

ESA Newsletter

Electrostatics Society of America - The Friendly Society

President's Message

Dear ESA Members:

With 57 participants from 12 countries, including representatives from several universities, 13 companies and one government agency, this year's ESA annual meeting was another successful event, held at the Holiday Inn at University of North Carolina at Charlotte, Charlotte, NC, USA. The various countries included the US, Canada, Germany, UK, New Zealand, France, Finland, Japan, Botswana, etc. In total, 38 talks were delivered, including 16 talks given by 17 students, on a wide spectrum of topics ranging from dielectrophoresis to ionic liquids to drug delivery to sand storms on the Moon and Mars. We had four invited, eminent keynote speakers from Germany, New Zealand, and USA.

Attendees: Very many thanks are due to all the attendees who made the meeting a great success.

General Conference Chair: The first hearty thanks is to Maciej Noras, General Conference Chair, for doing an excellent job in organizing the meeting this year. In addition to the normal general chair's hard work, he did significant fund raising for the meeting, helping to cover part of the expenses. He arranged transportation to and from the airport, a convenience never done before and greatly appreciated by all. He also arranged for pre-meeting technical tours and great lunches. In addition, Maciej also purchased 55 USBs and uploaded them with the meeting proceedings, many extra services this time. Thanks are due to the student assistants for the computer set-up and AV arrangements for the talks. Thanks you so much, Maciej and the UNCC team.

Technical Program Chair: My next hearty thanks are due to Dan Lacks, Technical Program Chair, for dealing with 38 final papers (and additional abstracts), and the associated review, edit, and acceptance process, as well as organizing the various technical sessions. The sessions and their chairs were:

Atmospheric and Space Applications I – Daniel Lacks, Case Western Reserve University; Materials Processing – C.I. Calle, NASA, Kennedy Space Center; Materials I – L. Zhao, Gannon University; Atmospheric and Space Applications II – M. Sow, Case Western Reserve University; Liquids and Flows – K.M. Forward, MIT; Energy – A.R. Akande, University of Botswana; Materials II – M. Murtooma, University of Turku; Biological and Medical Applications – R.J. Prance; Forces and Fields - Daniel Lacks, Case Western Reserve University; Breakdown and Discharge – M. Hogue, NASA, Kennedy Center.

Two other sessions were new "Special before-lunch lectures" by Mark Horenstein, Boston University and Bill Wayman, Xerox, respectively. In addition, Dan also takes care of our website and he was also elected as our new Vice President for this year. So, now one can imagine all he has to do – additionally, he is also the host, the general conference chair, for next year's annual meeting at Case Western Reserve University, Ohio, USA (mark your calendars for June 14-16, 2011) and is also the Technical Program Chair for next year. Thank you so much Dan, for all your dedication and continued great services to ESA. Very special thanks to the session chairs for their contributions.

Invited Speakers: The meeting started with the opening invited/keynote talk by Gregory Delory, University of California, Berkeley, USA, explaining how wind storms and solar radiation lead to electrostatic charging of dust on Mars and the Moon. Other invited speakers were: Keith Forward, MIT, US describing

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his work to develop a nozzle-less electrospinning method for processing of pharmaceuticals; Friedrich Kremer, University of Leipzig, Germany, presenting results of experiments in which dielectric response spectroscopy is used to elucidate the fundamental atomic scale dynamics of liquids; and Michael Arnold, MacDiarmid Research Institute in New Zealand, showing how non-uniform electric fields can be used to separate biological cells. Very many thanks are due to the invited speakers for sharing their expertise.

Student paper competition: This year also we had a large number of student authors and presenters. As you know, the registration fee was waived for student authors who are also presenters. There were 16 student presentations given by 17 students and several first, second, and third prizes were awarded. Again, this year we had 30% more students than 2008 (12 vs 17, 2009 is not accounted as it was a joint meeting). It was heartening to see that several of them are returning students. More details about the student paper competition and the prizes may be found later on in Table I.

Judges: Special thanks are due to the 3 hard working judges: M. Hogue, A.R. Akande, and M. Forward (a prior student attendee and student paper award winner), for evaluating 17 students on their 16 presentations – a very tough job as many presentations were equally good, and it was really challenging to judge them.

Sponsors/Donors: As in the past few years, Mystic Tan (currently known as MT Industries, Inc.) donated a handsome amount for the student paper competition awards and all our thanks are due to Steve Cooper and his company for their continued generosity. In addition, thanks to the hard work of our general conference chair, Maciej Noras, we got a very handsome research grant from Charlotte Research Institute towards the student paper competition and also a grant from Trek Inc.

