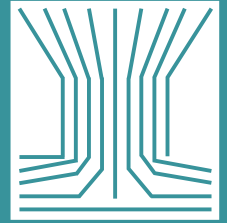


AMERICAN ASSOCIATION FOR AEROSOL RESEARCH



www.aaar.org

AAAR 27TH ANNUAL CONFERENCE

OCTOBER 20-24, 2008 • ROSEN SHINGLE CREEK • ORLANDO, FL



Early-Bird Registration Deadline – August 18, 2008



COMMITTEES

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- A. Ayala, A. Vette, J. Herner - *Mobile Sources*
- Junhong Chen - *Combustion and Material Synthesis*
- Cliff Davidson - *Careers in Aerosol Science*
- Weiwei Deng - *Electrospray*
- Neil Donahue - *Aerosol Chemistry*
- David S. Ensor - *History of Aerosol Science*
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- Linsey C. Marr, Mike Bergin - *Megacity Aerosols*
- Lupita D. Montoya - *Indoor Aerosols*
- Paul A. Solomon - *Atmospheric Aerosols*
- John Veranth - *Health Related Aerosols*
- Chang-Yu Wu, Pratim Biswas
- *Online Aerosol Science Education*
- Judy Q. Xiong - *Aerosol Physics*
- Ye Zhuang - *Control Technology*

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- William W Nazaroff - *Conference Chair (2008)*
- Chang-Yu Wu - *Conference Chair (2009)*
- Cynthia H. Twohy - *Conference Chair (2010)*
- Patricia B. Keady - *Exhibits Chair (2008 and 2009)*
- Lupita D. Montoya - *Tutorial Chair (2008)*
- Athanasios Nenes - *Student Liaison Chair (2008)*
- Donald Dabdub - *Abstracts*
- Susanne Hering - *Conference Program*

Exhibits

- Patricia B. Keady (*Chair*)

Development Committee

- Spyros N. Pandis (*Chair*)

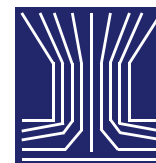
AAAR Staff

- Amy Williams, CAE, MPA, *Executive Director*
- Melissa Baldwin, *Assistant Executive Director*
- Deanna Bright, *Executive Assistant*
- Ann Mitchell, *Meeting Manager*
- Joanna Barrett, *Assistant Meeting Manager*
- Robin Geary, *Exhibits Manager*
- Gail Valente, *Registration Manager*

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WELCOME LETTER



Dear Colleagues:

AAAR's 27th Annual Conference will extend and further develop the great traditions of this premier conference series. Those of you who have submitted abstracts will have an opportunity to present your latest findings to an intellectually astute and professionally dedicated community. All in attendance will benefit from learning about the latest advances across the full frontier of aerosol science and technology. The annual conference will continue to be an excellent opportunity to renew old acquaintances and to meet new colleagues. For those of you new to or on the edge of the aerosol field, I recommend the conference as an excellent way to engage this welcoming community.

AAAR's 27th Annual Conference will begin on Monday, 20 October 2008 with a full slate of 16 tutorials, spanning a range of introductory and advanced topics. This year we will feature two themes in the tutorials: (a) nanoparticles/nanotechnology and (b) aerosols and climate. Each of the succeeding four days of the conference will begin with a plenary lecture from a distinguished scholar, addressing these topics: (i) aerosols, climate and health; (ii) from molecules to droplets: nucleation, growth, and structure; (iii) physical, chemical and toxicological characteristics of particulate matter from mobile sources; and (iv) particles, drops and crystals: recent advances in understanding aerosol-cloud interactions. In addition to the plenary lectures, the technical program features parallel platform and plenary poster sessions with plenty of scheduled breaks for informal exchange. Three special symposia are being organized to focus attention on (x) frontiers in megacity aerosol research; (y) applications of the electrospray; and (z) particulate matter and mobile sources. The exhibit area, open Monday through Thursday, provides opportunity to engage with and learn from leading companies offering instrumentation and services in aerosol science and technology.

This year's conference will be held at Rosen Shingle Creek in Orlando. This recently opened facility offers diverse amenities including a full-service spa, an 18-hole championship golf course, outdoor swimming pools, lighted tennis courts, nature trails, fishing, and a sand volleyball court. The site is conveniently close to Orlando International Airport (10 mi). In October, we can expect the weather in Orlando to be pleasantly warm (average high = 29.5 °C; average low = 18.5 °C; average sunshine = 8 hours per day). The city is renowned for its array of tourist attractions, including the nearby SeaWorld Orlando (3 mi), Walt Disney World (13 mi), and Universal Orlando Resort (17 mi). Come early! Stay late! Bring your family!

We eagerly look forward to meeting you in Orlando in October at the 27th Annual Conference of the American Association for Aerosol Research.

Regards,
Bill Nazaroff
Conference Chair

IMPORTANT INFORMATION

PROGRAM INFORMATION

Platform Session

A platform session is based on a submitted and approved abstract. Each oral presentation is limited to 15 minutes, including time for questions, and may be accompanied by PowerPoint presentations. No other visual equipment (overhead projectors, slide projectors, etc.) will be provided.

Poster Sessions

Poster Session 1

Tuesday, October 21, 2008

1:30 PM – 2:45 PM

Poster Session 2 and Continental Breakfast

Wednesday, October 22, 2008

9:15 AM – 10:45 AM

Poster Session 3 and Continental Breakfast

Thursday, October 23, 2008

9:20 AM – 10:45 AM

A poster in the poster session is based on a submitted and approved abstract. The size of a poster can not exceed 4 feet by 4 feet. Posters will be located in Sebastian J/K. There are three poster sessions during which authors will present their posters and will be available for discussions. Please check the final program for exact poster viewing times.

Please note that ALL posters will be available for viewing through Thursday, October 23 at 3:30 PM. We urge you to take advantage of this extended period to see the excellent research that is being presented in the field.

Speaker Ready Room

There will be a presentation preview/speaker ready room at Rosen Shingle Creek. Please check your final program for the hours and location. All speakers must visit the speaker ready room the day prior to their presentation. There will be a technician in the room to assist speakers with their presentations. **Please note: LCD projectors are the only form of visual equipment that will be provided.**

Late Breaking Posters

Please visit <http://turina3.eng.uci.edu/AAAR> for more information.

CM Points

AAAR has applied for CM Points through The American Board of Industrial Hygiene. The American Board of Industrial Hygiene will award CM points to CIHs as follows: .5 points per .5 day, 4.5 Industrial Hygiene CM points – approval #:08-1627.

All participants of the AAAR 27th Annual Conference are encouraged to contact their respective professional certifying agency for the applicability of the AAAR Conference program toward additional CM points and CEU credits.

Student Assistant Program

Applications are now being accepted for student assistants for the AAAR 27th Annual Conference. Student assistants perform a variety of important tasks that ensure the smooth functioning of tutorials, platform and poster sessions, as well as numerous other activities.

