

Education Advisory Board, chairs C1-S14 Study of Employee Benefits Sub-Committee, and is a member of the AATCC Foundation Inc. Bide served as a member of the AATCC Board of Directors and AATCC Foundation Board of Directors from 2005-2010, and served as President of the Association from 2007-2008. He was the 2009 recipient of AATCC's Harold C. Chapin Award for outstanding service to the Association, and the 2011 recipient of the Olney Medal Award. In 2003, he received the Weaver Award for Best Paper in *AATCC Review*, and in 1997, he received the Annual Research Medal of the Worshipful Company of Dyers.

Bide graduated from University of Bradford with a BTech (1st Class Honours) in Colour Chemistry and Colour Technology in 1974, and a PhD in 1979. He has been a professor with the Department of Textiles, Fashion Merchandising and Design at the University of Rhode Island since 1991, and chaired the department from 2001-2004.



Southern Region

James (Jimmy) E. Rodgers III, USDA ARS

Jimmy Rodgers is Research Leader of the Cotton Structure and Quality Research Unit at the US Department of Agriculture (USDA) Southern Regional Research Center (SRRC)—Agricultural Research

Service (ARS). He has been a member of AATCC since 1988, and is presently a member of the Gulf Coast section. He serves on RA24 Fiber Analysis Test Methods, RA57 Floor Covering Test Methods, RA45 Finish Analysis Test Methods, RA36 Color Measurement Text Methods, RA103 Spectroscopic Technologies, C3 Technical Committee on Research, C7 Publications Committee, CS65 Olney Medal Award Committee, RA105 Supercritical Fluid Test Methods, RA91 Applied Dyeing Theory, and C15 Textile Education Committee. He also serves as chair of RA103 Spectroscopic Technologies.

Rodgers has a BS degree from Jacksonville State University and a PhD in physical chemistry from the University of Alabama. He also earned an MBA from the University of West Florida. He has worked in various technical and management positions with

Milliken and Co. (1974-79) and Monsanto Chemical Co./Solutia (1979-2004). He joined the USDA Southern Regional Research Center in 2004 as the Research Leader for the Cotton Structure and Quality Research Unit.

He is also a member of the American Chemical Society (ACS), Inter-Society Color Council (ISCC), Society for Applied Spectroscopy (SAS), Council of Near Infrared Spectroscopy (CNIRS), Sigma Xi, American Society for Testing and Materials (ASTM International), International Committee on Cotton Testing Methods (ICCTM), and Reserve Officers Association (ROA).



Western Region

Susan L. Matter, Nordstrom Production Group

Susan L. Matter is product integrity manager with Nordstrom Inc. She has been a member of AATCC since 1991. Matter has been a member of RA23

Colorfastness to Water Test Methods, RA24 Fiber Analysis Test Methods, RA 50 Lightfastness and Weathering Test Methods, RA60 Colorfastness to Washing Test Methods, RA68 Odor Determination Test Methods, RA71 Hosiery Test Methods, and RA61 Appearance Retention Test Methods. She is chair of RA42 Dimensional Change Test Methods, and RA75 Evaluation of Materials and Products for End User Performance, and is a member of RA80 Printing Technology, C2-S1 International Test Methods, and C3 Technical Committee on Research, C1 AATCC Board of Directors, C6 Membership, and C11 Committee on Conferences.

Matter earned a BS from the University of California, Davis, in 1991, and has worked at Nordstrom Inc. since 1996. Prior to this, she worked at Mervyn's as a lab technician and textile technologist. She is also a member of ASTM, and serves as chair for D13.63 Home Furnishings.

Questions?

Debra Hibbard; hibbardd@aatcc.org;
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Color Management Workshop

September 19-20

AATCC Technical Center,
Research Triangle Park, N.C., USA

Color communication throughout the supply chain is imperative, since color plays such a vital role in a consumer's decision to buy a textile product. At AATCC's Color Management Workshop, learn from world-renowned color experts as they discuss:

- color principles and the effect of lighting
- factors to consider when developing your color palette
- how color choices affect cost, fashion, durability, and dyeing reproducibility
- how to implement a digital color program with your supplier
- managing color on multiple textile substrates
- how to control shade from concept to production, and much more.

Participants will have their color questions answered during the presentations and breakout sessions. This workshop is designed for merchandisers, retailers, manufacturers, product developers, color approval managers, specifiers, and designers.

www.aatcc.org/events/workshops/color.htm

AATCC Materials Symposium

October 10-11

Atlanta, Ga., USA

AATCC Materials Interest Group will conduct a symposium focusing on *Advances in Nonwovens, Technical Textiles & Sustainable Materials*. This two-day symposium will highlight the latest developments and cutting-edge research of broader interest to textile technologists and material scientists.