Awards: This year we again had a very nice awards ceremony with several categories, appreciating several of our sponsors, volunteers, invited speakers, faculty and spouses, in addition to the student awards for the student paper. The details are as follows:

- i) **17 Student Paper Competition awards:** 3 first, 10 second, and 4 third prize cash awards were given for 16 student papers. Please see Table for details.
- ii) **4 Invited speaker appreciation awards:** Our 4 invited eminent speakers were appreciated for their contributions. The citation reads as, “In recognition and deep appreciation of your invited talk”.
- iii) **3 Sponsor/donor appreciation awards:** This year we gave the donor appreciation awards to MT Industries, Inc. (previously known as Mystic Tan co., Inc.), Charlotte Research Institute and Trek, Inc. Steve Cooper, Maciej Noras are our members who work with these donors and serve us in additional ways. The citation reads as, “In recognition and appreciation of your excellent support to ESA”. It is to be noted here that Mystic Tan has been supporting our student paper awards for several years, a very big thanks to Steve for that.
- iv) **2 Faculty appreciation awards:** This time we honored Lucian Dascalescu and Shesha Jayaram, who attend year after year as well as bring several students each year, contributing to the next generation of ESA experts. The citation reads as, “In recognition and deep appreciation of your continuous attending and bringing students and others for several years”.
- v) **2 Spouse appreciation awards:** This year also we appreciated two of the spouses of our long term serving members, Roxanne Pappenheimer and Susan Cooper (wives of Mark Horenstein and Steve Cooper respectively). The citation reads as, “In recognition and deep appreciation of all your support to the ESA activities ...”.
- vi) **3 Service appreciation awards:** The ESA exists thanks to our volunteers who do all that is needed to run this organization and do it very successfully. This time we appreciated the great services of Dan Lacks, Maciej Noras and Glenn Schmiegl for their past, present and future services. The citation reads as, “In recognition and deep appreciation of your excellent service –”. In addition, Al and Toni Seaver were awarded their plaques given last year.

Thank you all of you for your continuing service for many more years to come. We are soliciting nominations for next year's awards. The details of the various awards are available on the ESA web. Please send your nominations to me.

President's Message (cont'd.)

Hospitality Suite and Spouse Services: We had a great hospitality suite serving both for relaxation and for meeting old and new friends. This was possible thanks to Maciej Noras, Toni Seaver, Kelly Robinson and others.

Other: As usual, we had our special and fun attraction of the ESA Banquet Speaker this year too; Glenn entertained and educated us with his informative presentation on food. I am sure you are also looking forward to next year's meeting and Glenn's banquet presentation as much as I am. Thank you so much, Glenn.

Very special thanks to Steve Cooper, our long time treasurer, who keeps our accounts in excellent condition and brings more income for us by investing wisely and profitably, and to Mark Zaretsky, whose services are bloodlines for our ESA by preparing and publishing the Newsletter. Very many thanks are to Dan Lacks (and Mark Horenstein) for web management. I can't thank Al Seaver enough for his photos (please visit http://www.electrostatics.us/esa/2010/page_01.htm). Thank you to all the others who serve the society in many ways.

We had several new members at this year's meeting, the majority of whom are student members, illustrating the bright future of ESA. Thank you all for joining and supporting ESA. The great news is that many students are so impressed with our meeting, they are already planning for next year and you can see all the happy faces at one table which had only students in all the chairs with their award checks and happiness, which is worth all the hard work many of us put in. Please note that several of these students are also returning students, and they want to come again too, which speaks highly of our meeting.

As already indicated, our next ESA meeting is at Case Western Reserve University, June 14-16, 2011. The General Conference Chair and Technical Program Committee Chair for this meeting is Dan Lacks.

The 2012 ESA Annual Meeting will be held at the University of Waterloo with Shesha Jayaram serving as General Conference Chair. Please note that this will be a joint meeting, as in 2009, with several organizations and Dr. Jayaram is already started negotiating with hotels to get us a great rate.

I look forward to seeing all of you and additional new members at the 2011 and 2012 meetings. These annual events lie as the core of the ESA and its activities and so, please bring your colleagues and friends who are in this field, as electrostatics pervades a wide variety of disciplines, including biotechnology, nanotechnology, energy with attractive applications, drug delivery using electrostatics and electrospinning for making nanofibers for various applications including food packaging, a multibillion dollar industry, and sand storms at Moon and Mars.

