



# ESA Newsletter

Electrostatics Society of America - The Friendly Society

## President's Message

It is with great pleasure that I look forward to welcoming ESA and IEEE members at the upcoming June 2003 Conference. This historical meeting, the first ever joint conference between the ESA and the Electrostatic Processes Group of the IEEE Industry Applications Society, has been long overdue. Each group brings to this joint meeting its own strengths and advantages. The IAS-EPC brings the organizational stature of the IEEE and its Transactions publication plus a worldwide membership in electrostatics that intersects that of the ESA by only about 30%. The ESA brings a tradition of interspersing less formal talks, demonstrations, and discussions that span a broad spectrum of non-traditional electrostatics with traditional, formal papers. The organizers on both sides are excited about this meeting and have cooperated with each other in every way. The number of papers submitted now over 100 -- exceeding all expectations. Both groups feel it important to keep a 3-day format for the conference, so as to make it financially feasible for self-funded attendees and logistically feasible for industrial attendees for whom travel time is at a premium. All papers presented in oral and poster formats will be eligible for consideration by either the IEEE Transactions on Industry Applications or the Journal of Electrostatics.

**Important:** Please note that each day of the conference, including Friday, will be a full conference day with papers scheduled until 5:00 on Friday. This one change over our usual Friday-noon closing was made so as to accommodate as many papers as possible. In the past, we have resorted to full Fridays and even Saturday morning sessions when the paper count has been large, so this change is not as radical as it may seem. The decision to stick to the 3-day format has also required that some papers be presented in poster format so that we can keep the oral presentation time to 20 minutes (this time is already too short!). The IEEE-IAS EPC group, as well as numerous other professional societies, use this format with great success. For those who may be unfamiliar with poster format, let me describe it briefly. One may think of the poster session as an opportunity to deliver multiple oral papers simultaneously. Papers chosen for poster presentation carry the same weight and recognition as oral papers and are similarly considered for future publication in IEEE Transactions or the Journal. Prior to the poster session, authors will have prepared a set of posters describing their work; these will be mounted on stand-up easels, one panel per author. During the session, the entire conference body will congregate in a large hall and pass from poster to poster. Each poster station will be staffed by one of its authors who will receive visitors in small groups, offering a short presentation to each and fielding any questions that arise. Visitors can spend as much time as desired at any given poster station. We have allowed ample time (approximately 2 hours per session) so that each poster will be given the time it deserves for full dissemination of research results. Poster format is a new venture for the ESA, hence we will consider it an experiment in how to deal with large numbers of quality papers that are submitted to popular and attractive conferences.

Let me list some of the other highlights that await attendees to the conference:

- ✦ A plenary lecture given by a guest speaker each morning, highlighting new directions in electrostatics.

- ✦ An industrial forum attended by companies working in electrostatics-related fields.
- ✦ Conference proceedings edited and produced by Laplacian Press, as it has been in the past.
- ✦ A banquet presentation by none other than our own, ever-popular Dr. Glenn Schmieg.
- ✦ Separate annual business meetings have been scheduled for the ESA and IEEE-IAS/EPC so that members who hold joint membership can attend both meetings.
- ✦ Shuttle bus service between the Peabody Hotel and the University conference site each day.
- ✦ The usual informal spouses/family "committee" which will convene to plan sightseeing trips during conference days.
- ✦ Opportunities for visits to nearby Hot Springs on the Saturday following the conference.

I'd like to take this opportunity to thank those who have made this conference possible. Prof. Toshiaki Yamamoto, Chair of the EPC and IEEE Technical Conference Chair, has done a great deal of work in soliciting and organizing a diverse and comprehensive set of technical papers. It has been a pleasure to co-chair with him, and I hope that the ESA-EPC relationship that we have established will continue to the future. Prof. Malay Mazumder of UALR has done a fabulous job of organizing the conference venue, including hotel accommodations, transportation, and all conference facilities. He is also responsible for initiating the plenary guest lectures and arranging for their sponsorship. Thanks also go to the ESA Executive Council and the IEEE-IAS EPC board members for their extensive input and advice surrounding this ambitious endeavor. Finally, please join me in thanking Joe and Barbara Crowley of Electrostatic Applications/Laplacian Press who work tirelessly behind the scenes each year to produce our conference proceedings. The large amount of work involved in this task is perhaps the most understated element of the conference, but one on which we have steadfastly relied for nearly a decade. Many thanks to all.

