

# PARTICULARS

The E-Newsletter of the American Association for Aerosol Research

SPRING 2016

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## President's Message

### Dear Colleagues

Spring is here and change is in the air! In addition to continuing to transition to our new management company and transitioning to a new Editor in Chief for Aerosol Science and Technology, Warren Finlay, we are in the process of updating the AAAR website. We will need your aerosol images so please stay tuned for a call for images with specifics about format and resolution. Behind the scenes on the AAAR website, we are also setting up communities so that the AAAR committees and working groups can have archiving, discussion group and other capabilities. Our AAAR Facebook page is alive and well, but it has less "likes" than we have members, so if you haven't checked it out yet, please do so. Our Online Education Initiative continues, with plans to record three tutorials at the next Annual Meeting.

Speaking about the Annual Meeting, the Call for Abstracts for the 2016 AAAR Annual Meeting in Portland is hot off the presses! It should be a great meeting, as usual, with first-rate science and plenty of opportunities to interact with colleagues. See the article by our Conference Chair, Mark Swihart, for more details. Our combined membership and conference registration rate, \$579 for the early bird Fall 2015 meeting registration and

2016 membership, continues to remain competitive. For example, for the upcoming Air and Waste Management Association meeting, the early registration is \$745, and annual regular membership is \$195 for a combined total of \$940. To support the transition from student to professional, at the recent Board of Directors Meeting on March 12th, the Board acted on a recommendation from our Membership Committee to create a reduced registration/dues rate for early career investigators. I'm proud that our organization has active members at all stages of their careers. I think this is a sign of a healthy and sustainable professional society! I look forward to seeing everyone in Portland this October!

*Sheryl Ehrman, AAAR President*

American Association for Aerosol Research  
**35th Annual Conference**  
**October 17-21, 2016**  
Oregon Convention Center | Portland, Oregon



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## 2016 Annual Conference Update

### Dear Colleagues

I am excited to share this brief update on plans for the **35th AAAR Annual Conference**, to be held October 17-21 at the Oregon Convention Center in Portland. As always, we expect the conference to provide an outstanding venue for sharing our latest aerosol science and technology research progress, while networking and re-connecting with colleagues.

The conference will commence on Monday with a schedule of 16 tutorials in four sessions, spanning a broad range of aerosol topics, including the popular "Hands-on Aerosol Instrumentation Design and Measurement" tutorial. In a new initiative, three of the most popular tutorials will be video-recorded for dissemination to a broader audience. A description of each tutorial will be posted on the conference website. Monday evening will conclude with the Young Investigators' event, where the next generation of aerosol scientists and engineers will network over some free food and drink.



An exciting array of plenary talks, special symposia, poster sessions, platform presentations, and special events will take place from Tuesday morning through Friday noon. We have a great line-up of plenary lectures by [Hai Wang](#) (Stanford), [Christine Wiedinmyer](#) (NCAR), [Michael Mishchenko](#) (NASA), and [Jon Samet](#) (USC).

The exhibit area, open Tuesday through Thursday, will provide ample opportunity to engage with leading companies and vendors offering instrumentation and services in aerosol science and technology.

Along with our usual high-quality platform and poster sessions on all aspects of aerosol science and technology, the 2016 conference will include four special symposia on topics of great current interest. These are: **(1)** *Electronic Cigarettes: Formulation, Particle Generation, Deposition, and Health Effects*; **(2)** *Effects of NO<sub>x</sub> and SO<sub>2</sub> on BVOC Oxidation and Organic Aerosol Formation*; **(3)** *Graphene-based Nanomaterials via Aerosol Routes: Synthesis and Applications*; and **(4)** *Single Aerosol Particle Studies: From Fundamental Physics to Instrumentation*.

The conference venue, the [Oregon Convention Center](#), is located along the Portland light rail system, providing easy access to the airport and downtown. Downtown

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has many fabulous [restaurants](#), [Powell's City of Books](#), the [Oregon Museum of Science and Industry](#) and traditional [Japanese](#) and [Chinese gardens](#). To find out more, visit the [TravelPortland website](#). There are many hotels within walking distance of the convention center, and reservations for AAAR reserved room blocks will be available on the conference registration site.

New for 2016 will be a **5k group run/walk** along the Willamette River! The run/walk will start at 6:30 am on Wednesday morning from the Convention Center; you can sign up when registering for the conference.

As you may recall, AAAR has instituted an abstract submission fee. Each AAAR member will receive a code for one free abstract submission. Codes are transferable, so they can be gifted or traded. Additional submissions will cost \$50 each. This abstract fee is intended to enhance the quality of the conference, in part by reducing the number of no-shows. **Submit your abstracts soon, at [www.AAARabstracts.com/2016](http://www.AAARabstracts.com/2016)! The abstract deadline is April 29.**

As a AAAR member, I encourage you to share your enthusiasm for the AAAR conference with your colleagues, particularly those with interest in the special session topics listed above!

See you there!

*Mark T. Swihart, 2016 AAAR Conference Chair*

## Organizational Members

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





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## AS&T Article Highlight

by Kristina Wagstrom

### A light-weight, high-sensitivity particle spectrometer for PM<sub>2.5</sub> aerosol measurements

R.S. Gao, H. Telg, R.J. McLaughlin, S.J. Ciciora, L.A. Watts, M.S. Richardson, J.P. Schwarz, A.E. Perring, T.D. Thornberry, A.W. Rollins, M.Z. Markovic, T.S. Bates, J.E. Johnson, D.W. Fahey

Aerosol Science and Technology (2016) 50, 1, 88-99

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Continuing on the theme from the AS&T Article Highlight from the Winter 2015, this newsletter will also highlight new and exciting work in the development and testing of low-cost particle sensing technologies. These technologies have the potential to enable a significant number of novel studies in understanding spatially and temporally varying particle matter concentrations. The new technology introduced in this feature is a light-weight (~800g), low-cost (~\$2,500 materials) particle spectrometer, named the Printed Optical Particle Spectrometer (POPS).

