

PRESENTS THE **NONWOVEN**  
37TH ANNUAL **FABRICS CONFERENCE:**

An Examination of the Latest Trends,  
Developments Technology, and Applications

**Capitalize on Nonwoven's world-wide growth. Come find out what your organization needs to know and do.** Learn from the industry leaders, scientists and subject matter experts representing:

- Celanese
- Herrmann Ultrasonics, Inc.
- Lickfield Consulting
- Beckmann Converting Inc.
- University of Tennessee Nonwoven Materials Research Laboratory
- Louisiana State University Agricultural Center
- Edward C. Gregor & Associates, LLC
- M & A Engineering
- Meierhoefer Consulting
- North Carolina State University
- Biax-Fiberfilm
- 3M Company
- H.B. Fuller Company
- Johnson Controls, Inc.
- Kimberly-Clark Corporation
- Sprague & Sprague Consulting Engineers
- TRI/Environmental
- Hills, Inc.
- Howard M. Zins Associates
- INDA

Hear **20** cutting-edge organizations bring you up-to-date on the latest products and technology updates in:

- Elastic Spun-Melt Nonwovens
- Wet Form Nonwovens
- New Mattress Standards
- Flexible Absorbent Binder Technology
- Ultrasonic Technology
- Advanced Spunlaid Nonwovens
- Carbonized and Activated Cotton Nonwovens
- Meltblown Technology
- Laminating Methods Binder/Adhesive Technology
- High-Strength Meltblown
- Thermal Insulation
- Moisture Imperviousness
- Innovative Nonwoven Methods
- Techniques and Methods for Profitable Growth with Nonwoven Materials
- Embossing Methods
- Polymers, Additives
- Fiber Extrusion Techniques
- Web Formation Methods
- Super Absorbency
- Concepts in Sustainability
- Lamination Methods

**Register Online at [www.clemson.edu/success](http://www.clemson.edu/success) or call Kay James at 864.656.2200**

The Westin Poinsett Hotel  
Greenville, South Carolina

**June 10–11, 2008**

**Get updated on important, new approaches in:**

- Automotive Products
- Medical Products and Devices
- Filtration Products
- Geotextile Products
- Acoustic Materials
- Personal Hygiene Products
- Cable Wrap Technology
- **PLUS:** An Overview of the Nonwoven Market

**Special Feature!**  
**BMW FACTORY TOUR**

You will have unparalleled access to the manufacturing process in BMW's only U.S. plant where you will observe how BMW builds the ultimate driving machine.

“An excellent review of Nonwoven technology and new developments. Well-organized, excellent speakers!”  
– Ben Shuler, Vice President, Hills, Inc.

# THE 37TH ANNUAL **Nonwoven Fabrics Conference:** An Examination of the Latest Trends, Developments, Technology and Applications

June 10–11, 2008

The Westin Poinsett Hotel, Greenville, SC

In two intensive days, discover the future of the nonwovens industry, nonwovens geographical hotspots, fast-growth products, latest technologies ... and much more

## Welcome to the 2008 Conference

Mark your calendar. You won't want to miss the agenda we have planned for you. This is the place to gain a global view of the industry, market trends, the latest developments and innovations, market niches and new processes, products and applications. You'll also gain an in-depth perspective of technology and advances impacting specific industries – including medical and automotive.

### You will:

- **Get up-to-date on industry trends** and their impact on raw materials pricing, private equity investments, mergers and acquisitions, global expansion and competition.
- **Learn about specialty applications** using wet form process, elastic spun-melt manufacturing technologies, needlepunching, ultrasonic bonding and chemical bonding innovations.
- **Examine the spectrum of nonwoven technologies** in filtration, the latest applications of biocomponent technology, and current and potential uses of advanced fiber technology in nonwoven fabric development.
- **Tour the only U.S. BMW factory** and observe how thousands of parts come together in the building of a BMW vehicle. The automotive industry is one of the largest users of "engineered" nonwovens.

## Unprecedented Networking: Meet and Connect with Experts and Peers

Over the two-day conference, you will have ongoing opportunities to meet informally with the speakers and industry experts to ask questions and discuss topics of interest. Plus, you will be able to share ideas and compare experiences with your colleagues in the nonwoven field who speak your language and understand your problems.

