THE Indicator

MARCH 2007 Vol. 88 • No. 3 ISSN0019-6924

Dr. Nicholas J. Turro

William H. Nichols Medalist for 2007

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Garden State Exhibit Center, Somerset, New Jersey

CALL FOR PAPERS

Deadline – April 15, 2007

The Eastern Analytical Symposium and Exposition is the second largest conference and exposition for laboratory science in the U.S. dedicated to the needs of analytical chemists and those in the allied sciences. We offer high quality cutting-edge technical sessions and state-of-the-art short courses, workshops and seminars. We invite you to be a part of the program by contributing a paper for oral or poster consideration. Please note that all abstracts must be submitted electronically via the EAS web site at www.eas.org. The abstract submission deadline is April 15.

To submit a contributed paper for the 2007 EAS Technical Program, please submit abstracts through our web site at www.eas.org, between March 1 and April 15, and follow the instructions for abstract submission. *Invited speakers must not submit abstracts to EAS until requested.*

Please carefully review the following information:

- All contributed abstracts must be submitted through our web site at www.eas.org between March 1 and April 15, 2007. No faxed, e-mailed, or mailed abstracts will be accepted.
- Please note that no one author may submit and present more than two posters.
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- Presenting authors of contributed submissions will be notified in June 2007 of the status of the abstract and its session assignment.

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THE Indicator

CIRCULATION: 8,500

The monthly newsletter of the New York & North Jersey Sections of the American Chemical Society. Published jointly by the two sections.

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POSTMASTER: **Send address changes to American Chemical Society, Department of Member and Subscriber Services, *THE INDICATOR*, P.O. Box 3337, Columbus, OH 43210, or e-mail: service@acs.org. Periodicals postage paid at Montville, NJ and additional mailing offices.**

Published monthly except July and August. All views expressed are those of the editor and contributors and do not necessarily represent the official position of the New York and North Jersey Sections of the American Chemical Society unless so stated. Subscription price included in dues paid by New York and North Jersey Section members. **Subscription price to non-members of either Section $20.00 per year. To subscribe, make checks payable to The Indicator and mail to the Manager/Editor (see top of left column on this page.**

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PROFESSOR NICHOLAS J. TURRO — 2007 NICHOLS MEDALIST

The ACS New York Section congratulates and extends its best wishes to Professor Nicholas J. Turro who will receive the **William H. Nichols Medal Award** on March 16, 2007 in White Plains, NY. The Nichols Medal will be presented at an award dinner following the Nichols Distinguished Symposium. Professor Turro will be honored for **Pioneering Research on the Photochemistry of Organic Molecules and Supramolecular Systems**.

Professor Nicholas J. Turro is the William P. Schweitzer Professor of Chemistry at Columbia University where he has worked since 1964. He was born in Middletown, CT, where he attended Wesleyan University and received a BA in Chemistry before going to Caltech for his PhD in Chemistry in 1960. He is the author of "Modern Molecular Photochemistry", a standard text in the field and has published over 800 research papers. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. Seventy students have obtained a PhD degree, 180 postdocs and over 100 undergraduates have been trained under his supervision.

Professor Turro is an internationally acclaimed pioneer and leader in the art and practice of physical organic chemistry and organic photochemistry. His intellectual and experimental contributions have been a major factor in providing the theoretical and experimental paradigms on which the fields of modern mechanistic organic photochemistry, chemiexcitation of organic molecules, the theory of organic photochemical reactions, supramolecular organic photochemistry and organic magnetochemistry have been built. Through the agencies of his classes, public lectures, text books and research publications, Turro has made a major impact in the education of recent generations of physical organic chemists and photochemists both nationally and internationally.

Professor Turro is an exceptionally productive chemist who has been able to achieve distinction and to create excitement in a wide range of areas of chemistry and to make deep intellectual and scientific penetration by examining the interface of organic chemistry with chemical physics and materials science. His research has been characterized by a striking breadth, encompassing synthetic organic chemistry, colloidal and interface chemistry, chemical physics, magnetic resonance theory and applications, and mechanistic aspects of molecular and supramolecular organic and inorganic chemistry.

His significant achievements and substantial contributions to chemistry include the pioneering development in the fields of cyclopropanone chemistry, mechanistic organic photochemistry, chemiluminescent organic reactions, a general theory of organic photochemistry, magnetochemistry of organic molecules, direct spectroscopic detection and characterization of carbenes and biradicals, organic photochemistry in micelles, photochemical characterization of dendrimers and DNA, supramolecular control of radical reactivity through supramolecular and magnetic effects, the use of EPR to elucidate organic reaction mechanisms and the use of photochemical methods to elucidate long standing issues in polymer chemistry.

Professor Nichols J. Turro's accomplishments have been recognized by his peers through his selection for major national and international awards in the fields of photochemistry, organic chemistry, physical organic chemistry and surface and colloids chemistry. In addition to his signal accomplishments as a research scientist, Turro has published an important analysis of the way science is performed and is recognized as an educational leader who has made a national impact. He has pioneered the use of information technologies and computers for the enhancement and enrichment of undergraduate education in chemistry. His educational ideas and products are employed at Universities and Colleges across the nation. These accomplishments have been recognized by his selection as a Distinguished Teacher Scholar by the National Science Foundation for 2002 and the Pimentel Award in Chemical Education of the American Chemical Society.