The symposium will feature topical papers on four main themes:

1. **protective performance materials**, including super-repellency, reactive coatings, carbon nanotubes, and nano fibers for filters.
2. **sustainable materials**, including bio-renewable materials, bio-based 3D composites, sustainability issues in cotton, and bio-based high-performance fibers.

3. **multi-functional material additives**, such as anti-microbial properties of microsilver, peelable coating for removal of decontaminates, novel enzymatic bactericide, developments in plasma treatments and novel encapsulation technology for finishing.

4. **engineered fibrous materials**, will focus on developments in the nonwoven and technical textiles field, machinery developments and a market update on the nonwovens and technical textile industry.

Presentations confirmed to date include:

Self-cleaning Superoleophobic Surfaces—No Trail Left Behind; Hoon Joo Lee, North Carolina State University (NCSSU)

Functionalized Nanofibers for Personal Protection Applications; Howard Walls, Research Triangle Institute

High Performance Fibers from Glucose (isosorbide); Mike Jaffe, New Jersey Institute of Technology

Cellulose Micro and Nano Structures for Advanced Material Applications; Tom Theyson, TensTech Inc.

MicroSilver as an Antimicrobial; Karl Richter, RFH BioTek Inc.

Novel and Highly Efficient Methodology for the Destruction of Organophosphorous CWA; Alex Nev-erov, Queen's University

Shaken but not Stirred, Japan Decontamination Operations Lessons Learned; Larry Stack, CBI Polymers

Multi-functional Protein-Enabled Inorganic/Organic Coatings; Kenneth H. Sandhage, Georgia Institute of Technology

Coca-Cola's Roadmap Towards 100% Renewable Packaging; Speaker TBA, The Coca-Cola Company

Nonwoven Web Forming Developments; Daniel M. Feroe, Andritz Küsters

Soft Armor for Local Responders and Emergency Personnel; Vinitkumar Singh, Texas Tech University

Plasma Surface Modification Processes for High Performance Textiles and Fibers; Mikki Larner, Plasma Technology Systems

Composite Aerogels of Soy Proteins and Cellulose Nanofibrils; Julio Arboleda, NCSU

Color Changing Functional Finishes; Ronnie Brignac and Debbie Aperfine, Chameleon International



Upcoming

Cotton Performance Technologies; David Earley,
Cotton Incorporated

Highlighting the program will be market updates on the industrial fabrics and nonwoven industries. Updates will be provided by Mary Hennessy, president & CEO, Industrial Fabrics Association International (IFAI) and Rory Holmes, president at INDIA, Association of the Nonwoven Fabrics Industry. Eugene Wilusz, Natick Soldier RD&E Center, will be covering the state-of-the-art and future research needs in the chemical and biological protection arena using fibrous materials. Developments in nonwoven decontamination wipes will be addressed by Amit Kapoor, president, First Line Technology LLC.

www.aatcc.org/events/symposia/Materials_Symp_2012.htm

IFAI Americas Expo

November 7-9

Boston, Mass., USA

AATCC is sponsoring the *Performance Textiles: Technologies and Testing* seminar 9:30 a.m. to 12:30 p.m. on Thursday, November 8 as part of the educational offerings at IFAI Expo Americas 2012. The seminar will focus on technologies that enhance fabric performance and test methods used to evaluate these performance attributes. Attendees will gain a better understanding of how standardized tests can be used to compare products and how testing can improve the reputation and bottom line of their business.

While at the Expo, please plan to visit AATCC's booth and chat with the staff about the Association's test methods and quality control aids, educational offerings, membership benefits, and activities.

www.ifaexpo.com

www.aatcc.org/events/symposia

Updated Resources for Quality Control

AATCC test methods and evaluation procedures are updated and added each year to provide the best possible resource for quality control testing. The *2012 AATCC Technical Manual* is available in both print and easy-to-use, searchable CD formats.

New for 2012

- TM 196 (Colorfastness to Sodium Hypochlorite of a Textile Floor Covering)
- TM 197 (Vertical Wicking of Textiles)
- TM 198 (Horizontal Wicking of Textiles)
- TM 199 (Drying Time of Textiles: Moisture Analyzer Method)
- Revised TM 134 (Electrostatic Propensity of Carpets)
- Revised "Standardization of Home Laundry Test Conditions" monograph with top loading washing machine parameters.