## The Time and Money You Invest in This Conference Will Pay Off – Guaranteed!

Your organization will gain important, new insights you will benefit from immediately and for years to come. We guarantee you will be satisfied with the conference or you will receive an immediate refund of your entire registration fee.

## A Must for Your Industry:

- **Fiber**
- **Textile**
- **Chemical**
- **Plastics**
- **Industrial Products**
- **Health Care**
- **Automotive**
- **Military**
- **Pesticide**

## 9 Reasons You Should Attend

- **Gain exposure** to the latest technology and applications in nonwovens that will help you improve your processes.
- **Take home ideas** you can implement immediately to expand your nonwoven market.
- **Delve into** newly patented processes that can diversify your product line and increase your profits.
- **Adopt** a worldwide view of nonwovens that will advance your organization forward.
- **Network** with your peers and learn from their experiences.
- **Exchange** ideas with industry leaders, researchers and subject matter experts in the nonwoven industry you may never meet on your own.
- **See** table top exhibits, learn from your colleague's new work and display your own.
- **Gain** a wealth of up-to-date and practical resources to take home and share with others and refer to later.
- **Be part** of an up-to-date, comprehensive and effective learning experience unlike any other in the world of nonwovens.

## Who Should Attend

- Manufacturers
- Marketers
- Design Engineers
- Product Developers
- R & D Personnel
- Bioengineers
- Procurement Officers
- Buyers
- New Business Developers
- Laboratory Managers
- Project Managers
- Quality Assurance Specialists
- Scientists

## To Purchase Nonwoven Fabrics Conference Proceedings:

If you can't attend, the proceedings for this or any other Clemson University conference are available for purchase. While not intended to be a substitute for actual attendance, these books are perfect for updating your technical library. They are professionally produced in a spiral-bound, semi-hard cover format for \$395 each (domestic postage and handling included). Call Kay James at 864.656.2200 to place your order!

## Clemson On-Site: Bring Executive and Professional Education to Your Location!

Let Tiffany Smathers arrange to help your organization solve its most pressing challenges. E-mail Tiffany at [tsmathe@clermson.edu](mailto:tsmathe@clermson.edu) or call her today at 864.656.1601 to discover the many services Clemson provides to help you. You will receive information on how Clemson can help:

- Discover and assess operational and organizational issues
- Develop learning objectives and establish needed outcomes
- Customize solutions to fit the exact needs of your organization
- Provide individual coaching support by an experienced licensed industrial psychologist
- Guarantee confidentiality and competitive sensitivity
- Deliver expert practical instruction and exceptional support materials
- Work within your time constraints and at a location of your choosing
- Quote fees substantially below other providers

## What Your Colleagues Are Saying About This Conference

"It was a nice balance between the technical side of fabrics and the marketing side. Nice topics and discussions."

– Brett Johns, *New Market Development Manager, TenCate*

"The overview of processes, raw materials, finishing materials and marketing concepts was wonderful for me and for me to take back to my company."

– Curt White, *CEO, Aegis Environmental*

"Conference was well put on. Had a good time at all the social events and great presentations. Made some good contacts in the industry for future reference and help with any questions. Like the diversity of the attendees. Very different perspectives and vantage points."

– Chris Hustad, *Technical Service Engineer, EMS Griltech*

"This was my first conference. I gained a lot of very good information. Very informative speakers"

– Russ Ingram, *Sales Representative, Norman W. Paschall Co., Inc.*

# CONFERENCE AGENDA

## Day I - June 10, 2008

### 7:30 am Sign-In and Receive Materials at the Westin Poinsett Hotel

Join fellow participants for Continental Breakfast and Informal Discussion

8:15 am

### Welcome to the Conference, Opening Remarks and Introductions

**Chairperson:** Helena Douglas, Executive Director Department of Professional Advancement and Continuing Education, Clemson University

**Co-Chairperson:** Howard Zins, Principal, Howard M. Zins Associates

**Moderator:** Deborah Lickfield, Principal Lickfield Consulting, LLC

### 8:25 am Profiles in Profitable Nonwoven Growth

**M&A Engineering,** John Halberda, President

Find out about techniques and approaches to new business development that have been tested in over 30 years of active practice and how to implement them in your organization. These techniques have developed millions of dollars in new business for clients in the nonwoven industry and often are their most profitable pieces of business.

