



PARTICULARS

the E-Newsletter of the American Association for Aerosol Research

Winter 2013-2014

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Letter From the Editor

Welcome to the Winter 2013-2014 issue of *Particulars*, the e-newsletter of the American Association of Aerosol Research (AAAR).

Another excellent annual conference is now behind us; big thanks go to Murray Johnston and all the organizers for putting together such a great conference. This issue includes a recap of the conference and a list of this year's honorees (fellows, award winners and student poster competition winners), a message from our new president, Barbara Wyslouzil, and recent news from the world of aerosol and particle science by assistant editors Akua Asa-Awuku and Chris Hennigan.

I also want to bring your attention to the resources available on [AAAR's website](#), which include job postings, a schedule of events related to aerosol science, and a direct link to *Aerosol Science and Technology*.

Future issues of *Particulars* will focus on information and announcements regarding the next annual conference (October 20-24, 2014 in Orlando, FL), as well as updates on the activities of our student chapters. In the meantime, if there are any other additional topics/resources that you would particularly like to see in your AAAR e-newsletter or on the website, definitely don't hesitate to drop us a note. Thanks!

Jesse Kroll
Editor

2013 Annual Conference
Sponsors

**Supporting, Young Investigators
Event and Student Poster Awards**



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2013 Annual Conference Update

The AAAR 32nd Annual Conference took place in Portland, OR September 30 to October 4, 2013. Despite challenges posed by unanticipated events elsewhere, the conference welcomed 785 attendees who gave 372 platform and 407 poster presentations. The platform presentations were spread among six parallel sessions Tuesday through Friday, while the poster presentations were given in two sessions, one on Tuesday and the other Thursday. The conference hosted three excellent special symposia:

- "Bioaerosols: Characterization and Environmental Impact", organized by Alex Huffman and Matthew Berg
- "Engineered Nanoparticles: Emissions, Transformation and Exposure", organized by Philip Hopke and Linsey Marr
- "Portable and Inexpensive Sensor Technology for Air Quality Monitoring: The Future is Now", organized by Paul Solomon, Igor Paprotny, Richard White and Lara Gundel

The week began with 16 tutorials on Monday. New this year was a hands-on tutorial on aerosol instrumentation that was enthusiastically received



AERODYNE RESEARCH, Inc.

**AEESP Lecture****Student Travel Support****Conference Bags**

by the participants. The young aerosol scientists interest group sponsored a workshop Monday evening on career paths.

Each day of the technical session Tuesday-Friday opened with a plenary lecture. Thomas Peters from the University of Iowa gave the AEESP Lecture on Tuesday entitled "Lessons from the Workplace: Hazards from Exposure to Engineered Nanomaterials". Alan Weimer from the University of Colorado gave the Friedlander Lecture on Wednesday entitled "Solar Thermal Chemical Processing using Particle Flow Reactors - Challenges and Opportunities". We were delighted that members of the Friedlander family were able to attend this lecture. On Thursday, Jonathan Reid of the University of Bristol presented a plenary lecture on "Studying Aerosol Processes, One Particle at a Time". Finally, Lynn Russell of the Scripps Institution of Oceanography rounded out the week, giving the Friday plenary lecture entitled "Secondary Organic Aerosols: Are Laboratory Chambers Mimicking the Atmosphere?"

Twenty two organizations participated in the exhibit this year, highlighting the latest and greatest in aerosol technology. AAAR gratefully acknowledges the generous support of this year's conference sponsors: TSI (Supporting, Young Investigators Event and Student Poster Awards); Sunset Laboratory (Bronze); Aerodyne Research, Desert Research Institute and Electric Power Research Institute (Supporting); Association of Environmental Engineering & Science Professors and Institute for a Sustainable Environment at Clarkson University (AEESP Lecture); National Aeronautics & Space Administration (Student Travel Support); and Cambustion (Conference Bags).