WILLIAM H. NICHOLS MEDAL DISTINGUISHED SYMPOSIUM AND AWARD BANQUET

Photons, Electrons, Spins and Supramolecular Chemistry: New Tools for Unraveling Chemical Complexity

Award Recipient: Professor Nicholas J. Turro
William P. Schweitzer Professor of Chemistry, Columbia University

Date: Friday, March 16, 2007
Times: 1:00 PM Registration 1:30 PM – 5:30 PM Symposium
5:45 PM Reception 6:45 PM Award Dinner
Place: Crowne Plaza Hotel, White Plains, NY

PROGRAM

1:30 PM	Welcome	Mrs. Joan A. Laredo-Liddell 2007 Chair, ACS, New York Section Marymount College of Fordham University
1:35 PM	Opening of the Distinguished Symposium	Professor Marc A. Walters 2007 Chair-elect, ACS, New York Section New York University
1:45 PM	DNA Charge Transport Chemistry and Biology	Professor Jacqueline K. Barton Arthur and Marian Hanisch Memorial Professor of Chemistry, California Institute of Technology
2:30 PM	Terrestrial and Extraterrestrial Chirality	Professor Ronald E. Breslow S. L. Mitchill Professor of Chemistry Columbia University
3:15 PM	Coffee Break	
3:45 PM	Protein Folding, Misfolding, and Disease	Professor Harry B. Gray Arnold O. Beckman Professor of Chemistry California Institute of Technology
4:30 PM	Photons, Spins and Special Pairs: An Integration of Photochemistry, Magnetic Resonance and Supramolecular Chemistry	Professor Nicholas J. Turro NICHOLS MEDALIST
5:45 PM	Social Hour	
6:45 PM	William H. Nichols Medal Award Dinner	

More information regarding the Symposium is available on the New York Section's website at **http://www.newyorkacs.org**

Tickets may be reserved using the following form:

RESERVATION FORM

2007 WILLIAM H. NICHOLS DISTINGUISHED SYMPOSIUM & MEDAL AWARD BANQUET in honor of Professor Nicholas J. Turro, Columbia University

Return to: ACS, New York Section, c/o Dr. Neil D. Jespersen, Department of Chemistry, St. John's University, 8000 Utopia Parkway, Jamaica, NY 11439 (516) 883-7510

Please reserve ___ places for symposium & banquet at $90/person, ACS member _____
___ places for symposium & banquet at $100/person, Non-member _____
___ places for banquet at $80/person _____
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(For table reservations of 8 or more, use the ACS member $90/person rate for combination tickets)

Reserve a table in the name of: _____
Names of guests are: _____ _____
_____ _____
_____ _____
_____ _____

Indicate numbers in your group who choose: ____ Chicken ____ Prime Rib ____ Salmon

Mail Tickets to: Name_____ Address_____

_____ RESERVATION DEADLINE March 5, 2007

Please make checks payable to: **ACS, NEW YORK SECTION** Check for $_____ enclosed

NOT NECESSARILY SHODDY — WHAT EVERY NEW JERSEY CHEMIST SHOULD KNOW ABOUT THE SCIENCE BETWEEN THE SHEEP AND THE SWEATER

By Kevin Olsen

How many hours do you work in order to afford a good quality wool jacket?

Taking the mean salary for a person in New Jersey, $50,000 per year and supposing the same average person works 49 weeks annually at eight hours a day gives an hourly rate of $25 and since a typical good quality jacket is about $250, the average New Jersey worker toils just over one day.

This was not the case for most of human history.

Consider the case of an unidentified woman from New Fairfield, Connecticut, who in October of 1770 worked at her spinning wheel for 12 hours. She produced 126 skeins of worsted yarn or about 560 linear yards. This might have been enough for one small size jacket but there was a lot more work involved. It started with raising and shearing the sheep, preparing the wool for spinning, and finally weaving the finished yarn into cloth that would be hand-sewn into finished clothing.

Such marathon spinning sessions were not the usual custom in Connecticut. By 1770 the American Colonies and Great Britain were already locked in the political and economic struggles that would eventually lead to the revolution. This housewife was making a point about being free from reliance on imported British textiles. (Or perhaps she made just the opposite point?)

Given the huge amounts of labor required to produce any sort of textile, it is not surprising that this activity was one of the first to be brought out of the home and into an industrial setting. And as all readers of the Indicator know well, where there is industry, there is chemistry.

Since wool comes from sheep, lets start there.

Writing in 1698 Gabriel Thomas reported that sheep in western New Jersey were abundant and that the animals were naturally very sound and largely free of diseases and external parasites. As the number of sheep increased throughout the state there were a number of laws passed dealing with stray sheep. In the late 1700s Newark and other towns imposed taxes on dogs as a means of discouraging animals that might prey on sheep. Eventually monies collected from these taxes were used to compensate people whose sheep had been attacked by dogs.

As valuable as they were, there seems to have been no systematic efforts to improve New Jerseys sheep until after 1800. Modern sheep breeds are largely the descendants of the Spanish Merino. Spanish herders routinely moved their flocks up to 400 miles between winter pastures in the southern part of the country and their summer pastures in the northern mountains. This annual migration produced a very hardy animal and good breeding made it one whose wool was both abundant and soft.

Merinos were so vital to Spain's wool industry that the exporting them from the country was punishable by death. But as most of Europe's royalty was related to Spain's, gifts of Merino sheep were made to many courts. Other nations were less punctilious and relied on animals smuggled through Portugal. By whatever means, Merinos began leaving Spain in the mid 1700s and by the end of the century were found in Saxony, Hungary, England, France, and even Australia.

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NOT NECESSARILY SHODDY

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Merinos were first brought to New Jersey by Dr. James Mease of Philadelphia. Dr. Mease placed two imported rams on a farm in Gloucester County. The DuPont family received gifts of Merino sheep from the Spanish government in 1812 and eventually had one of the best herds in the United States. The first meeting of the Merino Society of the Middle States was held on the farm of James Caldwell near Haddonfield, New Jersey, in 1811. Caldwell had been raising Merinos since 1806 and at the society's meeting some 200 to 300 pure breed merinos were on exhibit. By 1815, New Jersey had a total of 234,361 sheep of which 3,807 were Merinos.

The attention paid to merinos soon inspired attempts to promote more systematic breeding. Starting in the 1820s county agricultural societies started offering prizes for the best sheep and best wool goods. Twenty years earlier, in 1798, Newark had decided to spend its dog tax revenues on promoting sheep husbandry and offered cash prizes for the most wool produced.

Whatever the sheep's breed, its wool coats one purpose is to protect it from the elements. Wool fibers are keratin, as they emerge from the follicles they are overlaid with lanolin from the skins sebaceous glands. The ducts from these glands open directly into the follicle.

