques, such as needleless electrospinning, and novel properties and applications of nanofibers. It also covers unusual methods to process natural materials into nanofibrous materials.

The special issue consists of four review articles and eighteen research papers. One review paper presents an overview of the recent developments in needleless electrospinning and the influences of needleless spinnerets on electrospinning process, nanofiber quality and productivity. The review also points out the challenges remaining for further research in this area. Other three reviews separately summarize the preparation, characterization and applications of ZnO nanowires and the applications of carbon nanofibers for neural electrical/chemical interfaces and for cement reinforcement.

The research articles report new results of needleless electrospinning techniques, and novel methods to make bicomponent nanofibers, porous nanofibers, nanofiber hydrogel and chitin nanofibrils. As Guest Editors for this special issue, we are pleased to see the progress in the applications of nanofibers, especially for sound absorption and for protective clothing, as well as the antibacterial properties of titanate nanofibers.

We hope this special issue will promote further development of large-scale economically feasible nanofiber-making technologies, and also contribute to the wide use of nanofibers. We also hope that the articles collected in this special issue are well-received by the reader.

Acknowledgments

The editors gratefully thank the authors for their contributions to this special issue, the reviewers for their constructive comments and dedication, and Amira Tayseer (Editorial staff) for her support and assistance.

*Tong Lin
David Lukas
Gajanan S. Bhat*