www.aatcc.org/products

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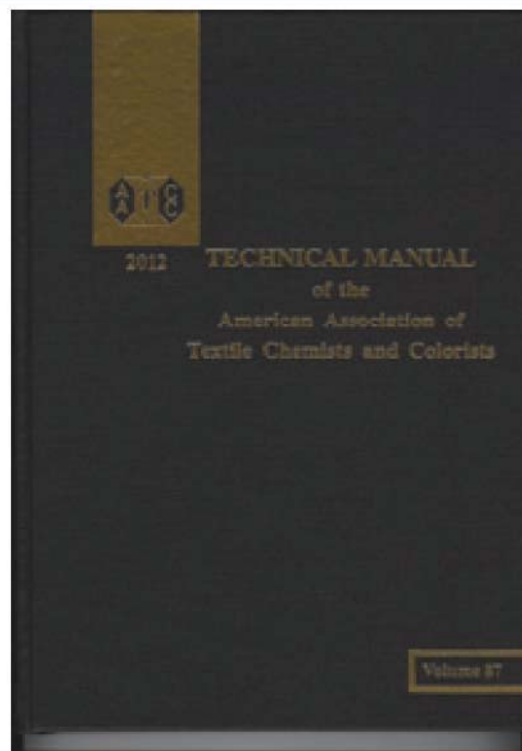
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AATCC International Conference

Poster Presentations

Abstracts Due November 26

Poster presentation abstracts should clearly state the problem, solution, and results of the research work. Poster presenters pay a reduced conference fee.



Submit abstracts to:

Peggy Pickett; pickettp@aatcc.org;
telephone +1 919 549 3533

www.aatcc.org/ic

Intro to Textile Testing Workshop

December 5-6

AATCC Technical Center

Research Triangle Park, N.C., USA

If you are responsible for product evaluation, specifications, and quality control for apparel and textile materials, this workshop is a must for you. The workshop features:

- procedures for evaluating colorfastness and physical properties
- colorfastness tests, including crocking, light, washing, and perspiration
- evaluation of physical properties, including dimensional change (home laundering and accelerated methods), water repellency and resistance, and appearance retention.

Emphasis will be placed on how to properly conduct and interpret the tests. Lecture, demonstrations, and hands-on participation will give attendees a thorough grounding in these methods. Attendance is limited, so early registration is encouraged.

www.aatcc.org/events/workshops



Mark Your Calendar

Make plans now for upcoming events and opportunities.

September 13

Northwest Section Meeting—Portland, OR, USA

September 19-20

Color Management Workshop

www.aatcc.org/events/workshops/color.htm

October 10-11

AATCC Materials Symposium

www.aatcc.org/events/symposia/Materials_Symp_2012.htm

October 25

Metro Section Meeting—FIT, New York, NY, USA

www.aatcc.org/members/sections/met.cfm

October 26

2013 AATCC International Conference Presentations—final abstracts due

November 2

Ballots for AATCC Officer Elections Due

November 8

Performance Textiles: Technologies & Testing seminar at IFAI Americas Expo—Boston, MA, USA

www.aatcc.org/events/symposia

November 26

2013 AATCC International Conference Poster Presentations—abstracts due

November 30

2013 AATCC International Conference, Herman & Myrtle Goldstein Student Paper Competition—entries due.

December 5-6

Intro to Textile Testing Workshop—RTP, NC, USA

www.aatcc.org/events/workshops

December 7

Northwest Section Meeting—Seattle, WA, USA

April 9-11

2013 AATCC International Conference—Greenville, SC, USA

www.aatcc.org/ic

Ongoing

AATCC Webinar Series

www.aatcc.org/events/online/webinars.htm

UV Calibration Reference Fabric Program

www.aatcc.org/testing/improve/uv.htm

Global Test Method Training

www.aatcc.org/events/workshops/global.htm

Proficiency Testing Programs

www.aatcc.org/testing/improve/proficiency.htm

Textile Fundamentals Online Training

www.aatcc.org/events/online/fundamentals.htm



Life-Saving Fibers

By Glenna B. Musante

Today, textile fiber biomedical implants represent a multi-billion dollar industry worldwide, but as recently as 60 years ago the use of textile fibers to replace body parts was virtually unthinkable. Then, two neighbors living near Philadelphia had a conversation.

According to David Brookstein, former Executive Dean for University Research at Philadelphia University, it was the late 1940's, and a New Jersey, USA, cardiac thoracic surgeon was certain that one of his patients had what is known as a dissecting aneurysm. This is a weakness in the wall of the aorta (a large artery that extends from the heart to the abdomen) that can rupture and cause sudden death.

The doctor's neighbor, a Philadelphia University graduate named William Von Liebig, owned a company that made silk. One day, the surgeon asked Von Liebig if he could construct a fabric tube to replace his patient's aorta. It had never been done before, but Von Liebig was intrigued and approached a professor at Philadelphia University named Thomas Edman, an expert in knitting, and asked if this might be possible. Edman gave it some thought and figured out how to construct a bifurcated aorta from fabric, and gave the design specifications to Von Liebig, who then went back to his mill and constructed what is reportedly the world's first textile implantable. The surgeon implanted the device, it worked fine, the patient lived, says Brookstein, and the rest, as they say, is history. Brookstein adds that Von Liebig went on to form a medical device company that later became Boston Scientific, which (according to a 2012 report from The Freedonia Group, a market research company) was the leading US manufacturer of vascular grafts in 2008.