Student assistants must work a minimum of four (4) sessions. They may attend two (2) tutorials at no charge. All student assistants are required to attend an orientation meeting at Rosen Shingle Creek on Sunday evening, October 19 at 8:00 PM.

If you are interested in participating in the student assistant program, please complete the online application at www.aaar.org or contact Deanna Bright at the AAAR office at (856) 642-4202 or e-mail info@aaar.org subject: Student Assistant Program. Applications must be received in the AAAR office by August 18, 2008.

Student Travel Grants

There are a limited number of student travel grants available for this conference. More information and an application can be found on the AAAR Web site, www.aaar.org.

AAAR Annual Business Meeting

This year the Annual Business Meeting will take place on Tuesday, October 21, 4:30 PM – 5:30 PM. This important session provides an overview of the highlights of AAAR today and tomorrow. There will be a special tribute to the current conference chair, technical program chairs, and their committees, as well as others who have served AAAR during the year. During this meeting, the ceremonial passing of the gavel will mark the transfer of leadership responsibility from Chris Sorensen to incoming president, Spyros N. Pandis.

Web-based Aerosol Science and Technology Educational Resources Workshop

Monday, October 20, 2008

8:00 AM – 4:00 PM

The workshop program includes hands-on experiences with online educational materials, how to develop and adopt online educational materials for your class, and career opportunities with skills in aerosol science and technology for associate, undergraduate and graduate degrees. **The cost for this workshop is \$50.** Additional details can be viewed at <http://aerosolwkshp.wustl.edu/>



IMPORTANT INFORMATION

Tutorials

Monday, October 20, 2008

8:00 AM – 4:40 PM

A slate of sixteen tutorials, presented by distinguished scholars, cover a diverse range of aerosol science and technology topics. Special tutorial series are convened this year on nanoparticles/nanotechnology (tutorials 3, 7, 11, and 15) and aerosols and climate (tutorials 8, 12, and 16).

Welcome Reception

Monday, October 20, 2008

6:00 PM – 8:00 PM

This is your opportunity to meet and greet the exhibitors. Representatives from well-known and respected vendors are happy to discuss their product and talk with you about the latest in technology and advances in the field.

Exhibitors' Reception

Tuesday, October 21, 2008

6:00 PM – 8:00 PM

The Exhibitors' Reception, an AAAR tradition, is a time to visit with the exhibitors and all conference attendees in an informal, relaxed atmosphere.

Careers in Aerosol Science Workshop

Tuesday, October 21, 2008

5:30 PM – 7:00 PM

This workshop provides information about different careers in aerosol science. Panel members will give short presentations on an academic career, starting your own company, working for a consulting firm, joining industry, and working for the government.

Student Poster Competition

Prizes for top student posters will be awarded. Evaluation criteria will emphasize technical merit and communication effectiveness.

Special Symposia

Tuesday, October 21, 2008 — Frontiers in Megacity Aerosol Research

Wednesday, October 22, 2008 — Applications of the Electro Spray

Thursday, October 23, 2008 — Particulate Matter from Mobile Sources

TRANSPORTATION

Special Meeting Airfare

AAAR has arranged discounted airfare with American Airlines and Jet Blue Airways for the AAAR 27th Annual Conference.

American Airlines is offering a 5% discount on roundtrip travel. There will be an additional \$15 ticketing fee for tickets purchased via telephone. To avoid a service fee, book your ticket at www.aa.com. Please provide the promotion code **A99H8AN** when making your reservation.

Jet Blue is offering a 5% discount on the lowest selling fare when booking roundtrip travel through www.jetblue.com. Please provide the promotion code **AAAR08** when making your reservation.

Airport and Shuttle Information

Orlando International Airport

Drive time to Rosen Shingle Creek: 10 minutes

Shuttle/Taxi Service

Mears Transportation offers van service between the Orlando International Airport and Rosen Shingle Creek for \$17 per person one-way. Round trip fares are \$28. Shuttle vans are available on both the A and B sides of the Main Terminal on the Ground Transportation Level (Level 1). Reservations are not required, and the shuttle runs approximately every 30 minutes. Please be advised that the van is a shared ride and the route is determined by the destinations of the individuals in the van.

Taxis are available on both the A and B sides of the Main Terminal on the Ground Transportation Level (Level 1) and cost approximately \$30 from the Orlando International Airport to Rosen Shingle Creek.

Driving Directions from the Airport

Take the north exit from the Orlando International Airport to the Beachline Expressway (S. R. 528) West (toward International Drive/Convention Center). Continue on the Beachline Expressway/ 528 to exit 2. At the end of the exit ramp, bear right onto Universal Boulevard. The entrance to Rosen Shingle Creek will be on the right. There are two tolls (.50 cents and .75 cents).

Rental Car

Enterprise Rental Car service is available in the Rosen Shingle Creek lobby. Please call (407) 996-8595 for more information.

IMPORTANT INFORMATION

HOTEL INFORMATION

Rosen Shingle Creek

Situated on a 230-acre setting on Shingle Creek, headwaters to the Florida Everglades, Rosen Shingle Creek will offer AAAR attendees both a relaxing and exceptional experience in central Florida. Just minutes from the major attractions in Orlando, this new (2006) resort features three heated outdoor swimming pools, a full-service spa and fitness center, basketball, sand volleyball and tennis courts, jogging and nature trails, an 18-hole championship golf course designed by David Harman, and a wide variety of restaurants including a steakhouse, a fine dining signature Italian restaurant, a specialty coffee outlet featuring Starbucks®, several lounges, an ice cream parlor, and 24-hour dining options both in-room and in the Monroe Street Market, a unique deli restaurant offering a variety of food items.

Reduced sleeping room rates have been negotiated for AAAR attendees. The single/double daily sleeping room rate is \$169 plus applicable Florida sales tax. To offset the cost of the sleeping room, however, \$10 (ten dollars) in Rosen dollars will be applied to each room on a daily basis. (Please note that the \$10 will be applied per room – not per individual in the room.) Rosen dollars can be used for any Rosen services and need not necessarily be applied to the sleeping room. **The cut-off date for sleeping room reservations is Friday, September 19, 2008.**

PLEASE NOTE THAT THE BLOCK OF ROOMS RESERVED FOR AAAR ATTENDEES IS EXPECTED TO FILL VERY QUICKLY. Once the block is filled, sleeping rooms will be offered on a space availability basis and will be charged at the prevailing Rosen Shingle Creek rate.

If making your reservation by telephone, identify yourself as attending the AAAR conference. The group attendee code is 2896. The group reservation telephone number at Rosen Shingle Creek is (866) 996-6338. Reservations can also be made by accessing the hotel reservation link shown on the AAAR conference Web site under General Information.

Rosen Shingle Creek accepts all major credit cards including American Express, Diners Club, Discover, JCB, MasterCard, and Visa.

All guest rooms have a view of the golf course and feature a luxurious Creek Sleeper bed, two telephones, high-speed Internet connection capabilities, a 32" flat-screen television, in-room laptop safes, and a mini-refrigerator. Please note that Rosen Shingle Creek is a non-smoking hotel. Smoking is only permissible in designated outside areas. Check-in time is 3:00 PM, and check-out time is 11:00 AM.