On another subject, I note that this message will be my last as your ESA President. Yes, my two consecutive 2-year terms are up already. I've enjoyed serving the ESA and have taken immense pleasure in seeing several new initiatives take hold. We now have a yearly tradition of identifying upcoming as well as established researchers in electrostatics outside the ESA family and inviting them as guest speakers to our meetings. Several of these individuals have now become regular attendees and their involvement in the organization continues to grow. The Web site is now secure and stable, offering online membership application, conference registration, and secure online payment. The ESA body continues to grow, with over 50 new paid members in the past three years. Our financial position remains strong, and we have managed to maintain the core characteristics that make us the Friendly Society. I look forward to continued involvement in the ESA and offer whatever assistance I can to the new President. (See note about upcoming elections elsewhere in this newsletter.) As my predecessor Al Seaver noted in his farewell message, "It's been a good four years!"

For the Friendly Society,

Mark N. Horenstein  
ESA President

## Current Events

### **Danger at the Gas Pumps** (from Mark Horenstein)

The topic of electrostatic hazards, long the sole province of ESD specialists, has gone mainstream. National news outlets such as CNN and MSNBC have run feature stories on the dangers of gasoline vapor ignition while refueling automobiles. Be prepared to answer your neighbors questions, but remember - just because you know about electrostatics does not mean danger won't come your way. Be aware of the following tips:

- ✦ If a gas pump fire occurs - DO NOT pull the nozzle out. Get away and tell the attendant to turn off the pumps.
- ✦ Avoid re-entering your car while gas is pumping.
- ✦ If you must go back into your car once you've started refueling, make sure you discharge any static by touching another metal object before going near the gas nozzle.

### **Electrostatic Pants** (from Mark Horenstein)

A company is now marketing electrostatic pants and other garments! No, not an ESD dissipative suit. The EC2 QwikDri Electrostatic Comfort Process (from Terramar - [www.terramarsports.com/electro.html](http://www.terramarsports.com/electro.html)) claims to "have the ability to actually lift moisture molecules away from the body and break them down for rapid evaporation." A composite of nylon, polyester, and silk fibers, "EC2's negatively-charged particles attack the natural cohesion that holds moisture in drops by attracting the positively-charged ends of water molecules and breaking them down. The electrostatic charge pulls moisture from the skin and disperses it through the fabric for rapid evaporation."

Has anyone heard about this product? Is the electrostatics real? Do the pants work? Let us know.

### **Electrostatic Necktie and Homeland Security**

(from Anne S. Benninghoff)

A radiologist from Cleveland University Hospital, Dr. John Haaga, is marketing silk neckties and scarves lined with "electrostatically charged filtration fabric" [polypropylene electret] that "traps airborne particles from pollen to anthrax." Filtration is claimed to be 98% for particles having an average size of 2.8 micrometers, compared to about 87% for a cotton T-shirt. See [www.fbsclothing.com](http://www.fbsclothing.com) for more info.

### **What do you know about DHMO?** (from Mark Horenstein)

Are you concerned about the possible dangers of dihydrogen monoxide? DHMO is a colorless, odorless, and tasteless substance that can be fatal if accidentally inhaled. Prolonged exposure to its solid or gaseous form can cause severe tissue damage. Symptoms of severe DHMO

ingestion include excessive sweating and urination, a bloated feeling, nausea, vomiting and body electrolyte imbalance. Lifetime ingestion of DHMO results in physiological dependency; for those who have become dependent, DHMO withdrawal means certain death.

Dihydrogen monoxide, also known as hydroxyl acid, is a major component of acid rain and contributes to the "greenhouse effect." It may cause severe burns and is known to accelerate corrosion of many metals. DHMO has been found in excised tumors and in the bodily fluids of purebred laboratory test animals.