A Scientific Synthesis

In the process, a new hybrid field combining textile engineering and medical science was born.

With advances in tissue engineering, nanotechnology, and other innovations, the field of textile biomedical implantables has emerged as a scientific frontier that promises to provide solutions to several of the world's fastest growing health issues, including heart disease.

According to a recent implantables industry forecast from The Freedonia Group, demand for medical implantables in the United States alone will grow 7.7% annually to an estimated US \$52 billion annually by 2015. Cardiovascular implants—an industry segment that includes textile implantables—represents 28% of the demand for implantables and (as with the first implantable) offer fertile ground for the development of innovations that combine fundamentals of textile engineering with medical research.

The Search for Biocompatible Materials

One of the major issues with which scientists have grappled is finding materials for implantables that the human body will accept.

Gary Bowlin, a professor at Virginia Commonwealth University, specializes in vascular tissue engineer-

What is Electrospinning?

Think of this as a glorified cotton candy machine. Electrospinning has been around a long time and creates micro or nano-scaled fibers by spinning a polymer solution at high speed. An electric charge is applied and when the electric field becomes strong enough, fluids are drawn out of the polymer, leaving miniscule fibers behind.

ing—specifically, designing small diameter vascular grafts and implants. Like many new innovators in this field, Bowlin is not a textile engineer, and he is not a physician. With training in chemical engineering and biomedical engineering, he refers to himself as a tissue engineer.

According to Bowlin, the polyester-based woven and knitted vascular grafts that have been used since the mid-1950's have worked for many people, but “are far from ideal when used for small diameter blood vessel replacement, such as with pediatrics, or in our arms and legs.”

He says that traditional polyester-based implantables often fail in small vessel situations on implantation, which could cause sudden death.

Bowlin uses electrospinning (see sidebar) to develop tissue-engineered implants. His research includes identifying non-synthetic replacements for polyester, and developing ways to use natural polymers to build the fabric walls for small diameter, nonwoven, seamless textile tube implants to replace and repair blood vessels. Using materials such as dextrose, Bowlin's implantables could be described as scaffolds that promote cell regeneration, then disappear.

“If you look at your body and take away the water, the cells, the mineral components of your bones,” you are left with an extracellular matrix formed from nanofiber, he says. “So we are nothing but a nanofiber, filled in.”

His work with implantables is based on this prem-

What are biomedical textiles?

Generally speaking, biomedical textiles are products designed and used for medical purposes inside the human body and include such items as absorbable sutures, vascular grafts, and artificial ligaments.

ise and the notion that the largest component of this extracellular matrix is collagen, which acts as a structural element for cells much like the steel beams in a sky scraper. But there, the metaphor stops because collagen, he says, has the ability to communicate with human cells.



New Spin on Textiles

Bowlin electrospins dextran to create implantables that human cells will hopefully respond to and grow on. “Cells know what to do in the right environment, so as textile folks, we need to create the right environment,” he explains, adding that the miniscule fibers created by electrospinning “look familiar to human cells.”

One challenge is finding the right polymers. Timing is also a tricky issue. Bowlin’s implantables are designed to provide a structure on which human cells can grow, but have to be in place long enough for that process to fully take place.

“If we use natural materials, cells will recognize that and know exactly how to respond to that,” he says, and the response he is looking for is a willingness by human cells to integrate with his fibers, and create replacement blood vessels.

Matt Phaneuf, president of BioSurfaces Inc., a company specializing in the development of innovative medical devices, is also using electrospinning to create new generation implantables.

Products in his company’s development pipeline include a peripheral artery graft designed to prevent clot formation, a hemodialysis access graft that prevents clotting and unwanted cellular growth, and drug-eluting stent sheaths.

He says that most of today’s implantables are manufactured using standard textile technologies. “For



artificial blood vessels, current grafts are knitted, woven, and extruded,” he explains. “Sutures can be braided or (made into) a monofilament form. While textile use in medical devices sounds very sophisticated, the technology uses basic textile techniques that have been around for many years.”

Phaneuf says electrospinning has also been around for many years, but typically has not been viewed as a viable manufacturing alternative for textiles. “It’s hard to produce things in bulk with electrospinning,” he explains.

But it’s an ideal methodology for creating minuscule nonwoven fabrics, including small implantable arteries. Another benefit to electrospinning is that researchers can weave—or rather, spin—pharmaceuticals into the fiber mix.

Did you know?

A nanofiber has a diameter smaller than 1000 nanometers. A nanometer (also spelled nanometre) equals one billionth of a meter.