Rosen Shingle Creek
9939 Universal Boulevard
Orlando, FL 32819
Telephone (main): (407) 996-9939

POINTS OF INTEREST

Nearly all of Orlando's greatest attractions are within reach of Rosen Shingle Creek. When in Orlando, be sure to visit one of its downtown culture-rich art galleries and an art, theatre, or science museum at the northern end of Orlando. The Orange County Regional History Center offers unique insight into the region's people, places, and milestones. The Orlando Museum of Art is considered one of the best art museums in the southeast. Located throughout Orlando are also a wide variety of multicultural restaurants and plentiful shopping.

Rosen Shingle Creek offers benefits including complimentary transportation to Universal Orlando and SeaWorld. All major Orlando attractions, including Walt Disney World, are located within 30 minutes from the hotel. Please contact the Universal Ticket Desk at Rosen Shingle Creek for discounted tickets, shuttle arrangements, and more information.

For more information concerning Orlando attractions, visit www.orlandoinfo.com.

SPONSORSHIPS AND ADVERTISING OPPORTUNITIES

There are several sponsorship opportunities available at the AAAR 27th Annual Conference. With more than 800 attendees from across the country expected to be in attendance, sponsorship is a great way to provide publicity to your organization. Please note some of the items are on a first-come, first-served basis.

For more information about specific sponsorship opportunities or advertising, please contact Amy Williams at (856) 642-4417, e-mail awilliams@ahint.com or visit the Web site, www.aaar.org.



REGISTRATION

REGISTRATION INSTRUCTIONS

AAAR offers a discounted registration fee if you register by August 18, 2008. Registration forms, including complete payment, must be received by this date to qualify for the early registration discount. Pre-registration ensures timely processing of your registration and helps avoid lengthy on-site lines. The pre-registration fees are lower than on-site due to the increased costs for an on-site registration including equipment, staff, and set-up. **Please remember both attendees and presenters are required to pay registration fees.**

Registration forms received after September 24, 2008 will not be processed. All registrations received after this date will be taken to the meeting and processed as on-site registrants. The on-site registration fee will be applied.

SPOUSE/GUEST REGISTRATION

Spouses/guests who are registered for the AAAR 27th Annual Conference will receive admission to the continental breakfasts for the morning Poster Sessions and admission to the Welcome and Exhibitors' receptions only. The fee for a spouse or guest is \$100.

HOW TO REGISTER

Web

Register on the Web at www.aaar.org. Payment must be made by credit card only. Please note registrations submitted online are not considered complete until the payment has been processed.

Fax

Please complete the registration form and include all information. Credit card payment must be included to process your registration. Fax completed registration form to AAAR Registration Manager at (856) 439-0525.

Mail

Please complete the registration form and include all information. Mail the form along with payment via check (U.S. funds), credit card, or wire transfer information to:

AAAR Registration Manager
15000 Commerce Parkway
Suite C
Mt. Laurel, NJ 08054
USA

**NO REGISTRATIONS WILL BE ACCEPTED
VIA TELEPHONE.**

STUDENT REGISTRATION

Full-time students 18 years of age or older can attend the AAAR 27th Annual Conference for a significantly reduced rate if the registration is received by **September 24, 2008** and accompanied by a copy of a current class schedule (spring or fall) or an official notification from the university indicating full-time enrollment. These documents can be faxed to the AAAR Registration Manager at (856) 439-0525. Registration includes 2009 membership. NOTE: Post-docs are not eligible to register as students.

PAYMENT

Acceptable payment forms include: checks made payable to AAAR (drawn on a U.S. bank in U.S. dollars), VISA, MasterCard, American Express, and wire transfers. Please contact Deanna Bright (dbright@ahint.com) for wire transfer information. If paying by wire transfer, please note that you must include an additional \$25 to cover all bank fees. In addition, the name of the bank that is sending the transfer must accompany the registration form. Registration forms without accompanying full payment will be returned for completion. **Registration will not be processed without payment.**

**DO NOT SEND HOTEL DEPOSITS
WITH REGISTRATION MATERIAL.**

CONFIRMATION OF REGISTRATION

Once your completed registration is submitted, you will receive an e-mail confirming receipt of your registration. Official confirmations will be sent beginning in early July. If you do not receive your confirmation by October 10, 2008, contact the AAAR registration office at (856) 642-4207

CANCELLATIONS/REFUNDS

To cancel your registration and receive a refund, a written request must be received in the AAAR registration office on or before September 24, 2008. Cancellation requests received by this date will receive a refund less a \$75 processing fee. Requests will be processed after the meeting. All requests received after September 24, 2008 will forfeit one-hundred (100) percent of monies paid. Registrations and tutorials are non-transferable.

AMERICANS WITH DISABILITIES ACT (ADA) ACCOMMODATIONS

AAAR will use its best efforts to provide reasonable accommodations for attendees with disabilities. Please contact Ann Mitchell, amitchell@ahint.com, if you have special needs.

MEMBERSHIP INFORMATION

REMEMBER, your conference payment includes your membership dues payment for 2009!

Some of the membership benefits for full members that are included with your conference registration are listed below:

- **Subscription to *Aerosol Science & Technology*** – Full members receive a one-year 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. Twelve issues are published.
- **Newsletter** – The member newsletter, *Particulars*, contains up-to-date information about meetings, conferences, symposia, awards, job opportunities, and other official AAAR business.
- **Membership Directory** – Updated annually, the AAAR Membership Directory lists the address, telephone, fax, and e-mail information for all current members. In addition, the directory includes a list of AAAR officers and directors, committee members, working group chairs, organizational members, past award recipients, past and future conferences, and the AAAR bylaws. All members also have access to the online directory.
- **Election of Officers and Directors** – AAAR members elect their own officers and directors by an annual mail-in ballot vote. Full members are eligible for peer or self nomination for any open position on the AAAR Board.
- **Working Groups and Committees** – Members are encouraged to participate in technical Working Groups representing many of the topical areas of emphasis. Working Group members help plan technical symposia, exchange ideas, and recommend programs. Members may join Organizational Committees to assist AAAR Board Members in building and strengthening the AAAR organization in important areas such as Education, Publications, Awards, Finance, Bylaws, and Newsletters.
- **Awards Program** – The prestigious AAAR Awards Program offers support and recognition of individuals who have shown outstanding achievement in aerosol science.
- **“Members Only” section** – All members will receive access to the “members only” section of the AAAR Web site.

AWARD PRESENTATIONS

Awards Program – The prestigious AAAR Awards Program offers support and recognition of individuals who have shown outstanding achievement in aerosol science.

Awards will be presented following plenary sessions. Please consult the final program for the specific award presentation times. Join us in honoring the recipients of AAAR’s major awards:

The **Kenneth T. Whitby Award** recognizes outstanding technical contributions to aerosol science and technology by a young scientist.