In the field of electrostatics, DHMO actually has the beneficial effect of helping to dissipate unwanted charge, but for those who work in high voltage, excess contamination by DHMO can contribute to accidental electrocution.

Contamination is widespread; DHMO can now be found in most all regions globally. Quantities of dihydrogen monoxide can be found in every stream, lake, and reservoir in America today, and has even been found in Antarctic ice. Is your neighborhood contaminated with DHMO? For more information, see [www.dhmo.org](http://www.dhmo.org).

### **Researchers Develop 'Natural Bandages' That Mimic Body's Healing Process** (from Mark Zaretsky)

With the same compound the body uses to clot blood, scientists at Virginia Commonwealth University have created a nano-fiber mat that could eventually become a "natural bandage." Spun from strands of fibrinogen 1,000 times thinner than a human hair, the fabric could be placed on a wound and never taken off — minimizing blood loss and encouraging the natural healing process.

To make the fibers, the researchers used a technique called electrospinning. The process begins with a solution of fibrinogen attached to a nozzle, which is then pointed at a metal target. An electric field is created between the nozzle and the target, and it is gradually increased until the force of the electric field overcomes the surface tension of the solution. This forms a liquid jet that is transformed into a dry fiber before it reaches the target.

The solution is made with a high concentration that causes the polymer chains to intertwine. Instead of breaking into droplets just after the jet forms (which occurs in electrospray ionization — a similar technique that earned a Nobel Prize in chemistry last year for another VCU researcher, John Fenn), the jet continues as a continuous liquid stream. By the time it hits the target, the solvent has largely evaporated and fibers are formed.

*excerpted from*

[www.sciencedaily.com/releases/2003/02/030211072313.htm](http://www.sciencedaily.com/releases/2003/02/030211072313.htm)

## Awards Nominations

Dear ESA Member,

This is a call for Nominations for ESA Awards for 2003. As you know, we depend on your suggestions and input to guide us in selecting Nominees for awards in many categories, ranging from Student of the Year to the Electrostatics Hall of Fame. Last year, at the joint session with IEJ at Northwestern University, we were pleased to recognize the following people for their outstanding accomplishments:

**Dr. Emery P. Miller** was elected to the Electrostatics Hall of Fame for extensive contributions to the industrial process of electrostatic spray coating, and Dr. Timothy Erin received the Distinguished Service Award for many years of service to the ESA.

Please take a few minutes to look over the criteria for each of the different awards on the ESA Website ([www.electrostatics.org](http://www.electrostatics.org)). Is there an unusually apt teacher or student of Electrostatics whom you know? Or is there someone whose contributions to the field ought to be recognized in some way? If you know of someone, please consider sending in your nomination by downloading and filling out the forms available on the website and sending them to:

Humphrey Wong  
Eastman Kodak Company  
Coating and Drying Technology Unit/SCTD/GMTO  
4-23-KP, Mail code 24325  
Rochester, NY, 14652-4325  
Email: [humphrey.wong@kodak.com](mailto:humphrey.wong@kodak.com)  
Phone: (585) 722-5555

Please take the time to read the instructions and complete the forms fully so that the Committee and I will have as much information as possible for evaluating your nominations in a timely way. Also, be certain to obtain the necessary endorsements for your nomination. If there is insufficient room on the form, please send supporting documentation as separate attachments.

Thanks,  
Humphrey Wong  
Chair, ESA Awards Committee

## It's Election Time!

The ESA Bylaws provide for the election of officers every two years. Members vote for a complete slate of candidates at the annual meeting, and anyone is eligible to nominate or be part of a slate.

Thus far, we have only one nominated slate of candidates for this years election:

Slate of ESA Officers for 2003-2005:

President:	William Vosteen, Monroe Electronics
Vice President:	Kelly Robinson, Eastman Kodak
Executive Council:	Sheryl Barringer, Ohio State University
	John Gagliardi, Rutgers University
	Mark Zaretsky, Eastman Kodak

If anyone would like to nominate an alternate slate, please inform me well before the June conference so that we can prepare election materials for the business meeting. Absent an alternate slate, we will likely approve the current nominated slate by acclamation.

