

Particulars



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Briefing from the Editor

Welcome to the first electronic edition of *Particulars*! As you will notice, we are switching to a greener, electronic format for the AAAR newsletter.

The 28th AAAR annual meeting is here; I hope you have already registered for the conference and made your travel arrangements. The conference will feature the usual mix of plenary speakers, platform and poster presentations. The conference program can now be accessed online at: <http://aarabstracts.com/AAAR/program.php?cf=1>. If you want to look up talks in a specific research area, this link should be very useful: http://aarabstracts.com/AAAR/list_of_topics.php?cf=1. Please sign up to attend working group meetings that interest you most. I would also encourage you to visit the exhibitor area to support our sponsors. See conference chair's message for further information on this year's meeting.

As many of you know, Paul Baron passed away in May after a tough battle with cancer. A quintessential aerosol scientist and a lifelong AAAR member, he made many contributions to the field of aerosol science. He was a colleague, collaborator, and a dear friend to many of us. He will be greatly missed!

Pramod Kulkarni

Message from the President by Spyros Pandis

The last year has been full of challenges for AAAR and its members. The financial crisis has not of course spared the finances of our association. However, thanks to the leadership of past presidents and boards, the generosity and loyal support of our members, and prudent management practices, AAAR has built enough of a cushion to protect us from major problems during such trying periods. I am happy to report that other than some probably healthy control of our expenses, the board did not have to make any major changes to the operations of the association and to the services that we provide to our members. Our management company has been very helpful with this expense control and their support is greatly appreciated. It is amazing how much AAAR has learned from the financial crisis of 2001 and how much stronger it has become. To all of these people who have contributed to this strength and have allowed me and the other board members to sleep peacefully during the last nine months, thank you! The AAAR board together with our financial consultants will continue to monitor carefully the situation and will take any necessary measures to protect the assets and the long term health of the association.

During its March meeting the board has officially approved unanimously the AAAR endowment policy and created the AAAR Endowment Fund. This fund has the mission of assisting in advancing aerosol science and technology by providing financial support for AAAR's programs. The vision is to establish and increase in net worth a set of endowment funds that will provide significant, stable, long-term financial support to aid in achieving AAAR's strategic objectives. We believe that despite the current financial challenges, the members of AAAR will take advantage of the flexibility and the security provided by this endowment and continue their

support of the association.

In the end of May, AAAR and aerosol science became poorer. After a long battle with cancer, Paul Baron died at his home. Over his thirty year career, Paul was a pioneer in aerosol measurements and has led the area of occupational aerosol sampling. We will miss him.

As somebody who joined AAAR as a graduate student, I have always appreciated the care of the association for its student members. Conference registration fees that are below cost, excellent tutorials, and travel support are some of the means with which AAAR has been trying to encourage the involvement of students and young researchers. To these we have recently added student poster awards, student chapters, a student reception during the annual conference, and the Young Investigators group. All these new initiatives have progressed well during their first year and they will be continued and strengthened.

Thanks to the efforts of Chang-Yu Wu and the conference committee we expect that the 28th Annual AAAR Conference in Minneapolis, Minnesota will be one of the all-time best AAAR meetings. It promises to establish new records both for quantity and quality of the papers that will be presented. Minneapolis has always been a special place for aerosol science, so this is a meeting that you cannot afford to miss. We are looking forward to seeing you in Minneapolis soon.

Spyros Pandis

28th Annual Conference Update by Chang-Yu Wu

Dear AAAR Colleagues:

The 28th Annual Conference in Minneapolis on October 26-30, 2009 is fast approaching. I am excited to report to you that the preparation is well on the way. The conference will begin on Monday with a full slate of 16 tutorials covering a wide range of introductory and advanced topics. Each of the following four days will begin with a plenary lecture from an esteemed scholar that addresses these key challenges and new directions: (a) AEESP Lecture - Reactions at Interfaces in the Atmosphere: A New Dimension in Aerosol Research? (b) Friedlander Lecture - Aerosol Science and Technology Enabling a Potpourri of Energy Applications; (c) Respiratory Dose Assessment of Inhaled Particles: Continuing Progress; and (d) Particulate Emissions from Modern Diesel Engines. The technical program features 6 parallel platform sessions and 3 plenary poster sessions with numerous scheduled breaks for informal exchange. We also have 6 special symposia organized for focused topics: (i) Aerosol Drug Delivery; (ii) Atmospheric Aerosol Nucleation and Growth - Molecular Clusters to Nanoparticles to Climate; (iii) Biodefense; (iv) Fundamentals and Applications of Electrospray; (v) Nanomaterials for Energy Application; and (vi) Recent Advances in Biomass Burning Emission Measurement And Modeling. The conference website (<http://aaar.conference2009.org/>) has detailed information.