### 9:00 am New Wetform Nonwovens

**Meierhoefer Consulting,** Alan Meierhoefer, Principal  
Wet form nonwovens are an old process – traditional wet form products have been used in filtration, food, medical and substrate materials. But new and exciting opportunities lie ahead now that a wide variety of fibers – from glass to synthetic to natural – are being used to produce engineered nonwovens targeted to specific market requirements. This session will shed new light on how they are produced using variations on the paper making processes. You'll explore how fibers are dispersed in water and converted to a web on a wire or forming surface. You'll understand how the water is removed and the web is dried, treated and wound up for further conversion into products. Plus, you'll learn the benefits of these exciting processes:

- New technologies combining wet form products with other nonwoven webs to make composite products with unique properties, such as strength and softness
- Wet form processes using a variety of fibers to allow cellulosic and synthetic materials to be combined with spunbonded or hydroentangled webs

### 9:30 am Nonwoven Geotextiles in Civil Engineering Applications: State of the Practice

**TRI Environmental,** C. Joel Sprague, Senior Engineer  
Nonwoven geotextiles have certain properties that make them uniquely beneficial in specific civil engineering applications. This presentation will highlight the most common (and a couple very new) civil engineering applications in which nonwovens are used and describe the unique material properties that make nonwovens the geotextile of choice. Additionally, generally accepted geotextile test methods and specifications associated with geotextile applications will be reviewed.

### 10:00 am Faces and Places: Who's Who in the Audience and Who Does What

Get to know your fellow attendees and identify those people you want to be sure and connect with later.

### 10:15 am Networking Refreshment Break

### 10:30 am New Method for Producing Acetate Nonwoven Material

**Celanese,** Ed Clark, Senior Engineer, Acetate Global Customer Product Support

Celaire™ is a patent-pending process and product that utilizes acetate filament to produce a rectilinear three dimensional nonwoven product. Ed will discuss how, through existing equipment technology, cellulose acetate is transformed into a single layer, highly absorbent, unique nonwoven structure. You'll learn:

- The desirable manufacturing costs, foot print requirements and design benefits of the process
- How this product is engineered to replace woven and nonwoven applications where fluid and surface properties are needed
- How Celaire™ enables the industry to rethink current solutions in a new, innovative way

### 11:00 am Ultrasonic Welding: The Cleaner Way of Bonding Nonwoven Materials

**Herrmann Ultrasonics,** Ralf Dittmer, Technical Support Sales Manager

Get up-to-date on the current basics of ultrasonic welding. Learn how ultrasonic technology can reduce the use of energy and eliminate oil based consumables for bonding of polymer based products. This session will focus on new technology to maximize bond quality and consistency with inherently variable materials. Learn how to use this technology to:

- Increase operating speed
- Maintain quality
- PLUS: Get an update on the latest techniques for embossing, lamination and welding nonwoven products

### 11:30 am Microfiber Nonwovens from Polymer Films

**3M Company,** Mario Perez, Staff Scientist

Examine the uses of very fine fibers, 0.01 to 10 microns, formed from polymer films or other material forms where a high surface area and a minute fibrous structure coexist. The method of releasing or mining these micro-fibers from precursor films involves the application of fluid jets or ultrasonically induced cavitation. Find out about the great advantage of molecularly oriented polymeric precursors which can be transformed into stiff microfiber mats, cloth like materials, or structures with a highly enhanced surface area. Learn about the advantages of these nonwovens, including:

- High fiber strength and stiffness
- High acoustical and thermal insulation power, moisture imperviousness, breathability, softness, traction, cleaning power, high surface area, and printability
- Great design flexibility – an inherent property of these nonwovens

12:00 Noon **Roundtable Networking Luncheon** with speakers and fellow attendees, sponsored by Clemson University

