



Introduction to Nonwovens Technology (Engineering With Fibers)

By Subhash K. Batra, Ph.D., and Behnam Pourdeyhimi, Ph.D

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Introduction to Nonwovens Technology (Engineering With Fibers) By
Subhash K. Batra, Ph.D., and Behnam Pourdeyhimi, Ph.D

- Provides a unified and in-depth treatment of raw materials, web formation, bonding and melt-extrusion technologies · Includes background information on heat, heat transfer and polymer physics · Covers technologies that are proprietary, new or not widely known · Introduces the concept of integrative technologies to produce multi-functional products · Explains raw material properties and process parameter interactions · Designed as a textbook and professional book with problems and exercises

The processing of nonwovens depends on a range of technologies, some adapted from the textile and paper industries, others developed uniquely for nonwovens production. The present volume provides a systematic step-by-step explanation of virtually all processes that integrate relevant raw materials into finished nonwovens for different end uses. In comprehensive terms, the book explains the connection between the structure of nonwovens and the specialized, as well as still evolving, technologies used to produce them from simple roll goods to nanoscale webs and fiberwebs. The unified treatment in the book is meant to serve the needs of engineering and technology students. For students and instructors, the text also offers reviews of basic chemistry, polymer physics and heat transfer concepts, which are linked to processing and design information. Problems and exercises are presented for classroom study and individual practice. The book can also be used profitably as a self-teaching tool by professionals working in or new to the nonwovens industry. From the Foreword by John Hearle "In comparison with other publications, the present book covers the great diversity of nonwovens and emphasizes how new types of nonwovens can be created through the use of novel fibres. This approach integrates many aspects of fibres and textile structures that are not associated with the conventional forms of nonwovens, which were established over the last fifty years. In this sense the book summarizes existing technical knowledge and suggests ways of going beyond it."

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Editorial Review

Review

Introduction to Nonwoven Technology fills the need for a textbook to cover fundamental and recent information in the growing worldwide nonwovens industry...The present book, written by the former and current director of the renowned Nonwovens Institute at North Carolina State University...covers all aspects of nonwovens, including staple fiber-based technologies, bonding and integrated technologies, and materials, processes and equipment. Numerous elements in the book are drawn from information patented by the authors and based on their long-term industrial research. Overall, it is an up-to-date and balanced treatment of the subject. --Prof. Xiao-ming Tao, Hong Kong Technical University, published in the Journal Asian Textiles.

About the Author

Subhash K. Batra was educated at Delhi University (undergraduate studies), Massachusetts Institute of Technology (MIT) (MS-ME, MS-Mgmt) and Rensselaer Polytechnic Institute (Ph. D.-Mechanics). His career path includes Battelle Memorial Institute, MIT, and North Carolina State University (NCSU). Before retiring in 2008, he was the Charles A. Cannon Professor, and founding director (1990 1999) of The Nonwovens Cooperative Research Center (NCRC) an NSF, State I/UCRC. Apart from teaching and research at NCSU, he was involved in professional organizations, ASME, INDA TAB, and the Fiber Society among them. Recognitions of his contributions include Fellow of ASME, Honorary Member of the Fiber Society, Harold DeWitt Smith medal and Award of ASTM, Honorary Doctorate from the Technical University of Liberec, and Sloan Industry Fellow at Harvard University. His retirement activities: promoting Engineering with Fibers book-series (with Professors Pourdeyhimi and Jaffe), assisting industry in teaching and consultative capacity, and gardening.

Behnam Pourdeyhimi was educated in Iran, followed by undergraduate studies at Huddersfield Polytechnic, now the University of Huddersfield (UK) and graduate studies (PhD) at Leeds University (UK). His career path includes NCSU, Cornell University, U. of Maryland, Georgia Tech. and back to NCSU. At NCSU, he is currently The William A. Klopman Distinguished Professor in the College of Textiles and a Professor in the department of Chemical and Biomolecular Engineering. In addition to teaching and research, his administrative functions encompass Associate Dean for Industry Research and Extension in the College of Textiles as well as Director of the Nonwovens Institute, which now includes the Nonwovens Cooperative Research Center (NCRC). He is the recipient of the Distinguished Achievement Award by the Fiber Society (1994), ASTM International Harold DeWitt Smith Memorial Award (2004), The TAPPI Technical Achievement and Hollingsworth award (2007) and INDA Lifetime Technical Achievement Award (2008). He was elected Fellow of the Textile Institute and has served as the President of the Fiber Society. His research interests include nonwovens science and technology, responsive fibrous systems, filtration, computational modeling, materials, failure mechanisms, software algorithms, optics and image analysis. Widely published, he is frequently an invited speaker at significant conferences in his field of expertise.

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