I would like to acknowledge many people who have worked so hard over the past year. First and foremost, Melissa Baldwin, Deanna Bright, Ann Mitchell and Caroline Olson from Association Headquarters worked continuously behind the scenes to organize and coordinate the many activities, big and small, needed to put on a conference of this magnitude. Donald Dabdub worked tirelessly to set up the online abstract submission portal and keep it running smoothly. I am also deeply grateful to Peter DeCarlo (tutorials), Kelley Barsanti (young investigators), Barbara Wyslouzil (development), Francisco Romay (exhibits), Christopher Sorensen (student poster competition), the working group chairs, co-chairs and special symposia organizers (technical program), the session chairs and student assistants. Each played a crucial role in making this year's conference a success.

The next conference, our 33rd, will be organized by Thanos Nenes and held October 20-24, 2014 in Orlando, FL. Save the date and plan to attend!

Murray Johnston
2013 Conference Chair

AAAR Honorees

Below are the names of this year's AAAR award recipients, AAAR fellows, and student poster award winners. All were honored immediately following the plenary lectures at the AAAR 32nd Annual Conference. Congratulations to all honorees!

AAAR Fellows: Lynn Russell and Paul Solomon

David Sinclair Award: Pratim Biswas
Thomas T. Mercer Award: Mark Utell
Sheldon K. Friedlander Award: Jason Surratt
Kenneth T. Whitby Award: Jian Wang
Benjamin Y.H. Liu Award: W. Patrick Arnott and Hans Moosmuller (co-winners)

Student Poster Awards: Adam Ahern, Jennifer Alexander, Ross Beardsley, Tandeep Chadha, Celia Faiola, Laura Fierce, Courtney

Herring, Nicholas Masson, Jai Prakash, Chelsea Preble, Arian Saffari, Swarnali Sanyal, Jeremy Smith, Ashley Vizenor and Megan Willis

President's Message

Thanks to your continued support, AAAR is starting its 33rd year characterized by financial strength and enduring membership. We are a diverse, dedicated group of scientists committed to broadening the reach of aerosol science while nurturing the fundamentals. The willingness of members to volunteer for positions on standing committees, ad hoc committees and to help organize the conference is outstanding. I'd like to thank all of our volunteers and particularly the board members who have served for the past three years. I'd also like to thank all those who answered my call for volunteers last spring. If I did not call you, your name has been passed along to Jay Turner who will be filling committee positions next spring/summer.

Organizational Members

AAAR would like to thank the companies that support us as Organizational Members:



To stay relevant, all organizations need to continue to ask "who are we?" With the information you have provided during conference registration, we can better understand the makeup of the current membership and plan for the future. To take this process further, AAAR plans to conduct a membership survey in the coming year. The purpose is to help inform the new strategic plan and to ensure that we are meeting our members' expectations, as well as providing the benefits you value and would like to see. When this request appears in your mailbox, please take a few minutes to complete it. Your voice will be heard and your comments appreciated.

As you may know, former AAAR President Barbara Turpin started an initiative on distance learning. The goal of this initiative is to have AAAR bring aerosol science education to a broader cross-section of potential and current members. Members of the ad hoc committee charged with developing this initiative include Chris Sorensen (Chair), Rob Caldwell, Arsineh Hecobian, Mark Hoover, Mike Kleeman, Faye McNeill and Liya Yu. I look forward to hearing their suggestions and plans. If you have ideas you would like to share with this committee, please feel free to forward them to one of the members.

As we look forward to the upcoming year, I also encourage members to think of who AAAR should honor. Our awards recognize scientist from early career onward, but recognition requires nomination. Please consider playing an active role and nominating your colleagues for an appropriate award.

It's never too early to start thinking about next year's conference, and I hope to see you at the 33rd Annual Conference, October 20-24, 2014 at the Rosen Shingle Creek in Orlando, FL. This is the last of the three visits to this venue. For those of you unable to attend the annual conference in Portland, OR, I hope you have found the time to renew your membership by going online. Remember, membership includes your online access to the journal *Aerosol Science and Technology* and a free abstract submission for next year's conference.

