



PARTICULARS

the E-Newsletter of the American Association for Aerosol Research

Winter 2014

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AAAR Contact Information

Effective **January 1, 2015** the AAAR Headquarters contact information will be:

American Association for Aerosol Research (AAAR)
12100 Sunset Hills Road
Suite 130
Reston, VA 20190
T: 703-437-4377 or 877-777-6753
E: info@aaar.org
www.aaar.org

Organizational Members

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Letter From the Editor

Welcome to the Winter 2014-2015 issue of *Particulars*, the e-newsletter of the American Association of Aerosol Research (AAAR).

The conference in Orlando is over and another excellent annual conference is now behind us. The conference provided several opportunities to reenergize our research efforts and reconnect with colleagues. A big thank you and a job well done is extended to the 2014 Conference Chair, Athanasios Nenes and all the organizers who put forth considerable effort for a great and smooth running conference event.

In this issue, we hope to continue with the spirituous momentum of the conference. This issue a list of this year's honorees (fellows, award winners and student poster competition winners), a message from our new president, Jay Turner, and recent news from the world of aerosol and particle science by Sr. and Jr. assistant editors, Chris Hennigan and Jeff Pierce. In addition, we have included a new and revamped section, Interview with an Aerosol Scientist. We hope to highlight our diverse research talent, membership, and readership in the AAAR community to motivate current and future members. Lastly, we also want to bring your attention to the resources available on AAAR's website. We frequently post employment opportunities, scheduled events and conferences related to aerosol science, and a direct link to our high-impact journal, *Aerosol Science and Technology*.

Future issues of *Particulars* will focus on information and announcements regarding the next annual conference (October 12-16 in Minneapolis, MN), 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 do not hesitate to drop us a note. Thanks!

Akua Asa-Awuku
Editor

Letter From the President

Thanks to the efforts of our members, AAAR continues to be on solid ground - both intellectually and financially. We are on the heels of a successful conference in Orlando including a robust scientific program that is the hallmark of our annual gatherings. Thanks to Thanos Nenes (2014 Conference Chair) and the large network of members, exhibitors, and administrative staff for helping us continue this fine tradition.

Last summer AAAR conducted a membership survey. Not surprisingly, the annual conference and our journal - *Aerosol Science & Technology* (AS&T) - were noted as key benefits. The conference provides an opportunity to share our current scientific endeavors in a constructive and



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supportive atmosphere. The opportunity to maintain personal connections - and establish new connections - was also highlighted. Most members have access to AS&T through their institutions; thus, access to the journal is not universally viewed as a benefit but it is recognized that membership supports the very existence of the journal. We also received good feedback on ways to expand member benefits and AAAR is committed to implementing a suite of enhancements.

Next year's conference - our 34th! - will return us to Minneapolis, October 12-16, 2015. Details will be forthcoming early in 2015. For those members unable to join us this past year in Orlando, please do note that you can renew your membership by going online and this entitles you to a free abstract submission for the Minneapolis conference.

Finally, we are now in the midst of a transition with our association management company. For the past decade we have worked with Association Headquarters (AH) with Melissa Baldwin currently serving as Executive Director. Starting January 1, 2015 we will be working with Drohan Management Group (DMG) and Bill Carney will be our Executive Director. It has been a pleasure to work with AH staff past and present, and we are grateful for the support they are providing during the transition. We are also excited to start working with DMG as we strive to maintain our strong traditions and embrace new initiatives.

Jay Turner
AAAR President

In Case You Missed It . . .

AAAR in the National Media: Researchers from the University of Pittsburgh presented work at the annual AAAR meeting about the link between autism and exposure to air pollution. The preliminary findings presented at AAAR have not been published, but they were reported on by national news organizations, including [here](#).

Wintertime Aerosol Chemistry: An upcoming NSF-sponsored aircraft campaign seeks to understand the sources and processes affecting wintertime atmospheric chemistry. A large focus of the WINTER study (Wintertime Investigation of Transport, Emissions, and Reactivity) is on heterogeneous aerosol chemistry and secondary aerosol formation. The study is scheduled for Jan-Feb 2015 and will include flights over much of the eastern U.S. More information can be found [here](#).