The wool fiber itself consists of overlapping scales with the cell matter inside them. This outer layer is resistant to wetting but water vapor will be absorbed by the fibers. A wool fiber can absorb up to 1/3 of its own weight in moisture without any detriment. This is why wool worn next to the skin will help remove perspiration from the body. The adsorption of water vapor is also accompanied by the liberation of heat. This is why wet wool has such a strong odor, the heat vaporizes oils from the sheep. (or Janet Ambrose of Syracuse University explains it, "If you wear one of those Irish wool sweaters, you'll smell sheep.") On the plus side, the slow absorption of water vapor and the release of heat provides a thermal buffer that contributes to keeping the wearer warm, especially when moving from a warm, dry environment into a cold, wet one.

Lanolin is the waxy covering of wool fibers. Although it is called wool fat and wool grease technically lanolin is a wax since the esters (typically 18 to 26 carbon atoms) contain no glycerin in combination with the fatty acids. Lanolin's primary purpose is to waterproof the sheep but it also has anti-fungal and antibacterial properties.

After shearing, the wool fibers are sorted. The shorter and courser fibers are used for blankets, carpets, and other cloth where texture is not important. Longer and thinner fibers are used for worsted cloth that is easier to wear because it is finer and lighter. (Just remember, the worsted is the bestest.)

The first step of wool preparation is scouring, which removes the lanolin. In the pre-industrial period scouring was done on the farm using alkali soaps. Years of experimentation by European wool producers showed that the best results were obtained with alkali soaps that were made using the ashes of burned kelp. The mixture of salts found in the marine environment made a superior soap.

The problem was that there were not enough ashes in all of Europe to make enough soap to keep pace with the growing textile production. Americans began exporting wood ash in the 1700s and this activity continued until French chemists introduced methods for converting sodium chloride to sodium carbonate in the 1790s. Freeing soap production from dependence on biological sources of alkalis was the start of the heavy chemical industry.

As the process industrialized the scouring mill used a series of washing vats so that as the wool was moved into progressively cleaner environments. For laboratory scale scouring, the ASTM recommended a 0.1% soap solution with 0.3% sodium carbonate. The industrialization of scouring allowed for the recovery of large quantities of lanolin and expanded its use as an emollient for cosmetics and pharmaceuticals. (Recipes using lanolin as an emollient go back well over 2000 years and the ancient Egyptians applied it to their heads by placing a lump of it on their skulls and allowing it to melt in the sun.)

At one time the city of Camden, New Jersey, was home to worlds largest wool scouring mill. Located at South 3rd & Jackson Streets, the Eavenson & Levering plant was opened shortly after the firm moved from Philadelphia in 1906. Eavenson & Levering's 500 production workers processed 50,000,000 pounds of wool annually.

Between scouring and spinning the wool must be carded. This is a process of combing the fibers until they are straight and parallel to one another. After scouring and carding, the wool needs a small amount of oil to lubricate it before it is spun. Without this step, the fibers tend to break during spinning. Oiling also helps to discourage the build up of static electricity. Prior to World War II, animal oils like olein, lard, and neatsfoot oil were used in ordinary yarn spinning. But for the finer worsted yarns, vegetable oils, especially peanut and olive oil, were employed. Shortages of imported oils during the first and second world wars lead to the development of synthetics. Today mineral oils containing emulsifying agents are the industry standard.

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North Jersey Meetings

http://www.njacs.org

NORTH JERSEY EXECUTIVE COMMITTEE MEETING

Section officers, councilors, committee chairs, topical group chairs, and section event organizers meet regularly at the Executive Committee Meeting to discuss topics of importance to running the section and representing the membership. All ACS members are welcome to attend this meeting and to become more involved in section activities.

Date: **Monday, March 19, 2007**
Time: 5:30 PM
Place: Fairleigh Dickinson University
College at Florham
Hartman Lounge, the Mansion
Madison, NJ
Cost: $5.00 - pizza dinner

Directions: can be found at **view.fdu.edu/default.aspx?id=238**.

Reservations: call (732) 463-7271 or email **njacsoffice@aol.com** prior to **Wednesday, March 14, 2007.**

Dinner at the Section Meeting is payable at the door. However, if you are not able to attend and did not cancel your reservation, you are responsible for the price of your dinner.

IN MEMORIAM

Dr. Eugene A. Barr	67 years service
Dr. Howard L. Bender	85 years service
Mr. Robert R. Buck	62 years service
Mr. Dominic F. Cundari	64 years service
Mr. Bernard Jaffe	59 years service
Dr. George E. Milliman	47 years service
Dr. Carl Moore	64 years service
Dr. Charles W. C. Stein	71 years service

CAREERS IN TRANSITION GROUP

Job Hunting??

Are you aware that the North Jersey Section holds monthly meetings at Fairleigh Dickinson University in Madison to help ACS members? Topics covered at these cost-free workshops are:

- The latest techniques in resume preparation
- Ways for improving a resume
- Answers to frequently asked interview question and
- Conducting an effective job searching.

The next meeting for the Careers In Transition Group will be held **Thursday, March 1, 2007**, in the Rice Lounge on the first floor of the New Academic Building. The meeting will start at 5:30 PM and end at 9:00. There will be a Dutch-treat dinner. To get the most from the meeting, be sure to bring transparencies of your resume.

Please contact **vjkuck@yahoo.com**, if you plan on attending this meeting.

ChemTAG MEETING

Date: **Tuesday, March 6, 2007**
Time: 4:00 - 6:00 PM
Place: Union High School
2350 North Third Street
Union Township, NJ

Contact: Maureen Guilfoyle at (908) 851-6500 or **mguilfoyle@twpunionschools.org**.

TEACHER AFFILIATES

Executive Committee Meeting

Date: **Monday, March 12, 2007**
Time: 4:30 PM
Place: Chatham High School
255 Lafayette Avenue
Chatham, NJ

Contact: Diane Krone at (201) 385-4810 or **kroned@optonline.net**.

NORTH JERSEY CHROMATOGRAPHY GROUP

Seminar is sponsored by Waters Corporation

Fast and Efficient Separations Using Sub-2 µm Particles and Ultra-high Pressures in Liquid Chromatography

Speaker: Dr. Mark Bolgar
Sr. Principal Scientist
Bristol-Myers Squibb

Brief History of HPLC Columns, from µBondapak in 1973 to Hybrid Packings in ACQUITY Columns

Speaker: Dr. Uwe Neue
Waters Corporation

Date: **Tuesday, March 13, 2007**
Times: Social 5:30 PM
Dinner 6:30 PM
Seminar 7:30 PM
Place: Somerset Marriott Hotel
110 Davidson Avenue
Somerset, NJ

Cost: Free *(Seminar is sponsored by Waters Corporation)*

Reservations: Please reserve by **Friday, March 9, 2007**. Please, note, seats are limited and pre-registration is required.