The **David Sinclair Award** recognizes sustained excellence in aerosol research and technology by an established scientist still active in his/her career.

The **Sheldon K. Friedlander Award** recognizes an outstanding dissertation by an individual who has earned a doctoral degree.

The **Benjamin Y.H. Liu Award** recognizes outstanding contributions to aerosol instrumentation and experimental techniques that have significantly advanced the science and technology of aerosols.

The **Thomas T. Mercer Joint Prize** recognizes an aerosol scientist for outstanding contributions in the field of aerosols in medicine. This prize is awarded jointly by AAAR and the International Society of Aerosols in Medicine (ISAM).

The **AAAR Fellows Program** honors significant contributions to the discipline of Aerosol Science and Technology and service to the Association.



PLENARY LECTURES

The Conference Committee is proud to have four distinguished speakers for the plenary sessions. Each speaker will offer a stimulating and insightful presentation on topics of current and emerging interest to aerosol scientists. Abstracts for these plenary presentations can be viewed at the conference Web site, <http://aaar.conference2008.org>.

TUESDAY, OCTOBER 21

8:00 AM - 9:00 AM

AEROSOLS, HEALTH AND CLIMATE

Kirk R. Smith

Kirk R. Smith, MPH, PhD, is professor of Global Environmental Health and coordinator of the Health, Environment, and Development Program at the University of California, Berkeley. He conducts research on the health and climate impacts of air pollution in developing countries including field surveys, epidemiological studies, policy analyses, and development of new monitoring technologies. He sits on a range of international assessments, including the IPCC, the Global Energy Assessment, the World Comparative Risk Assessment, and the Global Air Quality Guidelines. He was elected to the U.S. National Academy of Sciences in 1997.

WEDNESDAY, OCTOBER 22

8:00 AM - 9:00 AM

FROM MOLECULES TO NANODROPLETS: NUCLEATION, GROWTH, AND STRUCTURE

Barbara E. Wyslouzil

Barbara E. Wyslouzil, PhD, is a professor of chemical and biomolecular engineering and chemistry at The Ohio State University. Her research interests include aerosol physics and aerosols in biological applications. Dr. Wyslouzil received her PhD in chemical engineering at the California Institute of Technology in 1992. She joined OSU in 2003 after 10 years at Worcester Polytechnic Institute. She served on the AAAR Board of Directors from 2000 – 2003 and was honored with the Kenneth T. Whitby Award from the AAAR in 2002.

THURSDAY, OCTOBER 23

8:00 AM - 9:00 AM

PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS OF PM FROM MOBILE SOURCES

Constantinos Sioutas

Constantinos Sioutas, ScD, is the first holder of the Fred Champion Professorship in Civil and Environmental Engineering at the University of Southern California (USC) and the co-director and co-principal investigator of the Southern California Particle Center and Supersite (SCPCS). He received his ScD from the Harvard School of Public Health. Dr. Sioutas's research has followed an integrated approach to the problem of the well-publicized and significant effects of particulate air pollution on health and the environment. His research has focused on investigations of the underlying mechanisms that produce the health effects associated with exposure to air pollutants generated by a variety of combustion sources, such as traffic, harbor and airport operations, power plants, and photochemically induced atmospheric reactions.

FRIDAY, OCTOBER 24

8:00 AM - 9:00 AM

PARTICLES, DROPS AND CRYSTALS: RECENT ADVANCES IN UNDERSTANDING AEROSOL-CLOUD INTERACTIONS

Sonia M. Kreidenweis

Sonia M. Kreidenweis, PhD, is a professor of atmospheric science in the Department of Atmospheric Science at Colorado State University in Fort Collins, Colorado. Her research interests include characterization of atmospheric particles, especially their hygroscopicities, and the visibility and climate effects of particles. Dr. Kreidenweis received her PhD in chemical engineering from the California Institute of Technology. She is a past president of the American Association for Aerosol Research.

AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

First Session: 8:00 AM – 9:40 AM

1

INTRODUCTION TO AEROSOL MECHANICS I

William C. Hinds, UCLA School of Public Health, Center for Occupational and Environmental Health, Department of Environmental Health Science, Los Angeles, CA

Abstract: These two courses (Tutorials 1 and 5) form a sequence that covers basic aerosol mechanics (particle motion) at an introductory level. Topics include: Stokes law, settling velocity, slip correction, aerodynamic diameter, nonspherical particles, acceleration, relaxation time, stopping distance, impaction, isokinetic sampling, diffusion, and coagulation. The course covers theory and applications and is suitable for those new to the field and for others who want to brush up on the basics.

William C. Hinds is a professor of environmental health sciences at the UCLA School of Public Health. He received a bachelor's degree in mechanical engineering from Cornell University and a doctorate in environmental health from Harvard University. Professor Hinds has taught the Introduction to Aerosol Mechanics tutorial for many years as a service to AAAR. This will be his last year teaching this tutorial series.

2

BIOAEROSOL SAMPLING AND ANALYSES FOR BIODEFENSE

Tiina Reponen, Department of Environmental Health, University of Cincinnati, OH and Jana S. Kesavan, Aerosol Sciences Team, U.S. Army Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD

Abstract: Bioaerosols are produced naturally, as a byproduct, or intentionally to harm people. Sampling and detecting harmful aerosols produced by terrorists are important problems. Bioaerosols include viruses and bacteria, and the size of biological particles varies widely, from nanoscale to micron size. The same physical principles that are applied to non-biological particles can be applied to bioaerosol sampling in terms of sampling efficiency of a given particle size range. When sampling to identify a threat, high sample volume, high collection efficiency and accurate detection are important. This tutorial will review the traditional and modern techniques for bioaerosol sampling and analysis. Advantages and disadvantages of various methods in bioaerosol sampling and detection will be discussed.

Tiina Reponen is a professor of environmental health at the University of Cincinnati, Department of Environmental Health. She received her doctoral degree in environmental sciences from Kuopio University, Finland. Her current research efforts are focused on the exposure assessment of biological and non-biological particles in indoor and industrial environments and physical and microbiological characterization of airborne bacteria and fungi.

Jana S. Kesavan is a research physicist at the U.S. Army Edgewood Chemical Biological Center. She received her doctoral degree in environmental health sciences from Johns Hopkins University. She has been characterizing many aerosol samplers, concentrators, and detector systems that are used for biodefense purposes. Next generation and developmental aerosol sampler and detector systems are also characterized in her laboratory.



AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

First Session: 8:00 AM – 9:40 AM (cont'd)

3

NANOPARTICLE
SYNTHESIS

Mark T. Swihart, Department of Chemical and Biological Engineering, State University of New York at Buffalo, Buffalo, NY

Abstract: The vast majority of commercially produced nanoparticulate materials are made by aerosol processes, based on gas-to-particle conversion. Large volume examples include carbon black, fumed silica, titania, and nickel nanoparticles. In contrast, the vast majority of academic nanoparticle synthesis research has been in solution-phase methods that often provide much better control of product particle size distribution and morphology. A key challenge in aerosol synthesis of nanoparticles is to approach the control of particle size and morphology that is achieved by solution phase methods, while maintaining the important advantages of aerosol processing, including low cost, high throughput, high purity, high crystallinity, and reduced solvent use. This tutorial will provide an overview of methods of aerosol synthesis of nanoparticles, including flame reactors, laser-driven reactors, thermal and non-thermal plasma reactors, spray pyrolysis, and related approaches. Strengths, weaknesses, common features, and differences among these techniques will be highlighted. Aerosol dynamics modeling of nanoparticle synthesis will also be briefly addressed.