Haboob Hits the Pacific Northwest: A haboob, which is a strong dust storm, [recently hit eastern Washington](#). These storms are common in arid, desert regions such as Arizona and the Middle East, but are rare in places such as Washington. Wonder if there were any PM10 monitors operating during the dramatic storm?

Aerosols in the Developing World: A recent study led by researchers at the Paul Scherer Institute and the Chinese Academy of Sciences found that a wintertime pollution episode that occurred across multiple cities in China was dominated by secondary aerosol formation. The pollution episode, which lasted approximately 3 weeks, had average PM2.5 concentrations that ranged from 70-350 $\mu\text{g m}^{-3}$, depending on location. The [results of the study](#) were published in *Nature*.

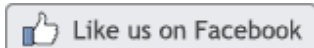
Chris Hennigan
Sr. Assistant Editor

Aerosols in the Spotlight

Mixing State of Black Carbon Aerosol in a Heavily Polluted Urban Area of China: Implications for Light Absorption Enhancement

Qiyuan Wang, R.-J. Huang, Junji Cao, Yongming Han, Gehui Wang, Guohui Li, Yichen Wang, Wenting Dai, Renjian Zhang, Yaqing Zhou, *Aerosol Science and Technology*, Vol. 48, Iss. 7, 2014.

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Black carbon (BC) in aerosol particles warms the atmosphere due to absorption of solar radiation. If the BC is coated by a scattering material such as sulfate, nitrate, ammonia or organics, the absorption per mass of BC will be enhanced due to a lensing of light by the coating into the BC core. The enhancement has been found to increase absorption by up to a factor of 2 in the laboratory and theoretical studies. However, some recent field measurements have detected negligible enhancement in absorption due to coatings on BC. This discrepancy in absorption enhancement leads to a large uncertainty in BC direct forcings on climate (a factor of 2!) that must be reduced to better quantify aerosol-climate effects. In this paper, the authors determine the BC-absorption enhancement in Xi'an, a city in northwestern China, using BC and coating physical measurements from a single-particle soot photometer (SP2) and absorption measurements from a photoacoustic extinctions (PAX). As shown in the figure below (reprinted from their publication), the absorption per BC mass (y axis) increases with the fraction of BC particles that have a thick, scattering coating (x axis). The authors use the linear fit of these data to estimate that the BC absorbed 1.8x more, on average, than if they were uncoated (by comparing the mean value of the data to the y-intercept). These results are consistent with lab and theoretical studies but stand in contrast to other recent field measurements that showed little absorption enhancement, even though the BC co-existed with scattering material. The important question remaining is thus "why and when is BC absorption strongly enhanced by coatings, and why and when is it not?".

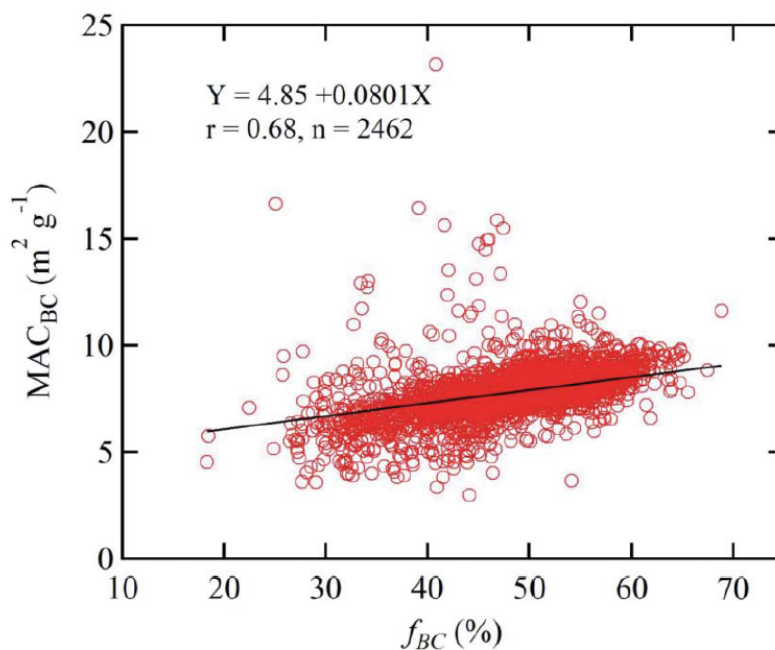
AAAR Newsletter Committee

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

Akua Asa-Awuku
Editor

Chris Hennigan
Sr. Assistant Editor

Jeff Pierce
Jr. Assistant Editor



The BC mass absorption cross section (MAC_{BC}) as function of number fraction of thickly coated BC (f_{BC}) (reproduced from paper).

