

March 21–22, 2007  
The Westin Poinsett  
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“ Outstanding Conference!  
The combination of up-to-date technology innovations in the Medical Textile Arena, both Wovens and Non-wovens, and the exciting tour of the Bio-engineering Department of Clemson University makes this conference outstanding.”

—Grace Howe, President,  
TEGS Limited,  
Woodland Hills, CA

“ As usual, the Clemson Conference was excellent. The information given is pertinent, leading edge, and diverse. The conference is critical to companies with vision for survival. I learned a lot. Clemson Conferences are my benchmarks for other conference.”

—Jamie Johnson, Technical Sales,  
Regal Mfg. Co., Inc.,  
Hickory, NC

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THE 2007 CLEMSON UNIVERSITY ANNUAL CONFERENCE ON  
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**MEDICAL**  
**TEXTILES**  
and Biomedical Polymers and Materials

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- Wound Care Solutions
- Antimicrobial Fabric Treatments
- Medical Device Sterile Packaging Applications
- Latest Products Using NonWoven Technology
- How to Make a Successful Filing with the FDA
- Modern Extrusion Technology, Applications, and Potentials
- Results of Study of Abdominal Response to Fabrics Used to Repair Defects
- Update on Organized Tissue Regeneration
- High Value Fibers
- The New Accreditation Council for Textile Laundry Professionals
- How to Choose the Appropriate Test Method
- Use of Nanoadditives to Improve Performance and Functionality
- How to Evaluate Microbial Barrier Properties
- Solutions to Issues which Impact Bonding
- Quality and Regulatory Issues
- Innovations in Medical Textile Systems
- A Physician's Perspective of the Healthcare Industry
- Advances in Providing Elasticity
- State-of-the-Art Data Collection Information Systems
- Specialty Polymers
- Update on Reusable Healthcare Textile Products

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- W.L. Gore & Associates
- Clemson University
- JHagewood, LLC
- Healthcare Laundry Accreditation Council
- NAMSA
- WINOVIA LLC
- Nelson Laboratories, Inc.
- Adchem Corporation
- Poly-Med, Inc.
- U.S. Department of Agriculture
- Phoenix Group USA, Inc.
- Vision Point Systems, Inc.
- Glo Tex, International
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# OPPORTUNITIES AND MARKETS FOR **MEDICAL TEXTILES** and Biomedical Polymers and Materials

*The application of textiles and polymeric materials in medicine, health care, surgery, biomedicine, and bioengineering continues to be one of the fastest-growing and potentially one of the most profitable specialized market sectors in textile manufacturing today.*

Dramatic advances are being made and reported every day as new research and development is being undertaken, new materials are being launched, new manufacturing or testing processes are being introduced, and exciting new applications evolve.

## About the Conference

Over the course of two days you will have the opportunity to learn about the latest developments in the specialized and growing field of medical textiles. You will receive a valuable look at polymers, fibers, fabrics and finished products, along with insight for adopting these materials into many applications within the medical textile field

As a conference participant you will learn of new textile structures and designs for specific medical applications. You will be exposed to the very latest advances in data collection systems, new standards for laundry professionals, sterile packaging applications, and classification and filing requirements of the FDA. Presentations will offer insight from a physician who directs minimally invasive surgical services, a professor and his team dedicated to meeting biomedical and biotechnical challenges, and a researcher committed to solving the world-wide pressure ulcers crisis.

In addition, you will discover the latest technology and information on antimicrobials, nanoadditives, reusable medical textiles, pressure sensitive products, fiber forming absorbable polymers, a new patented process for providing elasticity, and the extrusion of complex fibers.

## Who Should Attend

- Manufacturers and Marketers of Health Care Products and Medical Devices
- Manufacturers and Marketers of Special Products for Medical Applications
- Product Development and R&D Personnel in Medical Textiles
- Doctors, Surgeons, and Bioengineers
- Hospital and Biomedical Product Suppliers

- Hospital Procurement Officers or Buyers
- Textile Product Design Engineers
- Presidents
- Vice Presidents
- Business Development Managers
- Industry Consultants
- Project Managers
- Technical Specialists
- Quality Assurance Specialists
- Healthcare Laundry Professionals
- Chemists

## What Your Colleagues Are Saying About This Conference

"An excellent chance to network with people in a wide variety of backgrounds and expertise."