Mark T. Swihart is a professor of chemical and biological engineering and director of the UB2020 Integrated Nanostructured Systems Initiative at the State University of New York at Buffalo. He earned a BS in chemical engineering from Rice University, a PhD in chemical engineering from the University of Minnesota and conducted postdoctoral research in the Particle Technology Lab at Minnesota.

4

CONCEPTUAL FRAMEWORK AND
APPLICATION OF RECEPTOR MODELS

Philip K. Hopke, Departments of Chemical Engineering and Chemistry, Clarkson University, Potsdam, NY

Abstract: This course will present the underlying chemical basis for distinct profiles for different types of emission sources and how these differences in profiles then provide a basis for receptor models. The conceptual framework of receptor models, a mass balance approach, will be described and how resulting models can be implemented depending on what *a priori* information is available. Applications of several types of models to various problems will be described with an emphasis on the practical use of positive matrix factorization for both elemental and organic species data.

Philip K. Hopke is the Bayard D. Clarkson Distinguished Professor at Clarkson University and the director of the Center for Air Resources Engineering and Science. Professor Hopke received his BS in chemistry from Trinity College (Hartford) and his MA and PhD degrees in chemistry from Princeton University.



AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

Second Session: 10:00 AM – 11:40 AM

5

INTRODUCTION TO AEROSOL MECHANICS II

William C. Hinds, UCLA School of Public Health, Center for Occupational and Environmental Health, Department of Environmental Health Science, Los Angeles, CA

Abstract: These two courses (Tutorials 1 and 5) form a sequence that covers basic aerosol mechanics (particle motion) at an introductory level. Topics include: Stokes law, settling velocity, slip correction, aerodynamic diameter, nonspherical particles, acceleration, relaxation time, stopping distance, impaction, isokinetic sampling, diffusion, and coagulation. The course covers theory and applications and is suitable for those new to the field and for others who want to brush up on the basics.

William C. Hinds is a professor of environmental health sciences at the UCLA School of Public Health. He received a bachelor's degree in mechanical engineering from Cornell University and a doctorate in environmental health from Harvard University. Professor Hinds has taught the Introduction to Aerosol Mechanics tutorial for many years as a service to AAAR. This will be his last year teaching this tutorial series.

6

NUMERICAL MODELING OF MULTIPHASE FLOWS

Sean C. Garrick, Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN

Abstract: This tutorial presents the state-of-the-art in modeling and simulation of multiphase flows. The models, tools and techniques presented will highlight and delve into both scientific investigation and engineering practice. Specific attention will be given to the need for turbulence models, the coupling of Eulerian and Lagrangian dynamics, and spanning the wide range of length and time scales present in variety of multiphase flows. In addition, the tutorial will explore the interrelatedness of computational and experimental/physical investigation in the dynamics and chemistry of aerosols and how they may better inform each other.

Sean C. Garrick is an associate professor of mechanical engineering at the University of Minnesota. His research group investigates nanoparticle formation and growth and turbulent reacting multiphase flows. They also develop models for the effects of turbulence on chemical reactions, nanoparticle nucleation, and particle coagulation. Dr. Garrick earned his PhD in mechanical engineering from the State University of New York at Buffalo in 1998.

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NANOPARTICLE APPLICATIONS IN ENERGY TECHNOLOGY

Uwe R. Kortshagen, Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN

Abstract: Semiconductor nanocrystals produced in the gas, liquid, and solid phase are widely studied for applications in energy conversion devices. Applications range from photovoltaics to light-emitting devices to thermoelectrics. This tutorial will present an overview of some of these potential applications and will discuss the potential advantages of nanoparticles compared to bulk materials. It will discuss several schemes for light emitting devices, in which nanocrystals enhance the light emitting properties. It will also discuss the basic physical processes in semiconductor nanocrystals as well as various implementations of nanocrystal-based solar cells: dye-sensitized solar cells, quantum-dot sensitized solar cells, hybrid organic/inorganic solar cells, and ink-jet printed solar cells based on nanocrystal inks.

Uwe R. Kortshagen is a Distinguished McKnight University Professor and director of Graduate Studies in the Department of Mechanical Engineering at the University of Minnesota, and a member of the graduate faculties of physics, chemical engineering, and materials science. He earned his diploma degree in plasma physics in 1988, and his PhD in plasma physics in 1991 from the University of Bochum, Germany. He currently serves as president of the International Plasma Chemistry Society.



AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

Second Session: 10:00 AM – 11:40 AM (cont'd)

8 AEROSOL NUCLEATION: BRIDGING SUBNANOSCALE PROCESSES TO GLOBAL-SCALE CLIMATE CHANGE

Fangqun Yu, Department of Earth and Atmospheric Sciences,
State University of New York at Albany, Albany, NY

Abstract: Nucleation, the molecular process that drives the formation of new particles in the nanometer size range, is a key source of the atmospheric aerosol. Nanoparticles that grow to the sizes of cloud condensation nuclei contribute to the aerosol indirect radiative forcing of the climate system. Exposure to high concentrations of nanoparticles can lead to adverse health effects. A clear understanding of the physical and chemical processes and parameters controlling aerosol nucleation is thus crucial for assessing future climate change, and a range of health and environmental impacts associated with airborne particulates. Topics to be covered in this tutorial will include: (1) Nucleation fundamentals: A historical overview; (2) Recent advances in atmospheric nucleation (quantum-mechanical investigation of molecular interactions relevant to nucleation, measurements of prenucleation clusters, multiple-instrument characterization of nucleation events, and kinetic nucleation models); (3) Well-constrained case studies of particle formation and growth in the atmosphere; (4) Nucleation rate parameterizations suitable for multidimensional simulations; (5) Global modeling and observations of atmospheric nucleation; (6) Nucleation and climate change (aerosol indirect radiative forcing, positive and negative climate feedback mechanisms, and links between solar variability and climate change).

Fangqun Yu is a faculty member at the State University of New York at Albany. He has earned degrees from Peking University and the Chinese Academy of Sciences, and a PhD in atmospheric sciences at UCLA. Yu's research focuses on the fundamental theory of nucleation mechanisms, the development and application of nucleation models, the analysis of field and laboratory measurements related to particle formation, and the global implications of aerosol nucleation for climate change, air quality, and health impacts. He has published about 50 peer-reviewed scientific journal papers.