**Moderator:** Howard M. Zins, Howard M. Zins Associates

### 1:15 pm Filtration Industry Trends and Nonwoven Growth Opportunities

**Edward C. Gregor & Associates, LLC,** Ed Gregor, Managing Director

Nonwoven fabrics for use in filtration is the largest dollar application for nonwoven fabrics in the United States

– larger than hygiene, medical nonwovens or wipes. It also may be the most profitable on a pound or square yard basis. The growth rate of filtration as an industry outpaces the economy by 2-5 percent annually, whether the economy is up, down or stagnant. Here's your opportunity to examine in depth:

- Why the industry has steady growth, its overall size and market trends
- Fundamental characteristics and principal filter materials, including the role and key applications for nonwoven fabrics
- Specific unmet nonwoven needs, including higher margin opportunities for innovative companies seeking new market growth

### 2:15 pm Board Bus for Departure to BMW Plant.

Upon arrival at BMW you will enter the Zentrum where the past, present and future of BMW come together in a one-of-a kind building. See the cars, the speed, and the innovation. You will move into the manufacturing plant, the only BMW factory in the U.S. which is the birthplace of every X5 Sports Activity Vehicle, X6 Sports Activity Coupe, Z4 Roadster, M Roadster, Z4 Coupe, M Coupe and soon-to-be X3. You will observe how thousands of parts come together to build the ultimate driving machine.

5:30 pm **Networking Social**  
Sponsored by Clemson University



## Day II - June 11, 2008

**Convene in the Westin Poinsett Hotel meeting room** for continental breakfast and informal conversation.

**Moderator:** James Burns, Clemson University Emeritus

### 8:00 am Advanced Spunlaid Nonwovens: A New Era

**Hills, Inc.** Arnold Wilkie, President

Basic spunlaid nonwoven fabrics now have reached commodity status. And mature production and materials technology are available to all comers, so only the large, low-cost producer can be profitable. Come learn about the latest advances, early applications and potential economics of basic spunlaid nonwoven fabrics – and get ready for a new era. A speaker at the forefront of change will bring you up-to-date on:

- The emerging generation of advanced technologies which offer remarkable new product functionality
- How these technologies are empowering the spunlaid nonwovens manufacturers to enter and/or create profitable markets
- Changing technologies – including new polymers and additives, new fiber extrusion and web formation methods – and new finishing and converting techniques

### 8:45 am Nonwoven Materials for Automotive Applications

**Johnson Controls,** Christina Pollock, Materials Engineer

Christina will discuss various non-woven materials – including carpet, fabrics, leather and vinyl – and their current applications in automotive seating. She'll also address future trends and needs for nonwovens in automotive applications. You'll get updated on:

- Performance requirements
- The advantages and disadvantages of these materials
- Limitations of nonwoven materials

Register now by calling Kay James at 864.656.22

9:15 am **Development of Flame Retardant Nonwovens from Cotton-based Compositions**

University of Tennessee, Gajanan Bhat, Professor

As a result of recent legislation and market trends, interest in developing Flame Retardant (FR) nonwovens is increasing. Upholstered furniture and bedding products are required to pass the open flame test and there is a proposal to extend this standard beyond mattresses to bedclothes and mattress products. This session will share recent findings of research being conducted to develop cotton-based nonwovens for bedding products with flame-retardant properties. You'll learn about:

- How cotton is being blended with other commercially available fibers and binders
- The chemical treatments that follow
- How this cost-effective approach can help you meet flammability standards

9:45 am **Networking Refreshment Break**

10:00 am **Flexible Absorbent Binder Technology**

Kimberly-Clark Corporation, Dave Soerens, Technical Leader

Get up-to-date on new coating technology that enables the precise placement and attachment of super absorbent functionality onto a broad range of fabrics and substrates. Flexible Absorbent Binder (FAB) is a liquid coating that dries to form a crosslinked, water-absorbent film on a wide variety of substrates, including fabrics, cellulose, glass, and metals. Once dried, the coating is capable of absorbing many times its weight in water, forming a hydrogel. The flexibility of the coating is adjustable with the addition of plasticizers or compatible polymer dispersions. This presentation will:

- Introduce you to the technology
- Highlight potential applications
- Examine how you can leverage the unique attributes of this material

10:40 am **Carbonized Activated Nonwovens for Acoustic Applications**

Louisiana State University, Jonathan Chen, Professor

Hear from an expert on the cutting-edge of the fabrication, evaluation and application of carbonized and activated cotton nonwovens. You'll be introduced to the method of carbonizing and activating cotton nonwovens. You'll discuss the processing parameters of temperature, time, and gas flow rate and how they influence carbonization efficiency. You'll learn how microporous structure and adsorption properties of the carbonized and activated cotton nonwovens are tested using a chemisorption analyzer. And you'll actually see an example of end-use applications – a cotton nonwoven composite integrating the carbonized and activated cotton nonwoven will be exhibited. Topics include:

- Evaluating the performance of noise absorption and noise insulation of this biobased composite using the Brüel & Kjaer impedance tube instrument
- How the activated carbon cotton fiber indicates an excellent ability to absorb normal incidence sound waves – better than glassfiber
- How in noise barrier applications the carbonization and activation does not significantly increase transmission loss – yet the cotton nonwoven remains competitive to the glassfiber nonwoven

11:15 am **Brainstorming Session**

Join this fast-paced brainstorming session – it's the place to share your problem, questions, concerns, issues and ideas with speakers and fellow attendees. Leave with a list of solutions and ideas you can put to work right away in your organization.

12:00 Noon **Roundtable Networking Luncheon** with speakers and fellow participants  
Sponsored by Clemson University

1:15 pm **Technological Advancements in High Strength Meltblown**

Biax-Fiberfilm, Matt Pelham, Sales Engineer

SMS has long been used in various applications which require both high strength, and liquid barrier properties. While many Spunbond equipment suppliers have attempted, unsuccessfully, to replace the meltblown layer with fine fiber Spunbond, Biax Fiber-film has developed a Meltblown fabric which has both high strength, and high liquid barrier properties. In this presentation we will discuss the history, apparatus, process, and fabric properties of the Biax-Tuff High Strength Meltblown Fabric and the potential applications.

1:50 pm **Worldwide Prospects for the Nonwoven Industry with a Look at China's Nonwovens and the Implications of Rising Petroleum Costs**

INDA, Association of Nonwovens Industry, Ian Butler, Director of Market Research & Statistics

Ian will provide a fascinating review of the world's nonwoven growth in several key and emerging markets including North America, Europe and Japan. He'll show how a significant portion of the worldwide nonwoven expansion is due to the rising demand for these materials as emerging economies expand. He also will review the Chinese nonwoven industry which soon will be the world's largest nonwoven producing and consuming nation. He will conclude with a discussion of the rising cost of petroleum-based raw materials and the implications for the nonwoven industry. You'll learn how:

- China is still a net importer of nonwovens – importing close to \$670 million of nonwovens in 2007 – in spite of the massive increase in the country's nonwoven production capabilities over the past decade
- North America supplied a third of China's nonwoven imports or \$214 million worth of nonwovens to China, equivalent to almost 53,000 tonnes
- The major nonwoven markets of China present new opportunities in this rapidly growing industry

2:20 pm **Nonwovens in the Medical Market: The "Why", "What" and "How"**

Lickfield Consulting LLC, Deborah Lickfield, Principal

Deborah will provide a fascinating overview of the medical textiles market. She will select some high value-added applications for review and look at how performance can be engineered into a nonwoven construct.

2:50 pm **Networking Refreshment Break**

3:00 pm **Fundamental Physics of Melt Blown Block Thermoplastic Elastomers**

North Carolina State University, Stephen Michielson, Associate Professor

Thermoplastic elastomers have gained considerable attention since they are melt process like plastics, but have the elastic properties of elastomers. Recently, they have become of interest to the nonwovens industry. However, their high molecular weight makes processing difficult. In addition, most melt blowing process equipment has been designed for polypropylene. The difference in crystallization behavior of the thermoplastic elastomers makes it difficult to make melt blown webs from them. Topics include:

- How the interaction of the crystallization kinetics with the process variables results in webs with strength that is very sensitive to the process parameters
- How to relate the properties to polymer properties through the relevant polymer physics