Jeff Pierce
Jr. Assistant Editor

Aerosol Scientist in the Spotlight

Shunsuke Nakao, Clarkson University

Tell us about your education, experience, and your new job at Clarkson.

I was born in the US, grew up in Japan, and got a bachelor's degree in Applied Chemistry at Keio University in Tokyo. Although I am now a passionate aerosol scientist, I was a pretty bad student back when I was in my sophomore-junior years. I spent way too much time on extracurricular activities of "English Speaking Society", in which students work on English debate, discussion, speech, and drama, etc. I learned a great deal from the club activity and made wonderful friends, but it certainly hurt my classes and I failed a required lab class. I ended up in repeating my junior year (and lo and behold I am teaching a senior lab class as a professor). In my "second" junior year, I learned from my mistakes and started working really hard to catch up with others. I joined Environmental Chemistry lab and worked on chemical analysis of aerosol (TSP, PM2.5) filter samples collected in Beijing and Xi'an, China. I did a lot of filter analysis using an ion chromatograph and ICP-MS (~ a thousand filters). My foundation of analytical and presentation skills were built there. I co-authored five papers. It was a great experience.

[Click here to read the rest of our interview with Shunsuke.](#)

AAAR 2014 Recognition

AAAR Fellows

Mark Hoover, CDC-NIOSH
Barbara Turpin, Rutgers University

AAAR Award Winners

David Sinclair Award - *Constantinos Sioutas*,
University of Southern California

Kenneth T. Whitby Award - *Maosheng Yao*,
Peking University

Sheldon K. Friedlander Award -
Manabu Shiraiwa, Max Planck Institute for
Chemistry

Thomas T. Mercer Joint Prize - *Mark Hoover, CDC-NIOSH*

Student Poster Competition Winners

Kelvin Bates, California Institute of Technology
Matthew Brown, Clarkson University
Sri Hapsari Budisulistiorini, University of North Carolina at Chapel Hill
Chih-Hsiang Chien, University of Florida
Stephen D'Andrea, Colorado State University
Ting Fang, Georgia Institute of Technology
Shuang Gao, University of Cincinnati
Chang Hyuk Kim, University of Minnesota
John Kodros, Colorado State University
Sambhav Kumbhani, Brigham Young University
Christopher Lim, Massachusetts Institute of Technology
Derek Price, University of California, Riverside
Dongbin Wang, University of Southern California
Lauren Whybrew, University of Washington
Caiqing Yan, Peking University

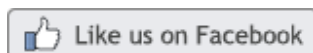
Memorial - Dr. Asit Ray

We are saddened to inform you that Dr. Asit Ray, long time member of AAAR, passed away on Tuesday, November 11, 2014, after a battle with lung cancer. He was the William Bryan Professor of Chemical and Materials Engineering at the University of Kentucky. Asit received his BTech degree from the Indian Institute of Technology, Kharagpur; followed by his Ph.D. from Clarkson University in Potsdam, N.Y. in 1980



and spent his career at the University of Kentucky. In 2003, he received the college's Henry Mason Lutes Award for Excellence in Engineering Education. He was the first recipient of the Ken Whitby Award. He made significant contributions to the study of mass ejection during charged droplet breakup and to the use of particle levitation techniques for the study of aerosol behavior. He effectively monitored resonances of light scattered from levitated droplets to get fundamental information on evaporating droplets, such as activity coefficients of multicomponent mixtures. Prof. Ray was a highly creative and rigorous researcher and has inspired generations of undergraduate and graduate students from his commitment to scientific and engineering excellence. He is survived by his wife, Sharmishta; son Rohit (a ChE graduate) and daughter Neha (a student in medical school).

Details and a short biosketch are available at <http://www.engr.uky.edu/news/2014/11/asit-k-ray-1954-2014/>



AAAR
1120 Route 73, Suite 200
Mount Laurel, NJ 08054
info@aaar.org | www.aaar.org

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