Third Session: 1:00 PM – 2:40 PM

9 ATMOSPHERIC-SURFACE EXCHANGE: DRY DEPOSITION AND RESUSPENSION

Cliff I. Davidson, Departments of Civil and Environmental
Engineering/Engineering and Public Policy, Carnegie Mellon
University, Pittsburgh, PA

Abstract: This tutorial reviews current understanding of aerosol exchange between the atmosphere and surfaces, focusing on the interacting processes of dry deposition and resuspension. First, the process of dry deposition is described physically and mathematically, considering the three sequential steps aerodynamic transport, boundary layer transport, and interaction with the surface. Second, the process of resuspension is described, including some newly developed models. Finally, a number of important measurement techniques for dry deposition and resuspension are summarized. These include direct measurements of material accumulated on surfaces as well as methods of inferring the flux using atmospheric data.

Cliff I. Davidson is a professor in the Department of Civil and Environmental Engineering and the Department of Engineering and Public Policy at Carnegie Mellon. He is the founding director of the Center for Sustainable Engineering at that university. He received his BS in electrical engineering from Carnegie Mellon and MS and PhD degrees in environmental engineering science from the California Institute of Technology.

AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

Third Session: 1:00 PM – 2:40 PM (cont'd)

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SECONDARY AEROSOL FORMATION

Paul J. Ziemann, Department of Environmental Sciences, University of California, Riverside, CA

Abstract: Secondary aerosol is an important component of atmospheric fine particles that generally consists of organics, sulfates, and nitrates. The processes that lead to the formation of this material are often complex and can involve gas and particle phase chemistry, nucleation, and gas-particle partitioning. In this course, Dr. Ziemann will discuss the major chemical reactions and partitioning processes involved in the formation of secondary organic and inorganic aerosol (with a strong emphasis on organic aerosol) using examples from laboratory and field studies.

Paul J. Ziemann is a professor of atmospheric chemistry at the University of California, Riverside. He received a doctorate in chemistry from Penn State University and was a postdoctoral researcher in the Particle Technology Laboratory at the University of Minnesota.

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CHALLENGES TO ENSURING THE SAFETY OF EMERGING NANOMATERIALS

Andrew D. Maynard, Project on Emerging Nanotechnologies, Woodrow Wilson International Center for Scholars, Washington, DC

Abstract: Many engineered nanomaterials demonstrate scale-specific functionality that may be exploited in new products and applications. But there is evidence that scale-specific properties might also lead to new risks to humans and the environment. Avoiding undue release, dispersion of and exposure to nanoscale aerosols is a significant challenge if safe and successful nanotechnologies are to be developed and commercialized. This tutorial considers the challenges to understanding and managing potential nanomaterial risks from an aerosol perspective. Starting from an exploration of how nanoscale size and structure might influence biologically-relevant behavior, the tutorial will consider how aerosol science and technology can inform the development of safe nanotech products and practices, and where some of the greatest future challenges lie.

Andrew D. Maynard is chief science advisor to the Project on Emerging Nanotechnologies. He received his bachelor's degree in physics from the University of Birmingham, U.K., and his doctorate in ultrafine particle analysis from the University of Cambridge, U.K. For many years, he worked on aerosol measurement and characterization at the U.K. Health and Safety Laboratory and the U.S. National Institute for Occupational Safety and Health. Before leaving bench science for science policy in 2005, Dr. Maynard was co-chair of the U.S. government National Nanotechnology Initiative Nanotechnology Environment and Health Implications working group.

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AEROSOL-CLOUD INTERACTIONS: THE ELUSIVE COMPONENT OF CLIMATE CHANGE

Athanasios Nenes, Schools of Earth and Atmospheric Sciences and Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA

Abstract: The effects of aerosols on clouds (known as the “aerosol indirect climatic effect”) are thought to have a net climatic cooling effect, which partially offsets greenhouse gas warming. Regional impacts of aerosol-cloud interactions on the radiation budget and precipitation can be very strong. Despite its importance, the complex and multiscale nature of aerosol-cloud interactions makes it one of the most uncertain components of anthropogenic climate change. This tutorial will provide an overview of what aerosol-cloud interactions are and present the approaches used to observationally study them and represent them in models. We will provide an assessment of what has been learned and point out key research challenges for the future.

Athanasios Nenes is an associate professor in the Schools of Earth and Atmospheric Sciences and Chemical and Biomolecular Engineering at the Georgia Institute of Technology. He received a diploma in chemical engineering from the National Technical University of Athens, a master's degree in atmospheric chemistry from the University of Miami, and a doctorate in chemical engineering from the California Institute of Technology.



AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

Fourth Session: 3:00 PM – 4:40 PM

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HUMAN AEROSOL EXPOSURE: TOWARD A MECHANISTIC UNDERSTANDING

William W Nazaroff, Department of Civil and Environmental Engineering, University of California, Berkeley, CA

Abstract: This tutorial explores the relationships between aerosol emission sources and human inhalation exposure. The tools and techniques are those of the physical sciences and engineering, stressing causal connections. The tutorial draws on key chemical and physical knowledge from atmospheric aerosol science. Focusing on human exposure as the outcome of concern leads to an emphasis on the proximity between sources and receptors. Most exposure occurs while people are in enclosed spaces, so issues that influence indoor aerosols enter strongly into this lecture.

William W Nazaroff is a professor of environmental engineering at UC Berkeley. His research group studies indoor air pollutant chemistry and physics. They also develop and apply methods for assessing human exposure to air pollutants from major exposure sources, such as motor vehicles, power plants, and cigarettes. Dr. Nazaroff earned a PhD in environmental engineering science at Caltech (1989).

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METHODS FOR THE SEMICONTINUOUS MEASUREMENT OF PARTICLE AND GAS CHEMICAL COMPOSITION

Rodney J. Weber, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA

Abstract: A wide variety of non-mass spectrometric methods have been developed recently for automated on-line measurements of particle chemical composition in real, or near real-time. Many of these techniques collect ambient particles in a manner that permits them to be directly coupled to existing analytical devices. Although these approaches generally only provide measurements of bulk chemical composition, they often have unique advantages. Some are highly quantitative and are capable of measuring a wide range of chemical compounds, including gas phase species. Others are relatively low in cost and/or can operate unattended for extended periods making them suitable for network monitoring sites. A review attempting to convey the breadth of these types of approaches will be presented. This will include approaches that convert particles to gases for analysis and liquid-based systems. Methods for measuring a wide range of compounds will be discussed, including inorganic ions, total organic mass and water-soluble organic mass, organic acids, reactive oxygen species (ROS), aerosol pH, and specific water-soluble metals. Consideration will be given to the application of newer analytical devices, such as microchip electrophoresis, ion selective electrodes, and liquid waveguide capillary cells with spectroscopic detection. The goal will be to provide resource information and insights into the many research opportunities afforded by these types of systems.

Rodney J. Weber is a professor in the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology. He received a bachelor's degree in mechanical engineering from the University of Waterloo and masters and doctorate degrees in mechanical engineering from the University of Minnesota.