3:30 pm **Options for Creating Multi-Layer Nonwoven Composites to Achieve Greater Finished Product Functionality**

Beckmann Converting Inc., Scott Ayers, Vice President Sales and Marketing

Multi-layer, nonwoven composites make it possible for the whole to be greater than the sum of its parts – by selecting the proper component layers and the optimum laminating technology. Scott will discuss how to achieve increased functionality by utilizing a variety of nonwovens in Multi-Layer composites and using specific laminating technologies. He will speak from the perspective of a contract or toll laminator and provide a range of possibilities that are achievable in terms of layers and performance properties of the completed composite. You'll learn:

- How the optimum laminating technology is best chosen
- How the laminating process can be part of the finished product development effort
- Key details involved in achieving the best performance from a nonwoven composite

4:00 pm **Absorbent Material for Fiber and Nonwoven Fabric**

H. B. Fuller, Sharf Ahmed, Research Fellow

Absorbent properties of nonwoven materials and various fibers can be significantly improved by using a unique thermoplastic composition. Sharf will look at this patented thermoplastic composition made from thermoplastic materials and easily applied like a hot melt adhesive to provide fluid absorbency of various articles. He will discuss:

- Product performance
- The ultimate superior absorbency of nonwovens
- Various fibers for disposable personal hygiene, textile and cable wrap applications

4:30 pm **Conference Wrap-up/Brief Update on New Perspectives Concerning Sustainability**

Howard Zins, Howard M. Zins Associates

Howard will wrap-up with closing comments about the program and the brief disclosure of a new concept in sustainability. He'll invite attendees to ask questions, bring up issues and share ideas. A wealth of knowledge will be shared during this dialogue so be sure to be there and take advantage

# Meet Your Speakers

**Sharf U. Ahmed** is a Research Fellow at H.B. Fuller Company. He has more than 15 years of experience in developing novel adhesives for personal hygiene, disposable articles, textiles, packaging and biodegradable applications. Sharf earned his B.Sc (Honors) and M.Sc. from Dhaka University and his M.Sc in Petrochemical and Hydrocarbon Chemistry from The University of Manchester Institute of Science and Technology. He received his Ph.D. in Organic Polymer Chemistry and worked in academia before joining H.B. Fuller in 1991. He holds 10 U.S. patents and has more than 20 publications in various journals.

**Scott Ayers** is Vice President of Sales and Marketing at Beckmann Converting Inc. (formerly Gem Urethane) where he has headed up sales/marketing for nine years. The contract laminator/converter specializes in full web, ultrasonic and gravure hot melt adhesive laminating and creating composites involving nonwovens, woven scrims, and membranes. It serves a wide range of industries, from filtration to environmental to healthcare to consumer products. Previously, Scott was head of a strategic business unit for a Fortune 500 company in the chemical coating industry. He is a member of INDA, has presented at Techtextile North America and holds a business degree from The Ohio State University.

**Gajanan S. Bhat, PhD**, is Professor of Materials Science & Engineering and Director of the Nonwoven Materials Research Laboratory at the University of Tennessee, Knoxville. He received his PhD in Textile and Polymer Science from Georgia Tech in 1990 and joined the UT faculty. He has experience working in a carpet company producing fibers from recycled polyesters. His research covers nonwovens – meltblown, spunbonded and biodegradable; plastics recycling; and high performance fibers and composites. He has published more than 140 papers and has two U.S. patents to his credit. He was the Associate Director of TANDEC. He was recognized as an Outstanding Young Engineering Alumni from Georgia Tech (1996) and received the Distinguished Achievement Award from the Fiber Society (1999). A Fellow of the Textile Institute, he currently is vice president of the Fiber Society.

**Ian Butler** is the Director of Market Research and Statistics for INDA where he develops sales and volume statistics and has written numerous reports on the North American and worldwide nonwoven industries. A report released in March 2008 is a comprehensive analysis and outlook for the North American Air Filtration Trends and Forecast 2007-2012. Working with EDANA, Ian is currently updating and expanding the Worldwide Outlook for the Nonwovens Industry 2007-2012, a successful report first released in 2002 and revised in 2005. Ian has been involved in the nonwoven industry for more than 25 years. Before working with INDA, he consulted exclusively to the nonwovens industry for 10 years. He also was the Director of Marketing for Veratec, Canada (now part of Fiberweb) and Marketing Manager for Stearns Technical Textiles, Canada.