Mark Horenstein  
ESA President

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## ESA subscription to J. of Electrostatics

ESA members are being offered a discounted rate of only \$105 for the year to the Journal of Electrostatics. Given the institutional price of over \$1,000 per year, this special rate represents a substantial savings. The member subscription is for individual use only. Detailed information about the readership, authors, aims, and scope of the journal can be found at [www.elsevier.nl/locate/elstat](http://www.elsevier.nl/locate/elstat).

Orders for member subscriptions will be processed by the ESA. Elsevier will mail your personal copy directly to the address that you specify. If you are interested, you can obtain a form either on-line ([www.electrostatics.org](http://www.electrostatics.org)) and pay on-line, or mail a hard copy of the form to our Secretary-Treasurer, Steve Cooper, 540 Morton Road, Athens, GA 30605 USA, with a check of \$105 made payable to the Electrostatics Society of America. Any questions please contact Steve by email [essinc@negia.net](mailto:essinc@negia.net) or phone 706-769-0025.

## Current Events (cont'd.)

### Electrostatics 2003, Edinburgh, Scotland

The quadrennial meeting of the international electrostatics workshop, sponsored by the Institute of Physics (IoP) was held this past March in Edinburgh, Scotland. Actually, the meeting was held at the Heriot-Watt University (Watt as in James Watt), located about 6 miles west of Edinburgh. The public bus service worked well and I was able to get to downtown Edinburgh within  $\Omega$  hr., taking advantage of my Saturday arrival to explore a little of the city. Just enough to decide that it's definitely worth a return visit for further exploration. The weather was unbelievably co-operative – sunny and relatively warm (no rain) for the whole visit (Sat. till Thurs.).

Sunday was spent at a tutorial given by John Chubb, Tom Jones, and Holstock. The tutorial was full of many interesting demonstrations (including one on what to do when one forgets the key to a locked box containing important demonstration material), as well as useful information on electrostatic fundamentals and standards. Monday's sessions were on Hazards and MEMS & Applications. Keynote, or extended talks were given by Ulrich von Pidoll on electrostatic ignition hazard measurements (interesting insights into some techniques, along with some scary (and humorous) anecdotes) and Carol Livermore on a MEMS induction machine design (clear presentation on many of the key design issues). An excellent plenary talk was given by Tom Jones entitled "Electrostatics and the Lab-on-a-Chip", providing excellent demonstrations of what Tom has dubbed "μplumbing", using dielectrophoretic forces to controllably move 10pL volume drops along a surface. More information on his talk may be found at <http://www.ece.rochester.edu/users/jones/>.

Tuesday's sessions were on the topics of Biological and Measurements, with a keynote talks by Masao Washizu on DNA manipulation using electrostatics (great video clips!) and Bill Greason on the wide variety of electrostatic measurement techniques (thorough and complete review). Wednesday's sessions were on EHD & Numerical Modelling and ESD, with keynotes by Antonio Castellanos on EHD in microelectrode structures (helpful for understanding the basic physics involved) and Jaakko Paasi on testing of ESD protective clothing (interesting adaptation of a charged plate analyzer). Thursday's session (AM only) was on the environment, with a keynote by Peter Castle on electrostatics and the environment (neat use of electrostatics for separation and recycling of plastics).

The ESA was well represented in presenters – aside from those mentioned above there were also talks or posters given or co-authored by Gerard Touchard, Mark Zaretsky, Istvan Berta, Dan Hays, Wamadeva Balachandran, Mark

Horenstein, Carlos Calle, Ed Law, Steve Cooper, Sheryl Barringer, Chuck Noll, Matti Murtomaa, and Kazimierz Adamiak. Apologies to anyone I may have forgotten. Overall, the conference was reasonably well attended, I estimated roughly 60 to 70 people, given the uncertainty and concerns about the war that had just begun in Iraq.

