

Registration Information

Registration fee (if received by July 14, 2017) \$2,500
Registration fee (if received after July 14, 2017) \$2,800

The course fee includes instruction, course materials, continental breakfast, refreshment breaks, lunches, and a TSI-sponsored dinner on Monday, August 21.

Register online at cce.umn.edu/aerosol.

Cancellation Policy

A full refund of the fee, minus a \$50 handling fee, will be made if registration is cancelled in writing to cceconf5@umn.edu no later than August 7, 2017. The University of Minnesota reserves the right to cancel the course if necessary, in which case a full refund will be issued.

Course Credit

Course attendees will receive 2.1 University of Minnesota Continuing Education Units (CEUs) signifying 21 hours of course participation. A CEU certificate will be mailed to attendees after the course. Application has been submitted for Industrial Hygiene Credit and will be available for attendees. A course completion certificate will be issued to each attendee at the conclusion of the course.

For Further Information

For complete information about this course, including instructor bios, location and accommodations, travel and visitor information, and to register online, visit the course website: cce.umn.edu/aerosol.

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Aerosol and Particle Measurement Short Course – 42nd Offering

This course is endorsed by the member companies of the Center for Filtration Research (CFR), University of Minnesota:



Organized and offered by:

Particle Technology Laboratory, Mechanical Engineering
Department, College of Science and Engineering,
University of Minnesota

In cooperation with:

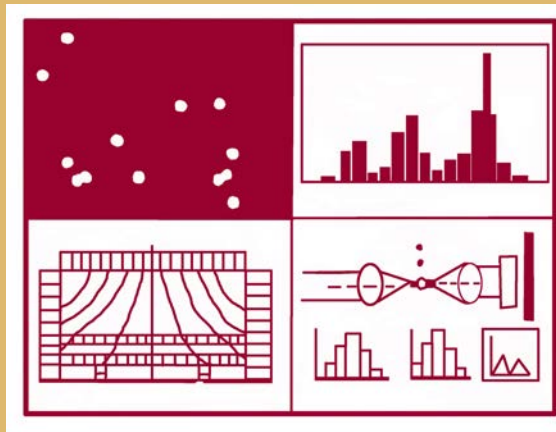
TSI Incorporated

Facilitated by:

College of Continuing Education, University of Minnesota

cce.umn.edu/aerosol

Aerosol and Particle Measurement Short Course – 42nd Offering



August 21–23, 2017

University of Minnesota
Minneapolis, Minnesota

In cooperation with TSI Incorporated
cce.umn.edu/aerosol

UNIVERSITY OF MINNESOTA

About the Course

Course Director

David Y.H. Pui, University of Minnesota



New This Year

Following the short course, please join TSI Incorporated for a FREE day of additional hands-on training with a variety of TSI instruments. Pick courses you are most interested in from at least six options. These sessions will provide smaller group sizes, more time with the instruments, and further application conversation with TSI experts.

Why You Should Attend

This course provides basic aerosol measurement and sampling skills for individuals entering the aerosol and particle field, as well as updated information for individuals already in the field. The course includes hands-on laboratory experiences where participants can discuss their own projects with experts and students alike.

What You Will Learn

Participants will gain a deeper understanding of the fundamentals of aerosol properties and behavior. With laboratory experiments, participants will gain practical skill training to sample, measure, and characterize airborne particulate matter in a variety of applications, including PM_{2.5} air pollution measurements, industrial hygiene sampling, nanoparticle exposure measurements, and contamination controls in microelectronics and pharmaceutical cleanrooms.

Who Should Attend

- Scientists, engineers, and other technical personnel interested in airborne particle properties and behavior
- Individuals involved in product design and development with particulate matter problems
- Individuals working in industrial hygiene, air pollution, cleanrooms, or contamination control and dealing with particle-related problems
- Individuals working in microelectronics, aerospace, automotive, pharmaceutical, biotechnology, pollution control, nanoparticle technology, or other industries with particle-related issues

Preliminary Schedule

Monday, August 21, 2017

Aerosol Behavior and Measurement Principles	
7:30 a.m.	Registration and Continental Breakfast
7:50 a.m.	Welcoming Remarks and Introduction <i>David Y.H. Pui, University of Minnesota</i>
8:00 a.m.	Aerosol Measurement Overview <i>Benjamin Y.H. Liu, University of Minnesota (retired)</i>
9:00 a.m.	Aerosol Mechanics, Sampling and Transport <i>David Y.H. Pui, University of Minnesota</i>
10:00 a.m.	Break
10:30 a.m.	Condensation Particle Counters <i>Peter McMurry, University of Minnesota</i>
11:30 a.m.	Light Scattering Fundamentals and Optical Techniques <i>Wladyslaw W. Szymanski, University of Vienna</i>
12:30 p.m.	Lunch
1:30 p.m.	Filtration Fundamentals and Applications <i>Kenneth L. Rubow, Mott Corporation</i>
Basic Instrumentation and Calibration, Part I	
2:30 p.m.	Filter Media and Design <i>Da-Ren Chen, Virginia Commonwealth University</i>
3:30 p.m.	Break
4:00 p.m.	Aerosol Generation for Instrument Calibration <i>Benjamin Y.H. Liu, University of Minnesota (retired)</i>
6:00 p.m.	Reception and Dinner sponsored by TSI Incorporated

Tuesday, August 22, 2017

Basic Instrumentation and Calibration, Part II	
7:30 a.m.	Continental Breakfast
8:00 a.m.	Inertial Impactors, Samplers, and APS <i>Thomas Kuehn, University of Minnesota</i>
9:00 a.m.	Nanoparticle Measurement Via Electrical Techniques <i>Chris Hogan, University of Minnesota</i>

Tuesday, August 22, 2017 cont.

10:00 a.m.	Break
10:30 a.m.	Optical Particle Counters <i>Wladyslaw W. Szymanski, University of Vienna</i>
11:30 a.m.	Chemical Characterization of Aerosol Particles with Mass Spectrometry <i>Deborah S. Gross, Carleton College</i>
12:30 p.m.	Lunch
1:30 p.m.	Lab Experiments at TSI Incorporated <ol style="list-style-type: none"> 1. Calibration of Submicrometer Instruments 2. Transient Aerosol Measurements—Capturing Fast Changes 3. Environmental Aerosols—Tools to Assess Air Quality 4. Large Particles Measurements—Isokinetic Sampling for OPS and APS
5:30 p.m.	Adjourn

Wednesday, August 23, 2017

Aerosol Applications	
7:30 a.m.	Continental Breakfast
8:00 a.m.	Atmospheric Aerosol Measurement <i>Peter H. McMurry, University of Minnesota</i>
9:00 a.m.	Occupational Health: Particle Sampling and Measurement <i>Kenneth L. Rubow, Mott Corporation</i>
10:00 a.m.	Break
10:30 a.m.	Biological Aerosol Detection and Characterization <i>Jim Ho, Canadian Department of Defense (retired)</i>
11:30 a.m.	Engine Emission Measurement <i>David Kittelson, University of Minnesota</i>
12:30 p.m.	Lunch
1:30 p.m.	Lab Experiments at University of Minnesota Particle Technology Lab <ol style="list-style-type: none"> 1. Optical/Laser Particle Counters: Calibration and Applications 2. Dust Measurement and Impactors 3. Aerosol Transport Efficiency in Tubes and PM_{2.5} Samplers 4. Bioaerosol Sampling and Filtration Efficiency
5:30 p.m.	Adjourn