

Institute of Environmental Sciences & Technology

Annual Technical Meeting of the Institute of Environmental Sciences & Technology

ESTECH 2008

May 4-7, 2008
Bloomington, Illinois, USA

Volume 1 of 2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-1-60560-412-1

Some format issues inherent in the e-media version may also appear in this print version.

Copyright (2008) by the Institute of Environmental Sciences & Technology.

All rights reserved.

For permission requests, please contact the Institute of Environmental Sciences & Technology at the address below.

Institute of Environmental Sciences & Technology
Arlington Place One
2340 S. Arlington Heights Road Suite 100
Arlington Heights, IL 60005
Phone: (847) 981-0100
Fax: (847) 981-4130

iest@iest.org

Institute of Environmental Sciences & Technology

Annual Technical Meeting of the Institute of
Environmental Sciences & Technology
2008

TABLE OF CONTENTS

VOLUME 1

Control of Time Dependent Contamination During Bonding of Semiconductor and Optical Substrates	1
<i>Iqbal Bansal</i>	
Lessons Learned in Facility Design Flexibility	29
<i>David A. Bunzow</i>	
Analysis of Contamination in Air & Gases that Degrade Steppers, Lasers, Masks, Inspection Tools & Other Optics	47
<i>Mark Camenzind, Hugh Gotts, Dan Cowles, Piyamit Chitrathorn, Ekong Bassey, Charles Thompson</i>	
Cleanroom Design Build 101	80
<i>Allan D. Chasey</i>	
New Solar Simulation Technology for Stepped Irradiance Level Testing	129
<i>George Coonley</i>	
New Technology for Outdoor Monitoring of Environmental Conditions	159
<i>George Coonley</i>	
Fire Suppression –Live Testing in Cleanrooms	182
<i>Roger Diener</i>	
Silvered Optics Corrosion Risk Assessment in Aerospace Manufacturing Environments	198
<i>William Elias, Delisha Stanley</i>	
Case Study –Evaluating and Implementing a Cleanroom Garment Program Compliant with USP 797	253
<i>Jan Eudy</i>	
MSL Pyroshock Development Test Program for Shock Mitigation	298
<i>Juan P. Fernández</i>	
Sinusoidal and Resonant Testing to Include Visualization of Resonances	319
<i>Fred Fey</i>	
Critical Issues for Cleanroom Clothing and PPE in the Electric Arc	336
<i>Michael Golovkov, Hugh Hoagland</i>	
Haze and Micro-contamination in the Semiconductor Industry	351
<i>Brian J. Grenon</i>	
Analyzing ESD Issues Using Electromagnetic Signatures	386
<i>Mark E. Hogsett</i>	
CO2 Clean Manufacturing Technology	416
<i>David P. Jackson, Nelson W. Sorbo</i>	

Hybrid Surface Treatment Technology	448
<i>David P. Jackson, Nelson W. Sorbo</i>	
Demand Controlled Filtration & System Design Considerations	481
<i>Joe Gecsey, Michael Jue</i>	
Contamination & Airflow Control Issues and Solutions	511
<i>M. Jue</i>	
IEST-RP-CC012.2 Considerations in Cleanroom Design Update	582
<i>M. Jue</i>	
Effectiveness Of Vacuum Removal For Various Size Particles	612
<i>Gary W. Knoth</i>	
Acoustic Induced Loads of Large Light-Weight Structures	636
<i>Albert Lee, Michael Purser</i>	

VOLUME 2

Evolution of Structural and Fatigue Testing in the Automotive Industry	648
<i>Nigel A. Linden</i>	
How to optimize chemical HVAC filtration for semiconductor process bays	717
<i>Jürgen M Lobert, Joseph Wildgoose, William Goodwin, Chris Quartaro, James Lo</i>	
USP <797> Compliance IEST Meeting	739
<i>Fran McAteer</i>	
A Comparison of Tire-Obstacle Force Models Used in Multi-Body Dynamics Simulations	760
<i>Michael McCullough</i>	
Evaluation of FBG DSS Sensors on a Structural Test Item from -60 F(-41 C) to 160 F (71.1 C) Under Mechanical Loading	821
<i>Enrique A. Medina, David Banaszak</i>	
Scaling of Time Scaling of Time-Varying Time Trace Varying Time Trace Information for Laboratory Testing	878
<i>Ronald G. Merritt</i>	
Method for Characterizing Outgassed Organic Compounds from Cleanroom Materials and Components	923
<i>Jim Ohlsen</i>	
Walk In Calorimeters	1006
<i>Chris Peterson</i>	
Nanometrology Room Design: The Performance and Characterization of the Kevin G. Hall Nanometrology Laboratory	1036
<i>J. Weaver, M. Voorhis, R. Reifenberger</i>	
Wiping Efficiency and Particle Removal Ability of Cleanroom Wipers	1059
<i>Jamie W. Rudisill, J. Marshall Oathout</i>	
Time Dependent Haze Formation on Silicon Wafers	1091
<i>Larry W. Shive</i>	
Vibration with Non Gaussian noise	1120
<i>David O. Smallwood</i>	

HALT Qualification of a Navigation System 1173
Amy Taylor

Attaching Test Items to Shakers 1187
Wayne Tustin

Introduction to Random Vibration..... 1202
Wayne Tustin

**Toward the Development of Electrically Dissipative Cleanroom Boots for
Grounding Mobile Personnel in Controlled Environments** 1211
Tom Watkins

Windowing Effects Upon Random Automotive Data 1227
George O. White

Shock Test Equipment: Applications, Recent Advances, and Trends..... 1244
Bryan Williams

Time Waveform Replication a Versatile Test Capability 1275
Delbert Wilson

Manufacture and Testing of Cleanroom Flame Retardant Garments..... 1289
Greg Winn

Author Index