For more details, please also read the write-up by our General Conference chair and see additional photos in this issue. Please visit our website, <http://www.electrostatics.org/esa2010proceedings.html> for the meeting proceedings and http://www.electrostatics.us/esa/2010/page_01.htm for more photos.

We constantly strive to serve you in as many ways as possible, such as the joint meetings, where you can interact with researchers from around the globe. As usual, we would also like to hear from you as to your likes and dislikes and suggestions for other ways we can serve best. I look forward to hearing from you.

Thank you very much and have a very productive and pleasant time.

Yours for the friendly Society,

Raji Sundararajan,
ESA President

Acknowledgments: Dan lacks, Maciej Noras, and Steve Cooper for all the statistics and details provided and Al Seaver for photos.

ESA Annual Meeting Report - Maciej Noras

This year, our Friendly Society met on June 22-24 in Charlotte, NC. I will leave it to Al Seaver to tell us the number we should assign to this Annual Meeting, but I know that happy people do not really count how many times they had a good time. This meeting was no exception; I believe we continued our long standing tradition of friendly meetings, where we do not criticize anybody else's presented work, but rather suggest and inspire. The conference was held in the Holiday Inn hotel at the University City area of Charlotte, in close proximity to the University of North Carolina at Charlotte (UNCC).



This year we started our meeting with visiting two of the UNCC's laboratories: Optoelectronics and Motorsports. We had an opportunity to take a sneak peak at some of the research facilities, including cleanroom, fabrication and characterization and measurement rooms. During our one and a half hour visit we did not build any devices, but managed to ask lots of questions and got our daily portion of exercise while rushing from one room to another. The Motorsports lab that we visited next is one of the more unique facilities in the country. Students not only build cars there, they also race them. We did not have a chance to do any racing, but it was only because these racers have no doors!

After lunch and some deserts we were ready for the first technical presentations session. Highlights of the technical program were the light-hearted 'Special Before-Lunch Lectures' by Mark Horenstein from Boston University and Bill Wayman from Xerox. Mark discussed the scientists behind the names of units in electrostatics, and why some scientists are immortalized this way while other deserving scientists are not. Bill described experiments he carried out on the electrostatic charge that develops while petting a cat.. One of the biggest advantages of the ESA meetings is the diversity of topics covered by the presenters, a great opportunity to learn something new from the field you have never tinkered with before. The range of topics and disciplines is always very broad, and after attending a couple of the ESDA meetings you expect to find an unusual presentation for which the new session title has to be invented (Special Before-Lunch Lecture is my personal favorite). After two and a half days of learning about charging and discharging, particles, liquids, and other materials, fields, forces, energy, measurement techniques, bacteria, cancer, cat fur and Lord Henry Cavendish, we celebrated our work achievements with a Gala Dinner and Awards Ceremony. We recognized student speakers, first- and second-time presenters,



ESA Annual Meeting Report (cont'd.)



sponsors, keynote speakers and long-time contributors to our Society along with their spouses. Along with dessert, we had Glenn Schmiege entertaining us with talk about laugh in science. I do not know about other participants, but I would attend the ESA Meetings for this event alone - Glenn's presentations always leave me with a thought, inspiration. We look forward to seeing you next year at Case Western Reserve University, Cleveland, OH.



Group Photo



ESA OFFICERS

President:

Rajeswari Sundararajan, Purdue Univ.

Vice President:

John Gagliardi, Rutgers Univ.

Executive Council

Sheryl Barringer, Ohio State Univ.

Steve Cooper, Mystic Tan, Inc.

Kelly Robinson, Electrostatic Answers, LLC

Calendar

- ✓ SFE 2010, Aug 30 - Sept 1, 2010, Montpellier, France, Contact: SFE2010 Organizing Committee, Tel: +33 4 67 14 34 85, sfe2010@univ-montp2.fr, website: <http://www.electrostatics.org>
- ✓ IEEE-IAS 2010 Annual Meeting, Electrostatic Processes Committee, Oct. 3-7, 2010, Houston, Texas, website: <http://www.ewh.ieee.org/soc/ias/2010/home.htm>
- ✓ IEEE-DEIS CEIDP 2010, Oct. 17-20, 2010, Purdue University, West Lafayette, Indiana, Contact: Rajeswari Sundararajan, Tel: +1 765 494 6912, rsundara@purdue.edu, website: <http://ewh.ieee.org/soc/dei/ceidp/ceidp2010.htm>
- ✓ Electrostatics 2011, 13th Int'l. Conf. on Electrostatics, April 10-14, 2011, Bangor University, Wales, UK, Contact: Dawn Stewart, Tel: +44 (0)20 7470 4800, dawn.stewart@iop.org, website: <http://www.electrostatics2011.org>
- ✓ ESA-2011, June 14-16, 2011, Case Western Univ., Cleveland, OH Contact: Dan Lacks, daniel.lacks@case.edu, website: <http://www.electrostatics.org>