To register online, go to **www.njacs.org**, click on chromatography. Or phone: David Kohler, ES Industries, (856) 753-8400.

NMR TOPICAL GROUP — POSTDOCS NIGHT

NMR Studies of the 204 kDa SecA ATPase

Speaker: Dr. Yiannis Gelis
(From Dr. Babis Kalodimos' Group), Chemistry Department
Rutgers, Newark, NJ

More Presentations to be Announced on **http://njacs.org/nmr.html**

Date: **Wednesday March 21, 2007**
Times: Dinner 6:30 PM
Seminar 7:00 PM
Place: Woodbridge Hilton
Iselin, NJ

Directions: **http://njacs.org/d_woodhilt.html**

Register online: **http://njacs.org/nmr.html**, or via e-mail to **WENQING.FENG@SPCORP.COM**.

CHEM CENTRAL MEETING

Date: **Thursday, March 22, 2007**
Time: 4:00 - 6:00 PM
Place: High Technology High School
765 Newman Springs Road
Lincroft, NJ

Contact: Lois Lyons at (732) 842-8440 or **Lois_Lyons@hths.mcvsd.org**.

New York Meetings

www.newyorkacs.org

ANALYTICAL TOPICAL GROUP

Industrial Applications of Microscopy to Study Paint and Waterborne Coatings

Speaker: Dr. John R. Reffner
The Rohm and Hass Company

Microscopy is often an important tool in studying paint and waterborne coatings. In this seminar I will present some typical examples of the use of transmission electron microscopy, scanning electron microscopy and optical profilometry to study the visual appearance of films, defects in films and performance issues.

Dr. John R. Reffner is currently the Team Leader for the Microscopy Group in the Central Analytical Support Department at Rohm and Haas Company where he has been employed since 1991. He received his Ph. D. from the University of Massachusetts in Polymer Science and a B.S. in Chemistry from Rensselaer Polytechnic Institute.

Date: **Wednesday, February 28, 2007**
Time: 6:00 PM
Place: The Graduate Center of the
City University of New York
365 Fifth Avenue
New York, NY

The room number will be posted in the Lobby.

CHEMICAL MARKETING & ECONOMICS GROUP

Neowater: Redefining Water for the Life Sciences

Speaker: Dr. Eran Gabbai
Chief Scientific Officer
Do-Coop Technologies
Israel

Date: **Thursday, March 1, 2007**

* * * * *

Biofuels: Markets and Technologies

Speaker: Mike Kratochwill
Vice President, Finance & Strategy
Nexant Chem Systems
White Plains, NY

Date: **Thursday, April 5, 2007**
Times: Cocktails 11:30 AM
Luncheon 12 noon
Presentation 1:15 PM
Place: The Chemists' Club
40 West 45th Street
New York, NY
Fees: $40 discount price for Members who reserve by the Tuesday before the meeting (12 noon). $55 for Guests and Members (at the door without reservations).

To reserve: Please reserve early to be eligible for discount price. Call Vista Marketing at (917) 684-1659 or via e-mail to: **cmegroup@yahoo.com**. You can also pay online (via credit card): go to our Website: **http://www.nyacs-cme.org/**.

LONG ISLAND SUBSECTION

Iridium Oxide (IrOx) Based Fuel Acidity Sensor

Speaker: Dr. Justyna Widera
Assistant Professor
Department of Chemistry
College of Arts and Sciences
Adelphi University

The measurement of acidity in organic liquids is a difficult, but important technique, for instance to ascertain the acidity of petroleum products. Measuring acidity of petroleum products during refining, storage and application is useful as a diagnostic tool for specification tests, thermal stability monitoring, R & D tool for additive development and process control application. Traditional electrochemical pH measurement technology is poorly suited for the nonaqueous environments. The measurement of acidity in organic solvent base matrices like petroleum products is much more difficult due to their complexity and the fact that they are extremely non-conducting. Currently the measurement of "Total Acid Number" in non-conducting fluids is performed by tedious, time consuming and solvent intensive methods based on titration.

We will show the feasibility of the IrOx sensor with respect to the potential application as a fast, accurate real-time acidity sensor for the testing of petroleum products. Finally, by the comparable studies of other commercially available pH sensors, the IrOx response will be demonstrated to be faster, better defined, more accurate and more reproducible than a response of the other commercially available sensors in non-aqueous solutions.

Date: **Thursday, March 1, 2007**
Times: Coffee 5:30 PM
Seminar 6:00 PM
Dinner 7:00 PM
Place: Hofstra University
Chemistry Building
Lister Lecture Hall
Hempstead, NY
Cost: Dinner $20.00

For information contact Professor Eugene Brown (516) 572-7579.

WESTCHESTER CHEMICAL SOCIETY

Formulating Semi-solid Topical Delivery Systems: Development of a Microbicide for HIV

Speaker: Dr. David Fairhurst
Colloidal Consultants Ltd.
Congers, NY

Date: **Wednesday, March 7, 2007**
Times: Registration and Refreshments - 5:30 PM
Speaker's Talk - 6:15 PM
Dinner at a nearby restaurant - 7:30 PM
Place: Polytechnic University
Westchester Graduate Center
40 Saw Mill River Road
Hawthorne, NY

For more information, contact Professor Mary Cowman: **mcowman@poly.edu**.

HIGH SCHOOL TEACHERS TOPICAL GROUP

Hydrogen Fuel Cells

Speaker: Dr. Paul Stonehart
Stonehart Associates Inc.

Date: **Friday, March 16, 2007**
Time: Social and Dinner 5:45 PM
Place: No reservations required
Caffe Pane e Cioccolato
10 Waverly Place at Mercer Street (south-west corner)
New York, NY
(You eat, you pay cash only, no credit cards.)
Time: Meeting 7:15 PM
Place: New York University
Silver Center Room 207
32 Waverly Place (south-east corner Washington Sq. East)
New York, NY

Security at NYU requires that you show a picture ID to enter the building. In case of unexpected severe weather, call John Roeder, (212) 497-6500, between 9 AM and 2 PM to verify that meeting is still on; (914) 961-8882 for other info.