Barbara Wyslouzil
AAAR President

In Case You Missed It . . .

Natural Aerosols: A recent study has shown that in order to reduce uncertainties in aerosol-indirect effects, the impacts of not only anthropogenic aerosols but also naturally-occurring aerosols must be better understood. The authors that 45% of the variance of aerosol climate forcing since 1750 derives from uncertainties in the emissions of naturally-occurring aerosols and precursors, namely volcanic sulfur dioxide, marine dimethylsulfide, biogenic VOCs, biomass burning aerosol,

and sea spray. The study, by Ken Carslaw (University of Leeds) and co-workers, was published in the [November 7 issue of Nature](#).

Particulate Pollution: In late October, the city of Harbin, China (population 10.6M) was blanketed by thick smog, with reported visibility values as low as 10 meters, and measured PM_{2.5} concentrations above 1000 $\mu\text{g}/\text{m}^3$ (!). This "Airpocalypse" (or "Airmageddon") has been attributed to a combination of the city's coal-powered heating system, the burning of crop waste, and low winds, and resulted in the closure of the city airport, highways, and schools for several days. [Click here for more information](#).

Nobel for Particle Physics: Particles - which come in all shapes in sizes - are having a wonderful year! In October, François Englert and Peter W. Higgs were awarded the Nobel Prize in Physics, for developing the theory of how subatomic particles acquire mass. This award comes right after CERN's discovery of the Higgs boson. [Click here for the official press release](#).

Akua Asa-Awuka
Sr. Assistant Editor

Aerosols in the Spotlight

Development of a Pulsed-Field Differential Mobility Analyzer: A Method for Measuring Shape Parameters for Nonspherical Particles

M. Li, R. You, G. W. Mulholland, and M. R. Zachariah, AS&T 48(1): 22-30 (2014)

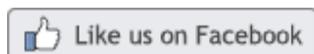
Measurements of particle size are fundamental to the field of aerosol science. The differential mobility analyzer (DMA) has become the workhorse instrument for particle sizing due to its fast automated operation, portability, robust design and high accuracy. An important limitation of the DMA applies to the measurement of non-spherical particles, since the electrical mobility diameter measured by the instrument can differ widely from the actual particle geometry. Further, the dynamic shape factor for certain particle types (and thus electrical mobility) is dependent upon particle orientation. A new method has recently been developed to provide separation of spherical/non-spherical particles with the same electrical mobility. The method can also be used to derive quantitative information on non-spherical particle geometry. The pulsed-field differential mobility analyzer (PFDMA) varies the maximum electric field in a DMA column without changing the time-averaged field strength. Spherical particles exhibit the same behavior and mobility diameter in the PFDMA system as they do in traditional DMA analysis because the time-averaged field strengths are equivalent. Non-spherical particles, however, respond to the pulsed E-field by alternately changing orientation and relaxing, which results in a different electrical mobility in the PFDMA system than in the traditional DMA analysis. The method was tested using cylindrical nanorods whose dimensions were precisely determined by TEM analysis. By subjecting the nanorods to different average applied E-fields across multiple tests, quantitative information on the length and diameter of the nanorods was obtained (within 10% and 15% of the dimensions determined by TEM, respectively). Although the method has been applied only to the sizing of nanorods thus far, there are many exciting possibilities for its future development, including characterization of the shape parameters of soot.

Quick Links

[AAAR Website](#)

[Career Opportunities](#)

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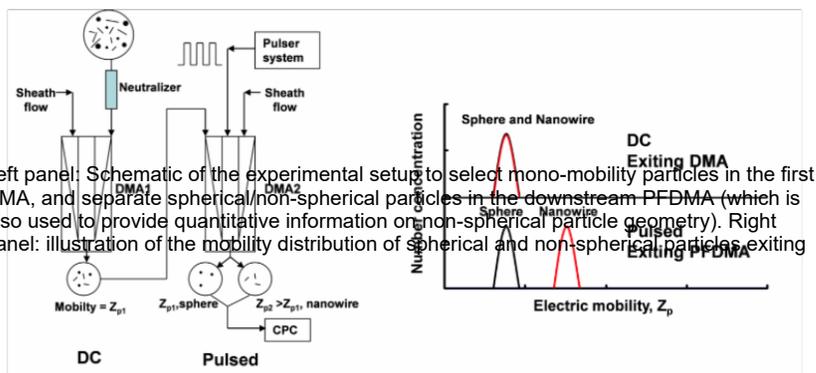
AAAR Newsletter Committee