*Ben Matthew, Engineer,  
Novtex Corporation., Adams, MA*

"I look forward to this conference each year. I am able to meet new folks with new ideas that solve old problems."

*Rick Sargent, President,  
Peach State Labs, Rome, GA*

"This was an excellent conference that was not only educational and informative but presented outstanding networking opportunities."

*Roger Walker, Quality Manager,  
Schneider Mills, Inc., Taylorsville, NC*

"High quality content, professionalism of all speakers, and the ability to "network" and build new relationships within the industry."

*Brendan O'Neill, E-Comm/Logistics  
Manager, London Hospital Linen Service,  
London, Ontario, Canada*

"A wide variety of information was provided and some very interesting technology relating to medical textiles."

*Elaine Barr, Sales Manager,  
Donaldson Co., Inc., Bloomington, MN*

NOTE: Dress is business casual.

## Conference Agenda

Confere

Wednesday – March 21, 2007

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 and Opening Remarks*

**Helena Douglas, Executive Director, Professional Advancement and Continuing Education, Clemson University**

*Announcements and Introduction of Moderator*

**James C. Burns, Consultant**

**Moderator: Beth Joiner, North American Science Associates (NAMSA)**

8:30 am

**An Overview of the Healthcare Sector – A Physician's Perspective**

*Greenville Hospital System, University Medical Group*

**William S. Cobb, MD, Director, Minimally Invasive Surgical Services**

Begin your conference experience by hearing directly from Dr. Cobb who observes on a daily basis how technology helps patients and doctors through the use of techniques and applications virtually impossible in the not too distant past. You'll gain an insider's view of the healthcare industry...where it is today and where it is headed.

9:05 am

**Wound Care – Antimicrobial Treated Fabrics as Protective and Therapeutic Materials**

*Aegis Environmental Management*

**W. Curtis White, President and Director of Research and Development**

The skin as the largest organ of the human body is a complex mixture of functional and protective cells. When the skin is compromised by intentional, physiological, or traumatic means, a wound is created. Wound protection must include protection against physical, chemical, and microbiological stresses. Combinations of external and systemic therapies and barrier coverings/coatings have been used for centuries. Curtis will review the physiological problems and available solutions for all types of wounds. He also will provide clinical examples of fabrics treated with antimicrobial treatments and their protective and therapeutic benefits. Curtis will conclude his presentation with a discussion on the risks and benefits of various antimicrobial technologies.

9:40 am

**Measuring the Effectiveness of Porous Microbial Barriers Used in Medical Device Sterile Packaging Applications**

*DuPont Medical Packaging*

**Curtis L. Larsen, Packaging Consultant**

Porous flexible barrier materials are common materials used in the packaging of terminally sterilized medical devices. This presentation will examine their

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ce Chairpersons: Helena C. Douglas, Professional Advancement and Continuing Education, Clemson University  
Howard M. Zins, Principal, Howard M. Zins Associates

usage and the past, present and future methodologies used to evaluate their microbial barrier properties.

**10:15 am**

*Networking Refreshment Break*

**10:30 am**

**Nonwovens in Advanced Medical Textile Design**

*Lickfield Consultants*

**Deborah Lickfield, Principal**

Nonwoven textiles holds a place of dominance in the more familiar textile sub-segments, such as gowns, drapes and sterilization wrap. However, the ability to engineer specific performance features via fabric geometry, fiber chemistry and alteration of the surface activity of these constructs, makes nonwovens a superb vehicle for certain end-uses with very exact requirements. Deborah will review a selection of current products in the marketplace and link the performance of those products to nonwoven technology.

**11:05 am**

**Barrier Classification of Surgical Gowns: Making a Successful FDA 510 (K) Filing as per AAMI PB70**

*Standard Textile Co., Inc.*

**Bradley J. Bushman, Vice President**

End users are increasingly referencing the AAMI barrier classification system as a means to make purchasing decisions for their protective surgical gowns. Even older products that are being marketed under previous 510 (k) can benefit from making an updated filing with the FDA to allow for these new label claims to be adopted. Brad will review the classification requirements for surgical gowns according to AAMI PB70 and the intricacies of making a successful filing with the FDA.