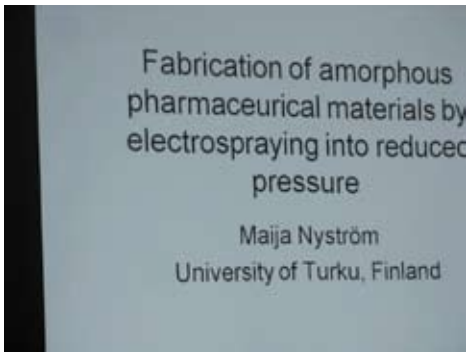
Table 1: ESA 2010 Student Paper Competition

Award:	Name:	Affiliation:	Country:	Title:	Faculty:
1st	Jinfeng Zhang	University of Oklahoma	USA	Effect of Emitting Electrode Number on the Performance of EHD Gad Pump in a Rectangular Channel	F.C. Lai
1st	Maija Nyström	University of Turku	Finland	Fabrication of amorphous pharmaceutical materials by electrospraying into reduced pressure	Matti Murtomaa
1st	Radu Beleca	Brunel University	United Kingdom	Electrostatic Properties of DPI Dispensed Drug Aerosols in a Human Upper Airway Model	W. Balachandran
2nd	Chitral Angamma	Univ. of Waterloo	Canada	A Modified Electrospinning Method for Conductive and Insulating Materials	Shesha Jayaram
2nd	Jorma Roine	University of Turku	Finland	Electroencapsulation of Mesoporous Silicon Particles for Controlled Oral Drug Delivery	Matti Murtomaa
2nd	Nikola Toljic	University of Western Ontario	Canada	Three-Dimensional Numerical Studies on the Effect of the Particle Charge to Mass Ratio Distribution in the Electrostatic Coating Process	K. Adamiak, P. Castle
2nd	Niloofar Farnoosh	University of Western Ontario	Canada	3-D Numerical Simulation of Particle Concentration Effect on a Single-Wire ESP Performance for Collecting Poly-dispersed Particles	K. Adamiak, P. Castle
2nd	Paria Sattari	University of Western Ontario	Canada	Numerical Simulation of Trichel Pulses in a Negative Corona Discharge in Air	K. Adamiak, P. Castle
2nd	Petr Cervenka	Institute of Chemical Technology	Czech Republic	Study on Faradaic and Coulombic interactions at microelectrodes utilized in AC electroosmotic micropumps	D. Snita
2nd	Philip Watson	University of Sussex	United Kingdom	Imaging the microscopic properties of dielectrics via potential and charge	Robert Prance
2nd	Rakshit Tirumala	University of Notre Dame	USA	The Assisted Corona Discharge: Multi-Electrode Configurations and the Effects on EHD Flows	D. Go
2nd	Richard Pham	Case Western Reserve University	USA	Triboelectric charging of identical materials by asymmetric rubbing	Daniel Lacks
2nd	Therese Salameh	Purdue University	USA	Enhanced Doxorubicin Uptake in Malignant Breast Cells using Electrical Pulses	Raji Sundararajan
3rd	Dennis Quill	SUNY Oswego	USA	Electrospray Onset Study of Water-Ethanol Mixtures	Adrian Ieta
3rd	Dixitbhai Patel	Gannon University	USA	Active Disturbance Rejection Control of Doubly-Fed Induction Generator during Voltage Dip	Lin Zhao
3rd	Joshua Primrose	SUNY Oswego	USA	Electrospray Onset Study of Water-Ethanol Mixtures	Adrian Ieta
3rd	Kiran Kumar Chedella	Gannon University	USA	Modeling of a Small Stand-Alone AC System with the Dynamic Models of Fuel Cells and Solar Panels	Lin Zhao

Presentations



Student Presentations and Awards



Conference Interactions



Faculty Awards



During Banquet



Invited Speaker Awards



Hospitality Suite



Sponsor Awards



Spouse Awards



Service Awards



**Electrostatics
Society of America**



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ESA Information

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

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**ESA-2011 Annual Meeting: June 14-16, 2011
Case Western Univ., Cleveland, OH**