AAAR thanks the following Newsletter Committee members for contributing their valuable time and talent to *Particulars*:

Jesse Kroll
Editor

Akua Asa-Awuku
Sr. Assistant Editor

Chris Hennigan
Jr. Assistant Editor



Left panel: Schematic of the experimental setup to select mono-mobility particles in the first DMA, and separate spherical/non-spherical particles in the downstream PDMA (which is also used to provide quantitative information on non-spherical particle geometry). Right panel: illustration of the mobility distribution of spherical and non-spherical particles exiting

each of the DMAs in the left panel.

Chris Hennigan
Jr. Assistant Editor

AAAR 2014 Membership Dues

If you did not attend the AAAR 32nd Annual Conference in Portland, OR, your 2014 membership dues are due!

Renew your AAAR membership today and continue to receive the following benefits:

- **Subscription to *Aerosol Science & Technology*** - AAAR members receive a one year online subscription to the official Association journal *Aerosol Science & Technology (AS&T)*. The journal publishes papers covering the full range of topics in aerosol science including basic theoretical developments, new instrumentation, ambient aerosol properties, respiratory deposition, aerosol drug delivery, aerosol climatology, etc. Full members may also receive a print copy of the journal for \$40/year (12 issues mailed quarterly). Student and retired members must pay the full subscription price of \$80 because your online subscription was already subsidized. You can also access a 20% discount voucher for online purchases of Taylor & Francis books (including those from CRC Press and Routledge) in the members only section of the AAAR website.
- ***Particulars* E-Newsletter** - The AAAR member e-newsletter, *Particulars*, is sent three times each year via email and contains up to date information about programs, conferences, symposia, awards, job opportunities and other official AAAR business.
- **Online Membership Directory** - The AAAR online membership directory lists the address, phone, fax and email for all current members. In addition, the PDF version includes a list of AAAR board officers and directors, committee members, working group chairs, organizational members, past award recipients, past and future annual conferences, and the AAAR bylaws.
- **Election of Board Officers, Directors & Working Group Vice Chairs** - AAAR members elect their own board officers, directors and working group vice chairs annually by an online ballot vote. Full members are eligible for peer or self nomination for any open position.
- **Working Groups & Committees** - AAAR members are encouraged to participate in technical working groups representing

many topics in aerosol science. Working group members help plan technical symposia, exchange ideas and recommend programs. Members may also join committees to assist the AAAR board in building and strengthening the Association in important areas such as education, publications, awards, finance and bylaws.

- **Awards Program** - The prestigious AAAR awards program offers support and recognition of individuals who have shown outstanding achievement in aerosol science.
- **Free Abstract Submission** - AAAR members are granted one free abstract submission credit to the AAAR annual conference. Credits are transferable so they can be gifted or traded. Additional abstract submissions cost \$50 each. This abstract fee is intended to enhance the quality of the AAAR presentations in part by reducing the number of no shows.

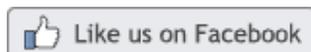
To renew your AAAR membership...

1. go to www.AAAR.org and log in to the "Members Only" section of the website,
2. choose "Member Profile" then click on the gray "Billing" button above your name,
3. add your membership renewal to your "cart", and that's it!

(If you forgot your password, please choose "Reset My Password". If you forgot your user name, please send an email with the subject "Username" to info@aaar.org.)

DO NOT DELAY - renew your AAAR membership today!

Please contact AAAR headquarters at info@aaar.org if you have any questions.



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