Note: Street parking is free after 6:00 PM. For those who prefer indoor attended parking, it is available at the Melro/Romar Garages. The entrance is on the west side of Broadway just south of 8th Street, directly across from Astor Place. It is a short, easy walk from the garage to the restaurant or meeting room.

Joan Laredo-Liddell and Ivi Tamm, members of the NY High School Teachers Topical Group, demonstrating at the STANYS Annual Conference in Ellenville, NY.

ANALYTICAL TOPICAL GROUP

Solving Unusual Chemical Problems Using the Infrared Microprobe

Speaker: Dr. John A. Reffner
Senior Scientist and
Research Director
Smiths Detection, and
Adjunct Professor, John Jay
College of Criminal Justice and
the Graduate Center, CUNY
as well as a Consultant in
Analytical Microscopy

The growing trend in analytical chemistry to a culture of "dilute-and-shoot" fails to address many challenging problems in forensic, geological, material and pharmaceutical sciences. When different batches of an active pharmaceutical ingredient are found to have different solubility, melting points or processing properties, it is essential to directly analyze the solid and determine both its physical and chemical properties. Molecular spectroscopy, optical microscopy and x-ray diffraction are methods for detecting and identifying polymorphic forms. Telling a mineralogist that a rock contains calcium carbonate is only half the answer; is it calcite or aragonite? Multiplayer laminates are commonly used as packaging materials. A bulk chemical analysis of these films has little value. Each layer must be identified and sequenced in the film's structure. The forensic scientist is challenged to identify and link evidence to a common source or incident, while maintaining the evidence and records for legal review. The infrared microprobe is a valuable tool for nondestructive analysis of molecular chemistry and microstructure, providing solutions to many unusual problems.

Dr. John A. Reffner, received his Ph.D. from the University of Connecticut (Storrs, CT).

Date: **Wednesday, March 21, 2007**
Time: 6:00 PM
Place: The Graduate Center of the
City University of New York
365 Fifth Avenue
New York, NY

The room number will be posted in the Lobby.

BIOCHEMICAL TOPICAL GROUP — JOINT MEETING WITH THE NYAS BIOCHEMICAL PHARMACOLOGY DISCUSSION GROUP

Immunotherapy for Neurodegenerative Diseases

Organizers: Robert Martone
Wyeth Research

and

David D. Auperin
Pfizer

Speakers: Dennis Selkoe
Harvard Medical School and
Brigham and Women's Hospital

Thomas Wisniewski
New York University School of Medicine

Eliezer Masliah
University of California
San Diego

Anne Messer
New York State Department of Health

Date: **Tuesday, March 27, 2007**
Time: 1:00 – 5:00 PM
Place: New York Academy of Sciences
7 World Trade Center
250 Greenwich Street – 40th Floor
New York, NY

Space is limited. Reserve a seat on-line at **http://www.nyas.org/events**.

NYAS Members and BPDG Affiliates may attend BPDG meetings free of charge. Non-members may attend for a fee of $20 per event; Student Non-members for $10. To become a Member of the Academy, visit **http://www.nyas.org/landing.html**.

SURPRISE

our editor by calling and saying you appreciate the quality and content of our newsletter. Our editor works hard to maintain a publication of interest to our membership. Oh, and by the way, you could also give credit to our advertisers who financially support us.

LONG ISLAND SUBSECTION

Eleventh Annual Frances S. Sterrett Environmental Chemistry Symposium

"Liquefied Natural Gas: Safe 'n Sound?"

Mark your calendar and save the date!

The annual Frances S. Sterrett Symposium is dedicated to presenting the public with up-to-date, factual scientific information on environmental topics. Email questions to Dr. Barbara Hillery at **hilleryb@oldwestbury.edu** or call (516) 876-2738.

Date: **Thursday, May 24, 2007**
Place: Hofstra University
Hempstead, NY

NICHOLS FOUNDATION HIGH SCHOOL CHEMISTRY TEACHER

Congratulations to **Dr. Sara Henry McCoy**, who was presented with the 2006 Nichols Foundation High School Chemistry Teacher Award at the annual Section-wide Conference of the New York Section on January 20, 2007 at St. John's University. This award was established in 1958 by Charles W. Nichols, Sr. to recognize highly effective teaching and inspirational leadership to students in chemistry. It is presented annually to an outstanding high school chemistry teacher in the ACS, New York Section.

Dr. Sara McCoy received her BA in chemistry from Hanover College, Indiana; her MA in physics from the College of William and Mary, Virginia and a PhD in Science Education from teachers College, Columbia University. In her forty-four years of teaching, Sara has taught in ten schools along the East and West Coast of the United States as she traveled with her husband, who was a Naval Officer. She taught at the Naval Academy in Newport, as well as, public, private and independent schools and community colleges. She brought her diverse experiences to the Collegiate School in New York City, where she has taught for the past twelve years. The Collegiate School is an independent school, grades K-12. Sara teaches Chemistry and AP Chemistry. Her students have participated in the Chemistry Olympiad and Chemagination. Sara recently brought two posters created by her Chemagination students to the Middle Atlantic Regional Meeting and they were first place winners. Sara's students compete in the New York State Science Olympiad. For the past five years her students have participated in the State level competition at West Point and for two years have won the small school award. Thank you, Sara, for your enthusiasm for chemistry and for encouraging the creative nature of your students.

Joan Laredo-Liddell presents award to Sara Henry McCoy.

SCENES FROM THE NEW YORK SECTION-WIDE CONFERENCE JANUARY 20, 2007 AT ST. JOHN'S UNIVERSITY

ACS Past President Bill Carroll with Frank Romano and Joan Laredo Liddell.

Marcia Rudy (Salute to Excellence Award - National Chemistry Week at the Hall of Science), Sara Henry McCoy (Nichols Foundation Teacher Award), Bill Carroll (2005 ACS President), Frank Romano (Outstanding Service Award), Joan Laredo-Liddell (2007 ACS New York Section Chair), Jill Rehmann (2006 ACS New York Section Chair), Vijaya Korlipara (Salute to Excellence Award - Chemagination), Richard Cassetta (Salute to Excellence Award - Long Range Planning), David Sherman (Salute to Excellence Award - National Chemistry Week.)