**11:35 am**

**Extrusion of Complex Fibers – Current Medical Uses and Future Potential**

*Hills, Inc.*

**Ben Shuler, Vice President, Business Development and Project Management**

Modern extrusion technology can produce exquisitely complex fibers – multicomponent fibers, novel shapes, microfibers, nanofibers, and combinations of these. The application of such fiber types is somewhat mature in continuous filament yarns, but is still in its infancy in nonwovens. This presentation will explore the technology, current applications, and potential for the future.

**12:10 pm**

**Roundtable Networking Luncheon with speakers and fellow participants**

**1:30 pm**

**The Abdominal Response to Fabrics Used in The Repair of Wall Defects**

*W.L. Gore & Associates*

**Janson Emmanuel, Manager, Histopathology Laboratory**

Weakness of the abdominal muscle is repaired surgically by the use of various meshes. These meshes are composed of different biomaterials, some of which are of a single material, two different

materials, coated materials and materials with two different surfaces. However, the surgical insertion of these biomaterials to repair wall defects usually results in adhesions. These fibrous bands of scar-like tissue cause the tissue to bond to other tissue, organs or to the biomaterials which can lead to various disorders. Janson will share the results of a study performed to evaluate the various biomaterials commonly used for the repair of wall defects and hernias and its effect on other tissues. And, he will discuss why the properties of the biomaterials are critical in preventing adhesions and other disorders, and in preserving the structures of the tissue and its proper functions.

**2:00 pm**

**Capillary Channel Polymer Fibers as Structural Templates for Organized Tissue Regeneration**

*Clemson University*

**Ken Webb, Assistant Professor, Department of Bioengineering**

Three-dimensional, biodegradable polymeric structures that serve as temporary scaffolds for cell transplantation and tissue formation are a critical component of strategies for regenerative medicine. Capillary channel polymer (CCP) fibers with parallel, micrometer-scale surface grooves offer a unique approach to directing the regeneration of structurally organized tissues such as ligament, muscle, and nerve. Dr. Webb will describe his lab's studies on the effects of fiber cross-sectional geometry on cell alignment and methods for the incorporation and sustained delivery of bioactive molecules.

**2:45 pm**

**Tour of Bioengineering Laboratories, Clemson University**

Observe State-of-the-Art labs and Cutting Edge Research and Testing Taking Place at Clemson University to Aid the Medical Textile Industry.

**6:00 pm**

**Enjoy a Networking Wine and Cheese Social**

The social will allow you to spend time talking with presenters and your colleagues as well as being able to view some interesting exhibits.

**Thursday – March 22, 2007**

**7:30 am**

**Convene at the Westin Poinsett Hotel for Continental Breakfast and Further Informal Discussion.**

**7:55 am**

*Announcements and Introduction of Moderator*

**Howard Zins, Principal, Howard Zins Associates**

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

**8:00 am**

**High Value Fibers for Medical and Other Applications**

*JHagewood, LLC*

**John Hagewood, Principal**

In this session you will discover what makes a fiber have high value and how its value is related to the end use. John's presentation will cover both existing high value fibers, including those used in the medical field and exotic new fibers under development.

**8:30 am**

**An Introduction to the New Healthcare Laundry Accreditation Council**

**(HLAC)**

*Healthcare Laundry Accreditation Council (HLAC)*

**Chris Isely, Executive Director**

In response to years of requests for an independent accreditation body by many textile laundry professionals which would certify their competence in processing healthcare textiles for hospitals and other healthcare customers the Healthcare Laundry Accreditation Council (HLAC) was formed in 2005. Since its inception HLAC has established and published high standards for processing healthcare textiles, and provided an inspection and accreditation process which recognizes those laundries which meet its criteria. John will tell you about the high standards established which cover the complete textile processing cycle, from handling and transporting, to in-plant processing, to delivery back to the customer. And, he will include information on standards established for facility layout, personnel training, customer service and OSHA-required practices, including Bloodborne Pathogen Exposure Control Standards.

**9:00 am**

**Testing for Antimicrobial Efficacy: Where Do I Start?**

*NAMSA*

**Beth Joiner, Technical Specialist**

This presentation is an overview of how to choose the appropriate test method to test the efficacy of your product. It will provide information on the test methods available as well as what you can do if a standard test method does not fit your testing needs.