AAAR TUTORIAL SESSIONS

MONDAY, OCTOBER 20, 2008

Fourth Session: 3:00 PM – 4:40 PM (cont'd)

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AEROSOL FILTRATION FOR FINE AND NANO PARTICLES

Da-Ren Chen, Department of Energy, Environmental and Chemical Engineering, Washington University, St. Louis, MO

Abstract: Nanoparticles comprise a key foundation for nanotechnology. Nanoparticles of different materials have been synthesized for industrial applications using a variety of physical and chemical methods. The presence of synthetic nanoparticles and the potential for releasing them into the environment have raised public concern over how these nanoparticles could impact the public health and our environment. Large increases in demand and production in the future could lead to unintended exposures to nanoparticles by occupational workers and/or end product users via inhalation, dermal absorption, and gastrointestinal tract absorption. Aerosol filtration is the conventional technique to remove particles from gas streams. Concern about the filtration efficiency of filters is often raised when applying the technique for controlling releases of nanoparticles. This tutorial will review published works in nanoparticle filtration, fundamental filtration theories and simulation techniques for nanoparticle filtration, the experimental validation of theories, and issues/common mistakes in the experimental evaluation of filter performance for nanoparticles.

Da-Ren Chen, PhD, is an associate professor in the Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis, MO. He received his PhD from the Particle Technology Laboratory, University of Minnesota. He has received the Sheldon K. Friedlander Award (1997), Smoluchowski Award (2002) and Kenneth T. Whitby Award (2005) for his contributions to nanoparticle instrumentation. He has also been involved in aerosol filtration research for more than 17 years. His filtration work includes filter pleating design; dust cake filtration; filter behavior under particle loadings; pulsed reverse-flow systems for filter cleaning; and modeling of filtration systems.

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FROM EMISSION TO DIRECT FORCING: SINGLE SOURCE CONTRIBUTIONS TO CLIMATE CHANGE

Tami C. Bond, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL

Abstract: This tutorial will examine direct climate forcing by aerosols from a slightly different perspective. Instead of looking at how single chemical species affect the Earth's radiative balance, we'll discuss total effects of *individual sources*. The tutorial will begin with a brief overview of the major players in direct radiative forcing. A simple one-dimensional box model of radiative transfer will be presented and made available to the tutorial participants. (Bring a laptop if you desire.) The important aerosol characteristics that come from aerosol characterization, including hygroscopicity and optical properties will be discussed. Dr. Bond will discuss the simplifications required to incorporate these aerosols into global models of transport and radiative-transfer models. Two case studies of sources that emit significant amounts of black carbon—diesel engines and biofuel cookstoves—showing the path from direct emission measurements to estimates of climate forcing by these sources will be presented. A discussion of future research needs to fill in the missing steps in the path from emission to forcing will conclude the tutorial.

Tami C. Bond earned bachelor's and master's degrees in the combustion side of mechanical engineering before turning to an interdisciplinary PhD from the University of Washington (atmospheric sciences, mechanical engineering and civil engineering). She was a NOAA Climate and Global Change postdoctoral fellow, a visiting scientist at NCAR, and is now an assistant professor at the University of Illinois. She measures emission properties that are relevant to understanding the climate impact of anthropogenic aerosols in the laboratory and field and runs microphysical and global models.



SPECIAL SYMPOSIA

TUESDAY, OCTOBER 21

FRONTIERS IN MEGACITY AEROSOL RESEARCH

Conveners: L.C. Marr and M. Bergin

The rapid proliferation of megacities and their air quality problems are producing unprecedented air pollution health risks and management challenges. Emissions from megacities affect not only local populations but also regional and global scale atmospheric chemistry and climate. Presently there are 20 megacities with populations in excess of 10 million, and the number is expected to increase to 26 by the year 2015. The extremely high aerosol loadings in megacities make them unique laboratories for studying the complex physical and chemical processes that form and transform particles. In addition, megacities offer special opportunities to study particulate impacts on human and environmental health due to the relatively large signals (e.g. relative health risk, regional radiative forcing) associated with the high particulate concentrations. This special symposium will center on (1) exposure, risk assessment, and policy implications, (2) aerosol measurements, and (3) regional and global impacts.

WEDNESDAY, OCTOBER 22

APPLICATIONS OF THE ELECTROSPRAY

Convener: W. Deng

Electrospray is an elegant technique to generate aerosols with monodispersed droplets/particles from a few nanometers to hundreds of micrometers. This booming area has made significant impact to nanotechnology and biotechnology, evidenced by John Fenn's 2002 Nobel Chemistry Prize for electrospray-related work. Given recent progresses on coaxial and multiplexed electrospray, the aerosol research community has a pressing need to draw together the multidisciplinary researchers to communicate on the potential applications of the electrospray. This special symposium strives to bridge the gap between electrospray researchers and general aerosol scientists who seek an aerosol generation technique with excellent monodispersity, complex structures, and/or high throughput.

THURSDAY, OCTOBER 23

PARTICULATE MATTER AND MOBILE SOURCES

Conveners: A. Ayala, A. Vette, J. Herner

Mobile source emissions of particulate matter (PM) and its precursors impact air quality and human health across multiple temporal and spatial scales. Approaches to characterize emissions include the use of dynamometers to simulate driving conditions for individual vehicles, remote sensing technologies under actual driving conditions, and field measurements to estimate integrated roadway emission factors. Once emitted to the atmosphere, the complex mixture of condensed and gaseous species undergo rapid dilution and cooling, resulting in high numbers of ultrafine particles adjacent to roadways. These ultrafine particles rapidly coagulate into the accumulation mode or evaporate such that particle counts return to background levels over relatively small distances. Also, coarse particles are generated by mechanical abrasion, and vehicle induced turbulence can resuspend road dust. Recent investigations of near- and on-road particle concentrations have sparked a great deal of interest in primary emissions from on-road vehicles and also in the "plume processing" that occurs under real-world conditions. As mobile source emissions are transported away from roadways, dilution and interaction with ambient pollutants may change the physical, chemical, and toxicological nature of the emitted aerosols. Attributing pollutant impacts to underlying causes underscores the need to differentiate the contribution and toxicity of aerosols from various emission sources at the urban scale. Health studies implicate PM from various sources, including vehicles, in adversely affecting human health at the urban scale.