Others

ASSOCIATION OF CONSULTING CHEMISTS & CHEMICAL ENGINEERS

The Chemical Trading Business

Speaker: William McShea

Mr. McShea will briefly review the past, present, and future of the trading company business model in the global chemical industry.

Most of Bill McShea's 38-year career has been within the global chemical industry. He has worked for US, British, German and Japanese chemical companies. His business-related travel has taken him to 23 countries and all 50 States. He is currently a Trading Department Manager for a subsidiary of Mitsubishi Corporation where he acts as a bridge between Asian specialty chemical manufacturers and industrial customers here in the US.

Bill earned bachelor of chemical engineering, and master of business administration degrees, both from Stevens Institute of Technology. He holds three US patents. Bill and his wife live in Bridgewater, NJ.

Date: **Tuesday, March 27, 2007**
Times: Networking/Cash Bar 6:00 PM
Dinner 6:30 PM
Presentation 7:30 PM
Place: Snuffy's Restaurant
Park & Mountain Ave.
(Route 22 East)
Scotch Plains, NJ
Registration: $40 ACC&CE Members,
$50 Non-members

To Reserve: Call Linda B. Townsend at (973) 729-6671 or e-mail: **accce@chemconsult.org**. Advanced registration is required.

Cancellations must be made 24 hours in advance or be invoiced.

LABORATORY ROBOTICS INTEREST GROUP

Emerging Technologies for Sample and Product Tracking

This meeting will focus on ways to track sample, bar coding and Radio Frequency Identification Tags. These technologies are applicable in a wide range of industries. They are not just for analytical and retention sample tracking. Many manufacturers are using these technologies to protect their products from counterfeiting and adulteration.

Date: **Tuesday, March 6, 2007**
Place: Somerset Marriott Hotel
110 Davidson Avenue
Somerset, NJ

Meeting Details and Registration at the group's web site: **http://lab-robotics.org/**.

* * * * *

ANNUAL TECHNOLOGY EXHIBITION

Academic Poster Contest

The annual Academic Poster Contest is open to all students and will be run in conjunction with the Technology Exposition on May 24th. Cash prizes will be awarded.

Posters may be on ANY TOPIC in the physical or biological sciences. Content related to robotics or automation is NOT REQUIRED.

Date: **Thursday, May 24, 2007**
Place: New Brunswick Hilton

To enter a poster please contact Kevin Olsen at **OlsenK@Mail.Montclair.Edu** or (973) 655-4076.

NEW JERSEY INSTITUTE OF TECHNOLOGY — OTTO H. YORK DEPARTMENT OF CHEMICAL ENGINEERING

Graduate Seminar Series — Spring 2007

March 5
Precious Metal Monolithic Catalysts – Advantages and Limitations of This New Technology in Small Scale Hydrogen Generation
Dr. Wolfgang Reuttinger
Senior Chemist, Strategic Technologies
BASF Catalysts LLC
Iselin, NJ

March 9*
Modification of Rheological Properties and Processability for Microbial Poly(3-hydroxybutyrate)
Prof. Masayuki Yamaguchi
Associate Professor
School of Materials Science
Japan Advanced Institute of Science and Technology
Ishikawa, Japan

March 19
Edible Film and Biomaterials
Dr. Peggy Tomasula
Research Leader for the Agricultural Research Service of the United States Department of Agriculture
Wyndmoor, PA

March 26
Rapid Product Development in a Rapidly Evolving Technology Environment
Dr. Marc Horn
President, Prospect Biosystems, LLC
Newark, NJ

March 29* [tentative]
TBA
Professor Vicki Colvin
Rice University
Houston, TX

April 9
The Wonderful Enzyme Zoo
Professor Peter Reilly
Professor of Chemical Engineering and Anson Marston Distinguished Professor in Engineering
Iowa State University
Ames, IA

April 16
Complex Geometry Flows of Concentrated Suspensions
Professor Nina C. Shapley
Assistant Professor
Department of Chemical Engineering
Columbia University
New York, NY

April 23
Recent Developments in Plastics Foam Research
Professor Chul Bum Park
Canada Research Chair Tier 1 in Advanced Polymer Processing Technological
University of Toronto
Toronto, Ontario, Canada

Times: Refreshments 2:30 PM
Seminars 2:45 PM
Place: New Jersey Institute of Technology
Room 117, Kupfrian Hall

Seminar Coordinator: Professor Kun Hyun (973) 596-3267, **kshyun@njit.edu**..

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BROOKLYN COLLEGE OF THE CITY UNIVERSITY OF NEW YORK

Chemistry Department Colloquium — Spring 2007

Friday, March 9, 2007
2:30 PM, Room 432NE
"Arsenic Contamination in Groundwater — A Global Health Threat"
Prof. Zongqi "Joshua" Cheng
Department of Geology
Brooklyn College of CUNY

SPECIAL SEMINAR
Tuesday, March 20, 2007
1:45 PM, Room 432NE
"Six Decades at the Interface: Semi-Permeable Boundaries Between Brooklyn, Barcelona, Jerusalem and Beijing"
Prof. Milton J. Rosen
Emeritus
Department of Chemistry
Brooklyn College of CUNY

Friday, April 13, 2007
2:30 PM, Room 432NE
Topic to be announced
Prof. Ishita Mukerji
Department of Molecular Biology and Biochemistry
Wesleyan University

Friday, April 20, 2007
2:30 PM, Room 432NE
"Mouse Models of Disease: Applications of MRI and Image Reconstruction in Heart Disease and Cancer Research"
Prof. Linda A. Jelicks
Department of Physiology and Biophysics
Albert Einstein College of Medicine

Friday, April 27, 2007
2:30 PM, Room 432NE
Topic to be announced
Prof. Beatrice Wittenberg
Department of Physiology and Biophysics
Albert Einstein College of Medicine

Friday, May 4, 2007
2:30 PM, Room 432NE
Topic to be announced
Dr. Arokiasamy J. Francis
Brookhaven National Laboratory
Department of Environmental Sciences

Place: Brooklyn College of CUNY
2900 Bedford Avenue
Brooklyn, NY

Contribute to *The Indicator*

The Indicator is interested in adding new features to the publication. Your input would be appreciated. Please let us know which type of feature you would like to see in future issues; i.e., book reviews, member news, short articles about your research or other ideas. Would you be willing to assist in gathering or writing such material?

