



University of Minnesota
Center for Filtration Research
51st Review Meeting (May 5, 2017)
Mechanical Engineering Department
University of Minnesota

Final Program

FRIDAY, MAY 5, 2017

7:30 a.m. *Coffee and Refreshments*

8:00 a.m. **Prof. Sam Mukasa**
Dean, College of Science and Engineering, University of Minnesota
Welcoming Remarks

David Y.H. Pui
Director, UMN Center for Filtration Research
CFR Research Overview

8:30 a.m. **Technical Program Presentation (I): New Initiatives**

Qisheng Ou
Performance Evaluation of Three-Way Catalyst Coated
Sintered Metal Fiber Media for Engine After-treatment Application
Qisheng Ou, Yuejin Li, and David Y.H. Pui

Jing Wang
ETH Zurich and Empa, Switzerland
Comparison of Catalyst Immobilization Techniques onto
Filter Media for Airborne VOCs Decomposition
Sarka Drdova and Jing Wang

Handol Lee
Atomization of CMP Slurry and its Characterization
Handol Lee, Sheng-Chieh Chen, Seong Chan Kim, and David Y.H. Pui

Min Tang
Non-IPA Production of DEHS Nanoparticles for Evaluating PTFE Filter
Min Tang, Sheng-Chieh Chen, Wilson Poon, and David Y.H. Pui

Sheng-Chieh (Shawn) Chen
Designing Composite Filters for High Efficiency,
Low Pressure Drop, and High Loading Capacity
Sheng-Chieh Chen, Min Tang, Drew Thompson,
Luying Liu, and David Y.H. Pui

10:00 a.m. Refreshment Break

**10:30 a.m. Technical Program Presentation (II): Air Intake Filters:
RH Effect; Dust Dispersion**

Chenxing Pei

Effect of Relative Humidity Hysteresis on Loading Characteristics
of Air Intake Filter Media by Hygroscopic Salt Particles
Chenxing Pei, Qisheng Ou, and David Y.H. Pui

Qisheng Ou

Clogging and Restructuring Behaviors of Solid and Oil
Mixtures on Air Intake Filter Media
Qisheng Ou and David Y.H. Pui

Sheng-Chieh (Shawn) Chen

Accurate Number Distribution Measurements for Micron
and Supermicron Particles by Shadowgraphy Method
Sheng-Chieh Chen, Seungkoo Kang, and David Y.H. Pui
Wing Lai, TSI Incorporated

12:00 p.m. Lunch Break and CFR representatives' Meeting

1:00 p.m. Technical Program Presentation (III): Invited Lectures

Prof. Kebin He

Dean, School of Environment, Tsinghua University, China
PM_{2.5} Mitigation in China

Prof. Seungki Chae

Sungkyunkwan University (SKKU)
Former Senior Vice President, Samsung Display
Challenges and Opportunities for OLED Display

**2:00 p.m. Technical Program Presentation (IV): Liquid-borne Particles
Filtration; Personal Exposure**

Handol Lee

Filtration Efficiency of 1.9-30nm Nanoparticles through Eight
Different Membrane Filters and CFD Simulation of Liquid
Filtration in Different Conditions
Handol Lee, Seungkoo Kang, Sheng-Chieh Chen
Doris Segets, and David Y.H. Pui

Da-Ren Chen

Virginia Commonwealth University
A New Setup for Evaluating Filter Media under the
Inhalation-and-Exhalation Condition
Peng Wang and Da-Ren Chen

3:00 p.m. *Refreshment Break and Lab Tour*

3:45 p.m. Technical Program Presentation (V): Modeling; Instrumentation

Drew Thompson

Web-based Modeling of Electret Filter and Nanofiber
Composite: Performance and Design
Drew Thompson, Min Tang, Sheng-Chieh Chen,
Seong Chan Kim, and David Y.H. Pui

Seungkoo Kang

CFD Modeling of Pleated Filter Elements
with the Experimental Validation using PIV
Seungkoo Kang, David Y.H. Pui, and Jacob Swanson

Nanying (Leo) Cao

Field Measurement of Nanoparticle Surface Area using
the Geometric Surface Area Monitor by the Weighted Sum Method
Nanying Cao and David Y.H. Pui

Qingfeng Cao

PM_{2.5} Concentration Profile around a SALSCS/AMSA:
A Numerical Study under Different Ambient Conditions
Qingfeng Cao, Sheng-Chieh Chen, Lian Shen, and David Y.H. Pui

5:20 p.m. Center Planning Meeting

5:30 p.m. Adjournment