



MISSISSIPPI STATE
UNIVERSITY™



- ❖ Established in 1878
- ❖ Land-grant University
- ❖ > 20,000 Undergraduate Students
- ❖ > 3,400 Graduate Students
- ❖ "Comprehensive Doctoral Research University with Very High Research Activity" by the Carnegie Foundation



MISSISSIPPI STATE UNIVERSITY™
DEPARTMENT OF
MECHANICAL ENGINEERING

- ❖ > 800 Undergraduate Students (ABET Accredited Program)
- ❖ > 150 Graduate Students
- ❖ > 20 Faculty Members
- ❖ Relevant Graduate Courses

Nuclear Air and Gas Filtration	Experimental Procedure
Aerosol Measurement Techniques	Compressible Flow and Turbomachinery
Air Conditioning	Intermediate Fluid Dynamics
Classical Thermodynamics	Intermediate Heat Transfer
Energy Systems Design	Viscous Flow
Computational Fluid Dynamic	Theory of Continuous Media

ICET Training for Graduate Students

- ❖ ASME Code on Nuclear Air and Gas Treatment (AG-1)
- ❖ Nuclear Quality Assurance (NQA-1) Training
 - Procedure Development
 - Test Control
 - Control of Measurement and Test Equipment
 - Document Control and Review
- ❖ Filter Testing
 - Kinetic Theory of Gases
 - Particle Motion and Size Distributions
 - Brownian Motion and Diffusion
 - In-place Filter Testing (Isokinetic Sampling, Filter Efficiency, Pressure Drop, and Mass Concentration)
 - Measurement of Velocity, Flow Rate, and Pressure
 - Test Stand Development
 - Custom-built Aerosol Generators
 - Filter Autopsy (Thermogravimetric Analysis, Tensile Strength Test, and Scanning Electron Microscopy (SEM) Analysis)
- ❖ Aerosol Measurement Instruments
 - Laser Aerosol Spectrometer (LAS)
 - Scanning Mobility Particle Sizer (SMPS) Spectrometer
 - Aerodynamic Particle Sizer (APS)
 - Electrical Low Pressure Impactor (ELPI)

ICET Organization Chart of Graduate Research Program



Charles A. Waggoner
Director of ICET

Heejin Cho
Director of Graduate Research at ICET
Assistant Professor of Mechanical Engineering

Spencer Phillips
Ph.D. Student
Mechanical Engineering

Design and Characterization of a Test Stand for Performance Evaluation of Flat Filter Media

Sam Cox
Ph.D. Student
Mechanical Engineering

A Review on Real-Time Aerosol Measurement Techniques and their Correlations

Andrew L. Schemmel
MS Student
Mechanical Engineering

Evaluation of a Test Stand to Assess the Performance of a Range of Ceramic Media Filter Elements

Matthew Wong
MS Student
Mechanical Engineering

Design and Performance of an In-Place Flat Media Particle Loading Testing System

Undergraduate Research Assistants from Mechanical Engineering

Assist Graduate Student Research at ICET

ICET Research Projects

- ❖ HEPA Filter Prototype Testing, Sponsored by Bechtel National, Inc., Subcontract Number: 24590-CM-HC4-MKH0-00001
- ❖ ASME AG-1 Section FO Ceramic Filter Testing, Sponsored by Lawrence Livermore National Laboratory, Contract Number: LLNL-ABS-681161