Contact the Editor at:
sturchio@optonline.net
Phone: (973) 331-5142 • Fax: (973) 331-5143

Call For Papers

55TH ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

Sponsored by: The New York Chemistry Students' Association of the American Chemical Society's New York Section.

The symposium provides an excellent opportunity for undergraduate chemistry students in the NY metropolitan area to present the results of their research. The program includes a keynote address by Dr. Spiro Alexandratos, Professor of Chemistry at Hunter College CUNY, presentation of student papers (15 minute talks to small groups), followed by a luncheon.

To:
1. Submit an abstract on-line
2. Print a flyer for posting - Print "Call For Papers" frame
3. Obtain directions to Manhattan College. Go To: **http://newyorkacs.org/grp_ students.html**

Date: **Saturday, May 5, 2007**
Place: Manhattan College
Riverdale

If you have any questions please contact:
Alison Hyslop, Co-chair
hyslopa@stjohns.edu

Sharon Lall-Ramnarine, Co-chair
slallramnarine@qcc.cuny.edu

JamieLee Rizzo
JaimeLee I'olani Rizzo, Co-chair
jrizzo@pace.edu

Call For Nominations

GOLD MEDAL AWARD — SOCIETY FOR APPLIED SPECTROSCOPY, NEW YORK SECTION

Nominations are being sought for the 2007 Gold Medal Award of the New York Section of the Society for Applied Spectroscopy. This coveted award was established in 1952 to recognize outstanding contributions to the field of Applied Spectroscopy. The Gold Medal will be presented at a special award symposium, arranged in honor of the awardee, at the 2007 Eastern Analytical Symposium. A nominating letter describing the nominee's specific accomplishments should be submitted along with a biographical sketch **by March 15th, 2007**. Please send all materials to Richard Castino, Analytical and Characterization Group, c/o Sun Chemical Corp., 631 Central Avenue, Carlstadt, New Jersey 07072.

If you have any questions or require more information, you may contact me at 201-933-4500, ext. 1238, or email me at rich.castino@na.sunchem.com.

Thank you for your consideration.

Sincerely,
Richard Castino

NOT NECESSARILY SHODDY

(continued from page 9)

Unsaturated fatty acids are not suited for wool oiling. Because they can be easily oxidized, certain oils such as cottonseed and soybean have been known to heat up and catch fire. The wastes from carding operations may contain up to 30% oil and present a dangerous fire hazard. Tiny bits of iron from the teeth of wool combs can co-catalyze rapid oxidation along with certain dyes. (Olive Drab dyes are particularly dangerous.)

In addition to their other problems, cheap and low-grade fatty acids are hard to remove from the carded wool and their presence can block the penetration of dyes into the fiber. (The oil can also turn rancid.) Converting the fatty acids to soap can facilitate their removal. The addition of alkalis or ammonia can saponify (or neutralize) the fatty acids but this must be done carefully as the excess alkali can adversely affect the wool quality. An 1848 recipe calls for six ounces of sodium bicarbonate and two ounces of sodium chloride in one gallon of warm water to be added to wool carding oil.

If one reads the histories of the industrial revolution, it may seem that the textile industry spawned huge vertically integrated factories virtually overnight. The actual process was far more gradual. This was especially true in areas that were still rural, like much of New Jersey in the first half of the 1800s.

Throughout the early 1800s as machines became available, owners of grist mills and saw mills began branching out into wool processing. Farmers might bring wool to one or another specialized mills for a specific step in cloth production. Raw wool might be carded in one mill, brought back home for spinning, and brought to yet another mill for weaving. Other entrepreneurs branched out into dying or oiling, or fulling. Wool garments produced in the home were said to be homespun and this word is still used to describe something that is simple and unpretentious. In 1810, 374,313 yards of woolen goods were produced in New Jersey homes. Sussex and Morris Counties lead the others producing 97,561 yards and 60,830 yards respectively. Essex County produced 43,000 yards. Bergen County, which at that time included most of present day Passaic County, produced the smallest amount, some 11,739 yards. Perhaps this was because Bergen County had excellent water and road transportation to New York and thus better access to imported textiles.

After 1840, the production of goods in New Jerseys homes dropped dramatically. The 1840 census lists the total value of all home produced goods at $201,625, by 1850 this dropped to $110,705, and was down to $22,226 by 1860. Industrialization more than made up for the decline, in 1860, New Jerseys 35 woolen mills were consuming 1,712,000 pounds of wool annually.

Many New Jersey families during this period had a spinning wheel for every female member, wool cards, a dye vat or two, and a loom. (The primary responsibility for spinning was the eldest daughters which is why an older un-married daughter is still called a spinster by the politically incorrect.) Given the tremendous amount of labor involved, as well as the capital investment, not to mention the itching, it is no wonder that many people gave up homespun fabrics at the earliest opportunity.

The experience of the Smith-Terry family of Cape May County was typical of the period. During the 1850s they kept sheep and the mother washed, dyed, and spun a small percentage of the wool into yarn for knitting socks. Most of the family's wool was collected by a one Isaac Dubois who brought it to the East Lake Woolen Mills in East Bridgeton. It came back woven into cloth and blankets.

The alternative to weaving wool into cloth was to felt the material. Pressed felt is a fabric where the fibers are first assembled into a loose mat. Heat and pressure are applied to the mat which causes the fibers to interlock. The production of woolen felts is beyond the scope of the present article but it should be noted that beaver fur, and other types of hats worn in the 1800s and into the 1900s were made from felted animal hairs.

The next physical - chemical process involved fulling the woven cloth. This process takes advantage of a property called felting, which is unique to Keratin fibers. When a group of these fibers is pressed together, the roots become permanently entangled with the other fibers and the resulting cloth tends to become heavier, thicker, firmer, and smoother, in a word, fuller. Oils that were added during spinning and any accumulated dirt were also washed out.