Mark Zaretsky

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## Current Events Calendar

- ✦ 25th Annual EOS/ESD Symposium, Las Vegas, NV, Contact: Christian C. Russ, email: [cruss@sarnoff.com](mailto:cruss@sarnoff.com) and <http://www.esda.org/news/call-for-papers2003.cfm>
- ✦ Electrostatics 2005, June 15-17, Helsinki, Finland, Contact: [electrostatics2005@congreszon.fi](mailto:electrostatics2005@congreszon.fi)

## Notes From the Editor

### Apologies Again

This is the second time I've needed to apologize for delays in getting the newsletter to you. I feel very badly about having let everyone down once again. I will offer no excuses here. Instead, I will re-affirm my commitment to you and to the task. There will be three issues for the rest of the year, to be published on the first of August, October, and December. Final dates for submissions to the newsletter will be one week before the publication date. I hope people allow me another chance to do a proper job. Thank you in advance for your patience and generosity.

### Electronic Notification

Several people have responded to my request to receive electronic notification of the newsletter (found on our website <http://www.electrostatics.org>) rather than a hard copy in the mail. If you haven't responded but are interested, please contact me at [mark.zaretsky@kodak.com](mailto:mark.zaretsky@kodak.com).

### Electrostatic Profiles

I started this feature in the last newsletter but have not received any profiles yet. As a reminder, the purpose of this feature is to serve as an alternative forum for introducing ESA members to each other. I would like to use this space for people to introduce themselves to the ESA and share a bit of their work and personal environments, to whatever extent they are comfortable with, so as to help maintain and further expand the "Friendly Society". Please share a bit of yourself with other members - Thanks.



**ESA/IEEE-IAS Joint 2003 Conference  
Registration Form**

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Name to Appear on Badge: \_\_\_\_\_

Affiliation to Appear on Badge: \_\_\_\_\_

Address \_\_\_\_\_

City: \_\_\_\_\_ State/Province: \_\_\_\_\_ Zip/Postal Code: \_\_\_\_\_

Country: \_\_\_\_\_ Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_ E-mail \_\_\_\_\_

**Type of Registration:**

When making travel arrangements, note that Friday will be a *full day* (8:30 - 5:00)

Full Conference: \$280 US (After May 23, 2003, cost is \$300)

(Includes: Tues reception, Meals Wed. AM through Friday lunch)

Wed., Jun 25 only\* (\$150 )     Thurs. Jun 26 only\* (\$150 )     Fri, Jun 27 only\* (\$150)

Student Registration for 3 days\* (\$100 with ID; Banquet and proceedings are extra)

Number of **extra** Thursday Banquet Tickets: (\$45 each) \_\_\_\_\_

I will need vegetarian meals at the conference

**Accomodations:**

I will stay at the Peabody Hotel (\$72 per night)

**NOTE: You must make your own room reservations at the Peabody Hotel by calling 1-800-732-2639 or 501-906-4000**

I will be staying elsewhere    Conference Site Parking at \$ 5 per day \_\_\_\_\_

(Note: The ESA will provide daily transportation between the hotel and conference site.)

**Payment Due** (Total of registration and extras in \$US) \_\_\_\_\_

I will mail a \$US check     I will pay by credit card at [www.electrostatics.org](http://www.electrostatics.org).

Checks and Money Orders payable to the Electrostatics Society of America may be mailed to:

Electrostatics Society of America c/o Susan Mitchell  
College of Engineering - Boston University  
44 Cummington St., Boston, MA 02215  
tel: 617-353-4909 fax: 617-353-5929 smitchel@bu.edu

Electrostatics  
Society of America



30 Shalimar Drive  
Rochester, NY 14618

*It's not too late!!!*

# Joint Symposium of the ESA & IEEE IAS-EPC

June 24-27, 2003  
University of Arkansas at Little Rock

## ESA Information

ESA Home Page: <http://www.electrostatics.org>

Mark N. Horenstein  
President  
Boston University  
44 Cummington St.  
Boston, MA 02215  
617-353-9052  
[mnh@bu.edu](mailto:mnh@bu.edu)

Steve Cooper  
Secretary/Treasurer  
540 Morton Rd.  
Athens, GA 30605  
706-769-0025  
[essinc@negia.net](mailto:essinc@negia.net)

Mark Zaretsky  
Editor  
30 Shalimar Drive  
Rochester, NY 14618  
585-588-6351  
[mark.zaretsky@kodak.com](mailto:mark.zaretsky@kodak.com)