**9:30 am**

**Networking Refreshment Break**

**9:40 am**

**Nanoadditives: Functional and Property Enhancement of Fibers for Medical Applications**

*WINOVIA LLC*

**Vinny Sastri, President**

You will discover how nanoadditives can be used to improve the performance and functionality of fibers used in medical applications, including incorporation of the additives nanoclays, nanosilicates, nanocarbon tubes and nanosilver in the resin matrix or as coatings. You'll learn how property and functional enhancements, including high strength, improved dimensional stability, lubricity, hemocompatibility, anti-static, stain and infection resistance can be engineered into the fibers and tailored to meet intended use and performance requirements.

**10:10 am**

**Test Methods and Specifications for Evaluating the Microbial Barrier Properties of Medical Textiles**

**s at 864.656.2200 or Register Online**

*Nelson Laboratories, Inc.*

**Todd D. Hillam,**  
**Aerobiology Section Leader**

This presentation explains the tests required for medical textiles to show the microbial barrier properties they possess to protect the end user and/or patients.

**10:40 am**

**Pressure Sensitive Adhesives and Medical Fabrics**

*Adchem Corporation*

**Walter Polifka, Business Development Manager**

Pressure-sensitive adhesive products are found throughout the medical industry. Whether as bandages, surgical drapes, biohazard sealing systems, or trans-dermal patches, it is important to understand the interaction between the adhesive layer and the material that needs to be bonded. The basics of pressure-sensitive tape products is discussed with a focus on those issues that impact the bond between the fabric or film and the adhesive as well as toxicity and processing considerations.

**11:30 am**

*Question and Answer Session with the Speakers*

**12:00 pm**

*Roundtable Luncheon with Fellow Participants and Speakers*

**1:00 pm**

**Quality and Regulatory Aspects of Fiber Forming Absorbable Polymers**

*Poly-Med, Inc.*

**Elizabeth A. Nichter, Manager, Regulatory Affairs and Quality Systems**

You will explore the critical issues concerning medical devices based on fiber forming absorbable polymers you need to consider when:

- developing quality processes,
- meeting FDA regulatory requirements,
- satisfying customer expectations

**1:30 pm**

**Prevention and Treatment of Pressure Ulcers with Medical Textiles**

*U.S. Dept. of Agriculture*

**J. Vincent Edwards, Ph.D., USDA-ARS, Southern Regional Research Laboratories**

With the aging of the population decubitus pressure ulcers (bed sores) are a world-wide health crisis, and their prevention and treatment has become a national priority. The National Pressure Ulcer Advisory Board estimates that as many as three million people in the United States have pressure ulcers. Discover how innovatively designed medical textile systems is a growing area of prevention technology, and how the application of new polymer gels, foams, woven, non-woven and multifunctional finishing technologies to medical textile products for treatment of pressure ulcers is required to improve mattresses, cushions, overlays, sheets, and incontinence pads. You will also learn why significant growth is expected for wound healing dressings.

**2:10 pm**

**Elastic Spunbond, Meltblown and SMS Medical Applications**

*Phoenix Group USA, Inc.*

**Gregory F. Ward, General Manager, Nanofiber R & D**

Learn how Phoenix Group's patented process provides elasticity without the use of elastic films and fibers or latex materials to Spunbond, Meltblown, and SMS materials. You also will observe medical uses of the process in this session.

**2:45 pm**

*Networking Refreshment Break*

**3:00 pm**

**Information Systems to Enhance Data Collection and Medication Compliance in Clinical Trials**

*Vision Point Systems, Inc.*

**Brad Shaw, President**

Focusing on the convergence of web and interactive voice response systems, Brad will provide the latest news on state-of-the-art use of information systems and telecommunications to collect data for clinical trials, how advances in web-driven data collection and telephone based systems have resulted in highly accurate data collection and reduced costs. You will also examine the automated tools which are available to handle sensitive data in a safe and secure manner in conformance with CFR medical data collection standards.

**3:30 pm**

**Specialty Polymers to Replace Coating Additives**

*Glo Tex, International*

**Christopher H. Burk, Organic Chemist**

With traditional Halogenated and Fluorochemical coating additives receiving increasing environmental attention, latex binders that have flame retardant monomers and water repellent monomers incorporated into the polymer backbone have been prepared. You will explore the performance characteristics of these materials as compared to traditional latex-based compounded coatings.