The exhibit area, open Monday evening through Thursday, provides opportunities to learn from and interact with leading companies offering instrumentation and services in aerosol science and technology. As Minneapolis is one of the best places with a high concentration of R&D in aerosol science and technology, we have arranged technical tours to TSI, MSP, Donaldson and UMN. If you'd like to know more about the city which is rich in culture and history, we have prepared materials for self-guided tours at the conference website. For Young Investigators, our future generation, there will be many initiatives, such as Young Investigator meeting and Student Chapter meeting. We'll also have an expanded student poster competition and a brand-new guided walking tour of the downtown area and historical Stone Arch Bridge.

The conference venue will be the Hyatt Regency in downtown Minneapolis. There are many restaurants, museums, and shopping options within walking distance. Public transportation is convenient in the area, and it only costs \$0.5 to take you anywhere in downtown. Minneapolis, the hub of a major US airline, has direct flights to numerous US cities and around the world. The weather in late October, as the Minnesotans say, will be perfect based on the average, around 50 deg F during the day. We may get both a sunny day in the 60's and a snow white day in the 20's in the same week. You get the best of all types of weather right here.

This will be an outstanding conference at a great location that you certainly don't want to miss.

This is the best outlet to present your latest findings to an intellectually engaged and professionally dedicated community. It also provides the best opportunity to learn the latest advances in all frontiers of aerosol science and technology. We have received more than 700 abstracts, which is a record in AAAR history! Here you can renew old acquaintances, meet new colleagues and network with the government, industry and academia. With my fullest enthusiasm, I cordially welcome you and look forward to meeting you in Minneapolis in October at our 28th Annual Conference!

Cheers!

Chang-Yu Wu
Conference Chair

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In Case You Missed It

Decrease in PM_{2.5} Linked to Increase in Life Expectancy

Pope et al. (New England Journal of Medicine 2009; 360:376-86) compiled data on life expectancy, socioeconomic status, and demographic characteristics for 211 county units in the 51 U.S. metropolitan areas with matching data on fine-particulate air pollution for the late 1970s and early 1980s and the late 1990s and early 2000s. Their regression modeling revealed that a decrease of 10 µg per cubic meter in the concentration of PM_{2.5} was associated with an estimated increase in mean life expectancy of 0.61 year. The investigators were acknowledged for their "pioneering attempts to document the population health benefits of reducing ambient air pollution by correlating past reductions in ambient PM_{2.5} concentrations with increased life expectancy", according to an editorial article that appeared in the same issue of the journal.

"Global Dimming" Trend for the Past Three Decades Examined

Researchers at University of Maryland and University of Texas demonstrated that visibility inverse (Vil, in km⁻¹) climatology be used to characterize the spatial and temporal variability of over-land aerosols for the past several decades (Science 2009; 323: 1468-1470). The calculated Vil's from National Climatic Data Center (NCDC) Global Summary of Day (GSOD) database indicated that visibility in the clear sky has decreased substantially from 1973 to 2007 over South and East Asia, South America, Australia and Africa, resulting in net global "dimming" over land by the presence of atmospheric aerosols. In contrast, the visibility has increased over Europe during the same period, consistent with the reported European "brightening".