**Jonathan Y. Chen** is a full professor at Louisiana State University Agricultural Center. He earned his PhD from the University of Leeds, England. His research focus includes process and evaluation of textile materials and products; production and applications of bio-based textile composites; and nonwoven technologies. Dr. Chen is a senior member of the American Association of Textile Chemists and Colorists and the Textile Institute.

**Ed Clark** has technical responsibility for the Celanese new business process and product Cellaire™. Over the past 18 years, he has held various positions with Celanese. These included technical support of new product development, flake and tow production, product performance and customer product engineering support. Ed graduated from West Virginia Institute of Technology in 1989 with a B.S. in Mechanical Engineering.

**Ralf Dittmer** has more than 10 years of experience in the polymer industry. In his current position with Hermann Ultrasonics, he is responsible for developing Ultrasonic processes or continuous manufacturing. In previous posi-

tions at BASE, Thyssen-Krupp Polymer and EWIKON, Ralf developed extensive knowledge in customer service and polymer development for injection molding and extrusion processes.

**Edward C. Gregor** is Managing Director of Edward C. Gregor & Associates, LLC, a consulting company specializing in the creation of growth for companies with new or under-exploited technologies and manufacturing capabilities in the filtration, specialty polymer and nonwoven fabric industries. He co-founded the American Filtration & Separations Society in 1987. He was awarded the title of Filtration Fellow in 2002. Ed is Chairman of the American Filtration & Separations Society Conference this fall. He is the Chairman of Filtration News magazine, on the Advisory Board of the Journal of Industrial Textiles and Coated Fabrics and Co-founder and Editorial Consultant of the magazine Technical Textile Technology for the North American market.

**John R. Halberda** is President of M&A Engineering, a management consulting firm specializing in new business development and strategic planning. John is past president of four companies in the materials engineering business. He has held positions in new business development, R&D, marketing, operations, and finance in publicly traded and private companies. He has experience in a wide array of industry sectors including automotive, aerospace, medical, construction/building materials, chemical, power, pulp and paper, woven and nonwoven textiles, consulting and engineering services, apparel and more.

**Deborah Lickfield** is founder of Lickfield Consulting LLC. She has over 30 years of experience in the textile industry, with a heavy concentration in nonwovens technology. Dr. Lickfield completed her studies at Clemson University, earning B.S. and M.S. degrees in Microbiology, followed by a Ph.D. in Textile and Polymer Science. She has held positions in some of the top nonwovens companies including Kimberly Clark, PGI Nonwovens and Fiberweb. She also worked as research faculty at Clemson University in the area of applied technology for a variety of military and aerospace applications. Dr. Lickfield founded Lickfield Consulting LLC in late 2000. She is an established industrial consultant in both textile materials and textile chemistry, with sub-specialties in intellectual property management and technical proposal writing. Dr. Lickfield holds six U.S. patents, is a frequent speaker on the subject on nonwovens technology and has numerous publications on the subject.

**Alan Meierhoefer** is a consultant to the nonwovens and specialty paper industries with over 30 years experience in synthetic fibers and all types of nonwoven processes. In addition to the design of new products, he has worked with new processes for spun bonded, wet form and dry formed techniques. Alan earned degrees in chemistry from Rhodes College and Mississippi State University and holds an MBA from Western Carolina University. He has participated in the Clemson Nonwovens Forum and presented papers at INDA Technical Symposia and Industrial Fabrics conferences.

**Stephen Michielsen**, PhD, maintains at North Carolina State University an active research group in applying polymer physics concepts to nonwoven processes and surface modification of fibers. He received his PhD in chemistry from the University of Chicago and went on to a post-doctoral Fellowship at Stanford University before joining DuPont. He has over 30 peer reviewed articles and has made over 100 presentations.