Wool fibers will not felt unless they are lubricated. They must slide along the path of least resistance but their scaly surface generates considerable friction so that no fulling will occur in air or a non-swelling solvent.

Alkaline soaps were commonly used for this process. Before mechanical equipment became available the cloth was soaked in warm soapy water and then beaten with sticks on a wooden floor. Afterwards the cloth might be placed in a stream and beaten again to wash out the last traces of soap.

Another option was to tread on the cloth. At a fulling bee the soapy cloth was placed in the center of a circle of barefoot young men and women who would kick it back and forth. The opportunities for flirting were not lost on the participants.

In the Middle Ages and in certain mills, urine was used as the fulling agent. The keratin proteins structure changes under alkaline conditions so the felting was enhanced. Naturally the fullers' working conditions were extremely unpleasant. Aside from the heavy physical labor, fullers were constantly exposed to the odors of putrefied urine and any pathogens growing in it. By 1700 the diseases of fullers were already listed in the earliest handbooks of occupational safety and health.

The best fulling agent was then and still is fuller's Earth. It was widely used in the 1800s and replaced stale urine. This is a clay mineral that when mixed with water produces a sudsy, surfactant rich solution. No appreciable deposits of fuller's Earth are found in the northeastern United States and the material had to be imported from Europe. Today it is mined in the western and southeastern states.

Mechanical fulling mills were already operating in the Middle Ages and they were among the first mechanical textile processing operations built in New Jersey. As early as 1667 William Lawrence of Monmouth County was operating a fulling mill and in the same year John Ogden of Elizabeth constructed a sawmill that would eventually be converted to fulling. Historians believe that early fulling mills seldom employed more than a single fuller and one or two apprentices. Perhaps this is the reason that fullers are seldom mentioned in census documents and lists of colonial era tradesmen.

Fulling mills operated by using waterpower to raise heavy woolen mallets that would be dropped onto the cloth. In some European towns the fulling mill was made available to its neighbors as a laundry during slack times in cloth production. Later mills used a series of rollers squeeze the cloth as it was pulled through vats containing the fulling agents.

Because the fuller was the last person to handle the cloth, it was only logical that many of them branched out into the dye business.

In terms of the chemistry involved, wool dying was the most complex part of the process. Sometimes wool was dyed after spinning and before weaving. This resulted in a garment that was more uniform in color. The thoroughness of the

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NOT NECESSARILY SHODDY

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process gave our language the expression dyed in the wool.

Prior to the explosion of synthetic dyes in the late 1800s, most wool dyes could be broadly divided into two categories, mordant and fast. Fast dyes were those that bound directly to cloth and would hold fast. It was hard to wash them away and they generally resisted fading and rubbing off. Mordant dyes were those requiring the wool be pre-treated with a metal salt (usually a sulfate) if the dyes were to bite. Although the word mordant came from a French word meaning to bite, this is not an accurate description of the process.

A mordant is usually a metallic salt having an affinity for both the dye and the fiber. They combine in the fiber to form a lake or insoluble precipitate. Mordants used for wool are, alum, potassium bichromate, iron sulphate, tin crystals (stannous chloride), and cream of tartar. The handling of the mordant can change the shade of the dye. Mordant dyes are classified by a Colour Index where the dye is named according to both the mordant and base color.

To deposit a metal ion on the fiber, most dyers soaked the fabric in a hot solution of mordant. The fabric was then transferred to another vat for the dying. The dyestuff itself is a large organic anion bound to sodium cation. In the dye vat the sodium is lost and the anion forms an insoluble complex with the metal ion.

Copperas (ferrous sulfate) was obtained from iron pyrites and this material was used both as a mordant and an additive that would alter the colors of produced by the botanical dyes. Readers from Morris County might be familiar with Copperas Mountain in Rockaway Township, which was mined for both magnetite iron ore and iron pyrites during the 1800s. Alum (aluminum sulfate) was another popular mordant although there were few deposits in the United States. It was not produced commercially in this country until after 1811.

Natural dyes available in New Jersey would have included indigo (blue), madder (red), logwood (used to turn woolens a rich navy blue), cochineal (scarlet), and woad (blue, or green after some modification.) In the years prior to 1850, the dyers palette had 32 natural reds, 3 natural blues, 5 natural greens, and 6 natural blacks.

After dying the cloth needed to dry so that it was stretched over a tent-like wooden frame and hooked into place. The hooks used for holding the cloth were called tenterhooks which has been corrupted to tenderhooks when used to describe being kept waiting while in a nervous state.

The astute reader will have noticed that after 3200 words, we have only reached the point where the cloth is ready for the tailor or the seamstress.

The history of tailoring and dressmaking is an entirely separate story but it should be noted that the costs of new clothes made them inaccessible to all but the relatively affluent. Before the era of mass-produced clothes in the late 1800s, a poor person might never own a suit of new clothes and an average middle class person would have seldom been able to purchase a new suit. For many upwardly mobile immigrants, owning their first set of newly manufactured American clothes was an important step in the process of assimilation. For the poor and the downwardly mobile, a lively market in second hand clothes persisted well into the twentieth century.

Wool became one of the first recycled materials to reach a large market. Scraps of fabric, loose fibers, and other wastes were gathered up, shredded and re-spun. This re-working often took place in a specialized factory called a shoddy mill. The resulting fibers were shorter and the cloth made from them was of an inferior quality. The cloth was called shoddy and despite its name, the cloth is

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Professional/Product Directory

Professional/Product Directory

Career Opportunity

NOT NECESSARILY SHODDY

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still being manufactured today.

Until the Civil War the word was a noun and not an adjective. The huge demand for uniforms caused many unscrupulous manufacturers to supply the Union armies with shoddy cloth that quickly wore out. Sometime around 1862 shoddy became a word describing anything of low or inferior quality.

The wool industry has been an important part of New Jerseys industrial history and has been one of the most important sources of manufacturing employment. In 1909, 28% of the states manufacturing workers were employed in textiles. The number dropped to 22% in 1929 and rose again to 28% (121,500 workers) in 1939. In 1992 the industry employed 37,900 workers or 13% of the manufacturing workforce and produced 5% of the states value added manufacturing. Today about 8300 persons are employed in the states 286 companies in the apparel trade.

Ad Index