Toxicity of Atmospheric Aerosols on Marine Phytoplankton Revealed

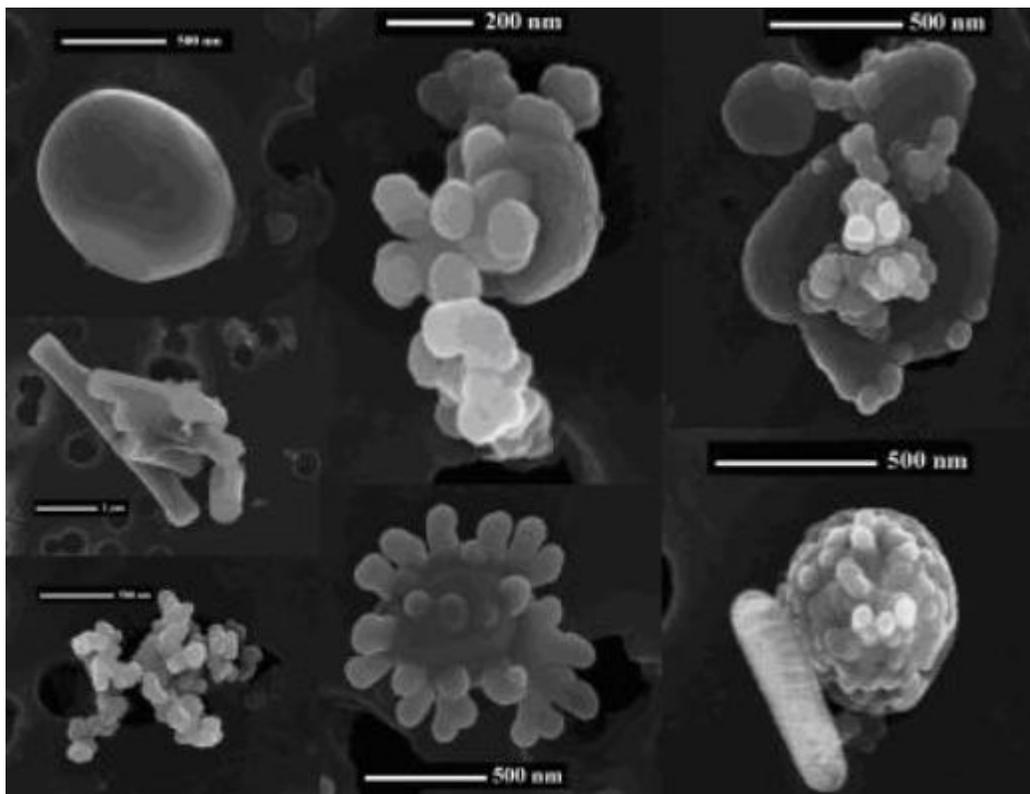
Previous studies have suggested that atmospheric deposition of nutrients and trace metals can stimulate phytoplankton growth of the phytoplankton community. Using aerosol samples from different back trajectories in incubation experiments with natural communities, an international team of researchers showed that the response of phytoplankton growth to aerosol additions depends on specific components in aerosols and differs across phytoplankton species (www.pnas.org/cgi/doi/10.1073/pnas.0811486106). High concentrations of copper (and possibly other elements) in some aerosols may induce toxicity that affects phytoplankton growth. One of the implications is that aerosol deposition can potentially alter patterns of marine primary production and community structure in high aerosol, low chlorophyll areas, particularly in the Bay of Bengal and downwind of South and East Asia.

Sub-2 nm Particle Detection Close to Operational Implementation

Iida et al. (AS&T, 43(1): 81-96) at University of Minnesota studied five working fluids for which the predicted cutoff diameter is below 2 nm in a laminar-flow ultrafine condensation particle counter (UCPC). Diethylene glycol (DEG) was recommended as the working fluid for atmospheric aerosol sampling because of the smaller sizes of detected particles, the relatively low saturator temperature, and its relatively high vapor pressure (so that particles can grow larger for detection). The performance of the UCPC using DEG was shown to be sufficiently steady for unattended operation. In the same issue of AS&T, Brunelli et al. (AS&T, 43(1): 53-59), design, construction, and calibration of a radial differential mobility analyzer suitable for sizing aerosol nanoparticles with mobility diameters as small as 1 nm.

Aerosols in the Spotlight

Many types of particle morphologies and compositions were determined from microscopy analysis of samples collected during the Pittsburgh Air Quality Study (2001-2002). During highly acidic periods, particles often showed presence of liquid or prior liquid state, while particles collected during neutral acidity periods showed indications of having been dried out. (Coz, E., B. Artalejo, A.L. Robinson, G.S. Cassucio, T.L. Lersch, and S.N. Pandis (2008). Aerosol Sci. Tech., 42, 224-232).



Special thanks to E. Coz for providing the images.

AAAR Establishes Fellow Member Program

Over the past year, AAAR Board of Directors established a category of fellow to honor significant contributions by individuals to the discipline of aerosol science and technology, and service to the Association. Initially the Board of Directors in 2008 received nominations and selected the inaugural class. After election of the inaugural class of fellows, the current fellows will elect new members in future years. The AAAR Fellow title will be retained as long as the individual is living. Fellows are expected to actively promote the field of aerosol science and technology and the ideals of the AAAR.

President, Chris Sorenson appointed the following inaugural class of fellows at the 2008 Annual Meeting:

Yung Sung Cheng, Cliff Davidson, David Ensor, Richard Flagan, Susanne Hering, Philip Hopke, Benjamin Y. H. Liu, Roger McClellan, Peter McMurry, David Y. H. Pui, John Seinfeld, Gilmore Sem and Ronald Wolff.

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