The authors of the manuscript discuss extensive evaluation of the spectrometer performance against several commonly used instruments and find strong performance, particularly in the 140-3000 nm size range. They also provide extensive information about the procedures and approaches used in calibration and the potential sensitivities to a large number of factors including Mie resonances. The authors mention already completed tests of the POPS applicability to unmanned aerial vehicle applications and balloon sondes. This spectrometer provides a novel instrument for smaller sized particles than many low-cost sensing technologies currently on the market.



*A photograph of the interior of the POPS instrument configured for desk-top operation.*

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## In Case You Missed It

*By Jeff Pierce*

An 300-acre landfill fire created extreme particulate matter concentrations in portions of Mumbai, India in late January.

[http://www.newyorker.com/tech/elements/  
the-burning-garbage-heap-that-choked-mumbai](http://www.newyorker.com/tech/elements/the-burning-garbage-heap-that-choked-mumbai)

Absorbing aerosol in the atmosphere of Jupiter plays a crucial role in the radiative balance of the planet.

[http://www.dailymail.co.uk/sciencetech/article-3370650/  
Aerosols-causing-global-warming-JUPITER-Fluffy-haze-  
particles-heating-gas-planet-s-atmosphere.html](http://www.dailymail.co.uk/sciencetech/article-3370650/Aerosols-causing-global-warming-JUPITER-Fluffy-haze-particles-heating-gas-planet-s-atmosphere.html)

Leading scientists advocate for aerosol reduction to improve the hydrological cycle and water resources in many portions of the world.

[https://www.foreignaffairs.com/articles/2016-02-16/  
next-front-climate-change](https://www.foreignaffairs.com/articles/2016-02-16/next-front-climate-change)

Clouds downwind of Icelandic volcano modified by volcanic aerosol emissions.

[http://www.natureworldnews.com/articles/18708/20151211/  
icelands-major-volcano-eruption-illustrates-sulfur-aerosols-in-  
fluence-cloud-formation.htm](http://www.natureworldnews.com/articles/18708/20151211/icelands-major-volcano-eruption-illustrates-sulfur-aerosols-influence-cloud-formation.htm)

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# Aerosol Scientist Spotlight: John Volckens

*By Kristina Wagstrom*

## An introduction to John Volckens



Dr. John Volckens is an associate professor and the Director of the Center for Energy Development and Health at Colorado State University. He holds appointments in the Departments of Mechanical Engineering and Environmental and Radiological Health Sciences and within the School of Public Health and the School of Biomedical Engineering. His research interests involve combustion science, occupational health, aerosol technology, and air pollution-related disease. He earned a B.S. in Civil/

Environmental Engineering from the University of Vermont in 1996 and M.S./Ph.D. degrees from the University of North Carolina at Chapel Hill in 1999 and 2003, respectively. He then went on to a Postdoctoral position at the U.S. EPA's National Exposure Research Laboratory in Research Triangle Park, NC. In 2004 he joined the faculty at Colorado State University, where he pioneered the development of several new sensor technologies – resulting in three recent patents. Dr. Volckens is the recipient of the 'Best Paper' award from the American Industrial Hygiene Association Journal (1999) and the Journal of Indoor Air (2013). He has published over 60 manuscripts related to exposure science, aerosol technology, and air pollution-related disease. He is a co-founder of Access Sensor Technologies, a spinout company started through his research collaborations at Colorado State University.

## How did you get involved with aerosol research?

During my junior year at the University of Vermont I told my undergraduate advisor that I was bored with coursework and that perhaps an independent study would pique my interest. In response he told me 'OK, for starters, read this book and write me a report on it.' The book was called "Cascade Impactor" by Lodge and Chan. I was hooked. By my senior year I was working 10 hours per week in the lab and had published my first research paper.

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### Which people in our field have influenced you the most?

David Hemenway, my undergraduate advisor at UVM

David Leith, my graduate advisor (who, since retiring from UNC, works as a 'Summer Intern' in my lab at Colorado State)

Jim Vincent, my all-around aerosol hero

Rich Kamens, who taught me that new theory melded into new data is the best song that science can sing

### What is, in your opinion, the most interesting research contribution you have made so far?

I'd like to believe that our work on low-cost sensors will have a major impact on our field, but as for 'interesting', NASA is planning to send our wearable thermal precipitator into orbit to characterize dust exposures on the International Space Station this year. I also just like saying 'Dust in Space'

### What research questions do you hope to answer?

1. Can a group of 'citizen scientists' make more impact than a well-funded research team when it comes to PM measurement networks? Can they outperform a federal network?
2. What is the most important (and realistic) action that an average citizen can take to lower their risks for air pollution-related disease?
3. How clean is 'clean enough' in regards to emissions of combustion-derived PM and human health?

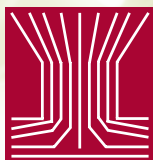
### Are there new aerosol research areas that you see developing in the near future?

My hope is that our sensor technology will enable a new wave of volunteer scientists to make reliable aerosol measurements at scales never seen. There are so many innovations happening in molecular biology, materials science, and fabless manufacturing; I am excited to watch these innovations enable our field. The future is very bright for aerosol technology in the coming decade.

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As always, we'd love any feedback or suggestions you may have for *Particulars*. Simply email [info@aaar.org](mailto:info@aaar.org) with the subject line 'Particulars'.

**Chris Hennigan, Editor**



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