**4:00 pm**

**New Factors in the Utilization of Reusable Medical Textiles**

*Howard M. Zins Associates*

**Howard M. Zins, Principal**

Environmental and cost issues have long been points for consideration in the utilization of reusable healthcare textile products. Additional determinants have been introduced recently including an accreditation program along with AAMI, (Association for the Advancement of Medical Instrumentation), barrier performance and classification standards. Howard will examine these issues and additional interest areas in Reusable Medical Textiles.

**4:30 pm**

*Question and Answer Session with Speakers and Colleagues*

**4:45 pm**

*Adjournment*

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## 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!

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## Speakers

**CHRISTOPHER H. BURK** is an Organic Chemist at Glo Tex, International. He earned his B.S. Degree in Chemistry and his M.S. Degree in Organic Chemistry from The Ohio State University. Articles related to his research and work have appeared in the *Journal of the American Chemical Society* and in *Organic Letters*.

**BRAD BUSHMAN** is Vice President of Technical Affairs at Standard Textile Co., Inc. His responsibilities include technical services, product development, and regulatory affairs. He currently serves as Vice President of the American Reusable Textile Association and is an instructor for NAIMS's educational program at the American Laundry and Linen College. For more than 12 years Brad has taken an active role in U.S. standard setting activities through the American National Standards Institute and the Association for the Advancement of Medical Instrumentation. Brad earned his bachelor's degree in Chemistry from Oberlin College and his master's degree in Business from Xavier University.

**WILLIAM SINTON COBB, IV, M.D.** graduated from the Medical College of Georgia with a Doctor of Medicine degree. He also graduated with a Bachelor of Science degree in Zoology from the University of Georgia. Currently, he is the Director of Minimally Invasive Surgical Services, Academic Department of Surgery, at the University Medical Center in Greenville, S.C. His appointments also include Assistant Professor of Clinical Surgery, Laparoscopic Surgery, University of South Carolina Medical School in Columbia, SC. Dr. Cobb's publications appear in peer reviewed journal articles, book chapters, letters to the editor and manuscripts. He has given many scientific presentations, poster presentations, and video presentations. Additionally, he has been awarded multiple research grants and has been an invited lecturer at many medical conferences.

**J. VINCENT EDWARDS, Ph.D.** has worked for 9 years in USDA's Agricultural Research Service as Lead Scientist combining and adapting the concepts of bioactive molecules with traditional textile chemistry approaches to create new value-added biomedical cotton products for industrial licensing. Previous work includes non-viral gene therapy research at GeneMedicine, Inc. and senior research scientist at Marion Merrill Dow Pharmaceuticals. His combined work has been documented in 10 patents, 60 co-authored publications and two edited books. Currently Dr. Edwards is Chair of the Cellulose and Renewable Materials Division of the American Chemical Society, and is active in other professional societies, including Wound Healing. Dr. Edwards earned his Ph.D. from the University of Louisville.

**JANSON EMMANUEL** is Manager of the Histopathology Lab at W.L. Gore & Associates. For more than 22 years he has studied tissue response of various biomaterials in anatomic sites including, hip and knee prosthesis in orthopedics, fabrics in vascular, cardiovascular and soft tissue applications. Currently, he is working on the applications of resorbable materials and polymers in various medical problems. Jason has published in orthopedic journals, presented predominantly at the Society for Biomaterials as well as to other groups. He earned his masters degree in Immunology and is currently working on his doctorate on Macrophage Interactions with Biomaterials.

**JOHN HAGEWOOD** began his career with NASA and Boeing in the Apollo moon program in the design of the rocket propulsion systems. John worked for Dupont for 14 years in product development of polyester fibers, spunbonds, composites and specialty fibers. Later, he became Vice President of McCoy-Elison where he was involved in development and marketing of draw warping equipment. Additionally, John has served as President of Fiber Associates and Allied Engineering, Business Unit Director for Hills, Inc. and Associate Director of the Nonwovens Cooperative Research Center. Recently, John formed JHagewood LLC, a consulting firm. John has a BS degree in Engineering Science from Tennessee Tech, a MS degree in Mechanical Engineering from LSU and a Ph.D. in Mechanical Engineering from LSU.