PRELIMINARY SCHEDULE OF EVENTS

MONDAY, OCTOBER 20

7:00 AM – 8:00 PM	Registration
8:00 AM – 4:00 PM	Web-based Aerosol Science and Technology Educational Resources Workshop
8:00 AM – 4:40 PM	Tutorial Sessions 1-16
12:00 PM – 5:00 PM	Exhibitor/Poster Set-up
6:00 PM – 8:00 PM	Welcome Reception and Exhibit/Poster Preview

TUESDAY, OCTOBER 21

7:00 AM – 5:30 PM	Registration
8:00 AM – 9:00 AM	Plenary Session #1
9:00 AM – 8:00 PM	Exhibits/Posters Open
9:30 AM – 4:15 PM	Platform Sessions
1:30 PM – 2:45 PM	Poster Session 1
4:30 PM – 5:30 PM	AAAR Annual Business Meeting
5:30 PM – 7:00 PM	Careers in Aerosol Science Workshop
6:00 PM – 8:00 PM	Exhibitors' Reception

WEDNESDAY, OCTOBER 22

7:00 AM – 5:00 PM	Registration
8:00 AM – 9:00 AM	Plenary Session #2
9:00 AM – 2:00 PM	Exhibits/Posters Open
9:15 AM – 10:45 AM	Continental Breakfast and Poster Session 2
10:45 AM – 4:30 PM	Platform Sessions
4:40 PM – 6:50 PM	Working Group Meetings

THURSDAY, OCTOBER 23

7:00 AM – 5:00 PM	Registration
8:00 AM – 9:00 AM	Plenary Session #3
9:00 AM – 3:30 PM	Exhibits/Posters Open
9:20 AM – 10:45 AM	Continental Breakfast and Poster Session 3
10:45 AM – 5:00 PM	Platform Sessions
3:30 PM – 6:00 PM	Exhibitor Move-Out

FRIDAY, OCTOBER 24

7:00 AM – 12:00 PM	Registration
8:00 AM – 9:00 AM	Plenary Session #4
9:30 AM – 12:30 PM	Platform Sessions

**Schedule is subject to change. Please check the AAAR Web site, www.aaar.org, and your final program at the conference for exact times and locations.*



REGISTRATION FORM

Early-Bird Registration Deadline: August 18, 2008

ATTENDEE INFORMATION

Please type or print clearly. Note: Credentials will not be used on name badges.

First Name: _____ Last Name: _____

First Name for Badge: _____

Organization: _____ Department: _____

Address: _____

City: _____ State: _____ Zip/Postal Code: _____

Country (other than the United States): _____

E-mail: _____

Telephone: _____ Fax Number: _____

Will you be accompanied by a spouse/guest? Yes No

If yes, please provide full name: _____

**The spouse/guest registration fee is \$100.*

2008 increases are limited to an increase of the CPI, rounded to the nearest dollar.

AAAR Tax ID#: 22-2387061

ANNUAL CONFERENCE REGISTRATION FEES

(excludes tutorial fees listed below) • Check ONE selection.

Early Bird

(received on or before August 18, 2008)

Advance

(received between August 19 and September 24, 2008)

On-Site

(received after September 24, 2008)

Regular* \$614

Student** \$147

Retiree*** \$147

Regular* \$696

Student** \$147

Retiree*** \$147

Regular* \$782

Student** \$230

Retiree*** \$230

*Regular registration fees include 2009 membership dues and subscription to AS&T.

**Student registration fees include 2009 membership dues and subscription to AS&T online only. Form MUST include a copy of university enrollment or class schedule.

***Retiree registration fees include 2009 membership dues and subscription to AS&T online only.

I do not wish to be a 2009 AAAR member. (Conference fee remains as listed.)

Tutorial Fees

Early – received on or before August 18, 2008

Advance – received between August 19 and September 24, 2008

On-site – received after September 24, 2008

Organizational member tutorial rates are only available to employees of Abbott Laboratories, Met One Instruments, Inc., MSP Corporation, Particle Instruments, LLC, Thermo Fisher Scientific, and TSI Incorporated

	1 Tutorial			2 Tutorials			3 Tutorials			4 Tutorials		
	Early	Advance	On-site	Early	Advance	On-site	Early	Advance	On-site	Early	Advance	On-site
Regular	\$129	\$146	\$164	\$215	\$247	\$265	\$276	\$327	\$344	\$315	\$384	\$400
Student/Retiree	\$79	\$84	\$101	\$124	\$135	\$152	\$157	\$175	\$191	\$180	\$202	\$220
Org Member	\$101	\$112	\$129	\$169	\$191	\$209	\$225	\$259	\$276	\$271	\$315	\$332

REGISTRATION FORM

Please choose only one tutorial per time period:

8:00 AM – 9:40 AM

- 1. Introduction to Aerosol Mechanics I
- 2. Bioaerosol Sampling and Analyses for Biodefense
- 3. Nanoparticle Synthesis
- 4. Conceptual Framework and Application of Receptor Models

10:00 AM – 11:40 AM

- 5. Introduction to Aerosol Mechanics II
- 6. Numerical Modeling of Multiphase Flows
- 7. Nanoparticle Applications in Energy Technology
- 8. Aerosol Nucleation: Bridging Subnanoscale Processes to Global-Scale Climate Change

1:00 PM – 2:40 PM

- 9. Atmospheric-Surface Exchange: Dry Deposition and Resuspension
- 10. Secondary Aerosol Formation
- 11. Challenges to Ensuring the Safety of Emerging Nanomaterials
- 12. Aerosol-Cloud Interactions: The Elusive Component of Climate Change

3:00 PM – 4:40 PM

- 13. Human Aerosol Exposure: Toward a Mechanistic Understanding
- 14. Methods for the Semicontinuous Measurement of Particle and Gas Chemical Composition
- 15. Aerosol Filtration for Fine and Nano Particles
- 16. From Emission to Direct Forcing: Single Source Contributions to Climate Change

Please check if you plan to attend the following:

Web-based Aerosol Science and Technology Educational Resources Workshop

Monday, October 20, 2008, 8:00 AM – 4:00 PM
\$50.00

Careers in Aerosol Science Workshop

Tuesday, October 21, 2008, 5:30 PM – 7:00 PM
No Charge

Student Reception

Sunday, October 19, 2008, 9:00 PM – 10:00 PM
No Charge

Registration Fee: _____ **+ Tutorial Fee:** _____ **+ Workshop Fee:** _____ **+ Spouse/Guest Fee:** _____ **= TOTAL AMOUNT DUE**

REFUND POLICY

Requests for refunds must be submitted in writing by September 24, 2008. There will be a \$75 processing fee for all refunds. Refunds will not be processed until after the meeting. Refund requests received after September 24, 2008 will not be honored. Registrations and tutorials are non-transferable.

PAYMENT INFORMATION

- Check *Make checks payable to AAAR (U.S. funds drawn on U.S. bank only)*
- Wire Transfer (Requires additional \$25 to cover bank fees. Please contact Deanna Bright – dbright@ahint.com – for transfer information.)
- Credit Card: Visa MasterCard American Express

Card Number: _____ Expiration Date: _____

Signature: _____ Cardholder's Name: _____

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Register online at www.aaar.org

For registration inquiries, please contact Gail Valente at (856) 642-4207 or gvalente@ahint.com.



SPECIAL NEEDS AND REQUESTS

Individuals with any special needs such as letters for visas, letters of invitation, or other special requests should contact the AAAR office at info@aaar.org. As a large number of international attendees are expected, please provide sufficient time (at least three weeks) for the office to reply.

KEY DATES: EARLY BIRD REGISTRATION DEADLINE: **AUGUST 18, 2008**
HOTEL RESERVATION DEADLINE: **SEPTEMBER 19, 2008**



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