**Matthew Pelham** began his career in the Nonwovens industry in 1992 working for J&M Laboratories as a Design Engineer. There he designed and developed Meltblown dies, cartridge filter winders, and adhesive application equipment. A few years later, he moved into sales engineering and was instrumental in the sales and marketing of wide web meltblowing lines. In 1999, Matthew founded Jentex Corporation, a meltblown manufacturing company in Buford, GA. The company specialized in engineered meltblown fabrics such as biodegradable materials, nylons, polyesters, adhesive webs. He also did R&D contract work for some of the largest companies in our industry. He joined Biax-Fiberfilm in the early part of 2007. Over the years, he has presented papers at INDA, SME, and TANDEC. He also was

one of the first to develop low cost loop from spunbond PP to be used on baby diapers as a low cost “hook and loop” diaper fastening system. Patent No. 6,217,693 assigned to YKK USA. This patent has been referenced numerous times as a “landmark” patent.

**Mario Perez**, PhD, is a Staff Scientist at the Safety Security and Protection Laboratory, 3M Company - St. Paul, Minnesota. He received an M.S. and PhD in Polymer Science and Engineering from the University of Massachusetts at Amherst, a B.S. and M.S. in Chemical Engineering and a bachelor's degree in Business Administration from Ohio University in Athens. Before joining 3M, he spent several years in plastics production management and academia teaching polymer technology and chemical engineering, drawing from experience in polymer science and processing dates back to 1983. He holds 33 issued U.S. patents and 19 U.S. patents pending and has been published in numerous publications.

**Christina M. Pollock** has been a Materials Engineer at Johnson Controls for 11 years where she works with the soft trim materials – such as fabrics, leather, vinyls and carpets – used in the automotive industry. She began her career with Cramerton Automotive Products as a process engineer. She also worked at a textile mill. At Johnson, she has gained experience with product development, manufacturing value engineering and technical writing. She works extensively with suppliers, customers and cross-functional teams. For the past three years, her focus has been on cost reductions and low cost country suppliers. She holds a B.S. from Ohio State University and an M.S. from Clemson.

**Dave Soerens**, PhD, is a Technical Leader at Kimberly-Clark Corporation with responsibility for exploratory development of new materials for personal care and hygiene products. He has 30 years of experience in the development of novel coatings, adhesives, films, and absorbent materials. He is an inventor and has more than 80 granted or pending U.S. patents.

**Joel Sprague**, PE, is a long-time member of the senior technical staff of Sprague & Sprague Consulting Engineers, Greenville, SC and TRI/Environmental, Austin, TX, specializing in research, development, and application of geosynthetics, plastic pipe, and erosion and sediment control technologies. He is co-chair of the Subcommittee on Mechanical Properties in the ASTM D35 Committee on Geosynthetics and involved in the ASTM D18.25 Subcommittee on Erosion and Sediment Control. He is a registered professional engineer in North and South Carolina, Georgia, and Texas. Joel has been involved in the design, research, development, and application of geosynthetics, plastic pipe, and erosion and sediment control systems/materials for many years and has authored numerous technical papers.

**Arnold E. Wilkie** has been President of Hills, Inc., in West Melbourne, Florida, since 1988. He is a developer and manufacturer of technically advanced fiber extrusion equipment and his company is the world leader in multi-component fiber equipment and technology. Previously, Arnold was with the Fibers Division of Monsanto Company (now Solutia) where he held positions in fiber process engineering, fiber research and development, business development, and product management. He holds a B. S. degree in Mechanical Engineering from the University of Tennessee and an MBA from the University of West Florida. He is an inventor and holds several patents in the fields of fiber equipment, fiber processes, and fiber products.

**Howard Zins** is the principal of Howard M. Zins Associates, a consulting practice specializing in the fiber, textile and materials sectors. Howard has long been active in Clemson University conferences as both a co-chairperson and speaker. He has also been instrumental in planning and supporting conferences at North Carolina State University and at the University of California, Davis. He is a frequent contributor to the technical literature and has published reports in AATCC Review, Technical Textile Technology, Safety and Protective Fabrics and Research Journal of Textile and Apparel. He has been active in the development of many new fabric products and holds seven patents related to textile materials.

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