**TODD D. HILLAM** is Aerobiology Section Leader at Nelson Laboratories, Inc. where he has worked for more than 5 years. The Aerobiology Section specializes in testing of materials and medical devices which are designed to provide protection against biological exposures. Todd is a Registered Microbiologist with The National Registry of Microbiologists and is a member of the Association for Standard Testing of Materials. He received his bachelor's degree in Microbiology from Brigham Young University and his MBA from the David

Eccles School of Business at the University of Utah.

**CHRIS ISELY** is owner of Pilot Productions, Inc. For more than 20 years, Chris has written and produced many marketing, training and public relations presentations and publications for the textile maintenance industry and for the Textile Rental Services Association of America (TRSA). Because of Chris' close association with TRSA he has in-depth knowledge of all aspects of the business. Additionally, as a result of his experience as a business owner, financial consultant to other businesses, and writer/producer of productions and publications for the textile maintenance industry he was well positioned to assist in the development and growth of HLAC. He drafted the major Standards document and accompanying Inspection Check List for TRSA's Healthcare Laundry Task Force, and he facilitated the process of forming the Council. In 2005, the newly formed Board of Directors appointed Chris as the Executive Director of HLAC. Chris has a BA degree from Lawrence University and a Masters degree in Journalism from Northwestern University.

**BETH JOINER** is a Technical Specialist for NAMSA. She holds a Bachelor of Science Degree in Biological Sciences from Murray State University. Beth analyzes the technical appropriateness of client requests and advises clients and NAMSA associates on technical issues. She has 28 years of experience in the field of Microbiology; four years with Custom Biologics and the Murray State University Diagnostic and Research Center, as well as 24 years with NAMSA. Beth is a member of the Association of Textile Chemists and Colorists and American Society of Microbiology. She is a registered microbiologist with the National Registry of Microbiologists. She has published an article on Determining Antimicrobial Efficacy, in the September 1998 issue of *Nonwovens Industry Magazine* and wrote chapter 12 on Determining Antimicrobial Efficacy and Biocompatibility of Treated Articles Using Standard Test Methods in the ACS Symposium Series 792 Bioactive Fibers and Polymers.

**CURTIS L. LARSEN** is Package Engineering Consultant for Dupont Medical Packaging. Curt serves on many committees of the American Society of Testing and Materials International. He is a member of the Association for the Advancement of Medical Instrumentation, and is past co-chair of the AAMI administered U.S. sub-TAG for ISO 11607 standard packaging for terminally sterilized medical devices and has been active on the ISO task group for the past three revisions; a member of the AdvaMed (Health Industry Manufacturers Association or HIMA), Packaging and Sterilization Subcommittee and co-author of the HIMA Reference on Sterile Packaging; a professional member and co-chair of the Medical Device Packaging Technical Committee of the Institute of Packaging Professionals. Additionally, Curt is a member of the editorial advisory board of *Pharmaceutical and Medical Packaging News*. In June 2004 *Medical Device & Diagnostics Industry* magazine named him one of the 100 Notable People in the medical device industry. Curt earned a B.S. degree in Packaging Technology from Michigan State University.

**DEBORAH LICKFIELD** received her Ph.D. degree in Textile and Polymer Science from Clemson University after earning her B.S. and M.S. degrees in Microbiology from Clemson University. Deborah has extensive experience in the textile industry including academic service. She has held positions in management and research and development at Kimberly-Clark, BBA Nonwovens and PGI. She owns a consulting firm which offers services in product development and market research. Additionally, she has sub-specialties in intellectual property management, prior art searches, technical opinions and application drafting, and formal proposal writing. Deborah holds 6 U.S. patents and has published in numerous industry journals.

**ELIZABETH A. NICHTER** is Manager of Regulatory Affairs and Quality Systems at Poly-Med, Inc. Her responsibilities include developing and implementing quality management systems for the medical device company in compliance with FDA regulations and international standards, ISO 9001 and ISO 13485. Previously, she served as the first quality assurance coordinator for the clinical laboratory and reference laboratory at Anderson Memorial Hospital, where she had been employed as a Certified Medical Technologist. Beth has written and presented several papers on quality issues, and in 1996 she represented the quality improvement team which won the RIT/USA Today Quality Cup Finalist Award. Beth earned a B. S. degree in Chemistry from Erskine College and a M.S. degree in Nutrition with an emphasis on Biochemistry from Clemson University.

**WALT POLIFKA** has been part of the Business Development team of Adchem Corporation for more than seven years. He is responsible for new business

development for pressure sensitive tape products in several industrial markets and the medical market. His prior experience includes 15 years in the fluid handling equipment business including that used to meter, mix and dispense adhesive materials and 14 years of experience in the polyester resin and urethane foam chemistry business. Walt holds a B.S. degree in Chemical Engineering from Lehigh University.

**VINNY SASTRI, Ph.D.** is President of WINOVIA, LLC., a firm which provides customized, sustainable solutions and strategies in new product development, quality improvement and high performance materials. Prior to starting his own consulting company, Vinny held global leadership positions in technology, quality, and marketing at BASF, Honeywell and General Electric Plastics. Vinny earned a Ph.D. from Rutgers University and completed post-doctoral work at Brooklyn Polytechnic Institute. He holds 5 patents and has more than 20 publications in his name.

**BRAD SHAW** is President of Vision Point Systems and is responsible for growing the Information Technology Services Division with a special focus on the federal government and bio-technology companies. For the previous 10 years, Brad was a professional consultant for the Department of Defense in the area of materials science. He has a Bachelors degree from Virginia Tech in Mechanical Engineering and a Master of Business Administration degree from George Mason University.

**BEN F. SHULER** is Vice President of Business Development and Project Management for Hills, Inc., a company which develops, manufactures, and sells customer-designed equipment for the extrusion of complex and highly technical synthetic fibers to a world-wide market. Previously, Ben served in Engineering Management positions with Procter and Gamble and Fiberweb Nonwovens. He holds BS and MS degrees in Metallurgical Engineering from the University of Tennessee. Additionally, Ben is a founder and Vice President of the Space Coast Chapter of the Project Management Institute.

**GREGORY F. WARD** is General Manager of nanofiber research and development at Phoenix Group USA, Inc. He has previously had extensive management and research experience with Shell Chemical, Scott Nonwovens, Johnson & Johnson, and International Playtex. Greg is a graduate of Stevens Institute of Technology with an ME degree in Chemical Engineering, and Rutgers University's School of Law with a JD in Law. He is licensed to practice law in New Jersey State and Federal courts.

**KEN WEBB, Ph.D.** is Assistant Professor at Clemson University in the Bioengineering Department. Dr. Webb established the Micro-Environmental Engineering Laboratory at Clemson which focuses on combining molecular strategies of protein and gene delivery with structurally organized polymer fiber scaffolds for tissue engineering and regenerative medicine. Previously, he worked at the Keck Center for Tissue Engineering at the University of Utah as a post-doctoral research associate and research assistant professor. Ken earned his B.S. degree in Agricultural and Biological Engineering from Clemson University and his Ph.D. in Bioengineering from the University of Utah.

**W. CURTIS WHITE** is responsible for the business and technical growth of AEGIS Environmental Management, Inc. AEGIS is a specialty antimicrobial company which provides technical and marketing services, and the AEGIS Microbe Shield Program to the textile, foam, water services, personal care, household products, and building materials marketplaces. Curtis has extensive experience in the field of research and development of antimicrobials working for Dow Chemical Company and Dow Corning. Curtis is recognized as a leader in the understanding and control of microbial problems

**HOWARD M. ZINS** is the principal of Howard M. Zins Associates, a consulting organization offering the textile and apparel industries, research and development support. The firm also delivers technical service and regulatory response/lobbying support programs. His previous business experience includes positions held with Angelica Corporation and Milliken, Inc. As past president of the American Reusable Textile Association (ARTZ), Zins continues to serve on ARTA's board of directors and as that organization's Legislative Director. In addition, he is a member of ASTM's F23 Protective Apparel Committee and has also served as a member of the AAMI (Association for the Advancement of Medical Instrumentation) Protective Barriers Working Group. A co-chairperson of the Clemson University Medical Textile Conference since 2002, Zins has also been a longstanding participant in these programs. Additional presentations have also been made at TRSA Healthcare Seminars, NAIML meetings, Cornell University, the University of California, Davis, and NC State University, Protective Clothing Symposia.

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