

Institute of Environmental Sciences & Technology

Annual Technical Meeting of the Institute of Environmental Sciences & Technology

ESTECH 2007

April 29 – May 2, 2007
Bloomingdale, 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: 978-1-60423-442-8

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

Institute of Environmental Sciences & Technology

Annual Technical Meeting of the
Institute of Environmental Sciences & Technology
2007

TABLE OF CONTENTS

VOLUME I

Testing Trends Today and Tomorrow.....	1
<i>D. Acquarulo</i>	
Vibration and Shock Test Fixturing	10
<i>D. Ball</i>	
Apparent Strain of EFPI Strain Sensors at Low and High Temperatures	70
<i>D. Banaszak, L. Kretz</i>	
Mechanical Shock Testing of LIGA Parts.....	118
<i>V. I. Bateman</i>	
Contamination and Static Charge Control Using ESD Dissipative Ceramics	135
<i>W. Boone, O. H. Kwon, Q. Zhao</i>	
State-of-the-Art Shock Testing Using Electrodynamic Shakers.....	160
<i>C. Kim</i>	
Cleanroom Design Build 101	186
<i>A. D. Chasey</i>	
Helium Leak Rate Testing and Leak Resolution Experiences	240
<i>G. Cutting</i>	
Product Thermal Control System Development for Thermal Vacuum Testing	260
<i>S. Webb, N. Hartney, G. Cutting</i>	
Using Work and Energy to Characterize Mechanical Shock.....	280
<i>T. Edwards</i>	
Modal Deposition of Shock Energy.....	299
<i>T. Edwards</i>	
Evaluating, Validating and Implementing a Cleanroom Garment Program	314
<i>J. Eudy</i>	
Development of Multi-Axis Cooling Module Durability Simulators	358
<i>A. Fereday</i>	
An Overview of the Use of the Pseudo Velocity Shock Spectrum	378
<i>H. A. Gaberson</i>	
Identification of Dynamic Loads Imparted on Missile Launch Rails	439
<i>R. S. Garner</i>	
Operational Modal Analysis of Aluminum Beams.....	458
<i>S. Rudroju, A. Gupta, S. Yandamuri</i>	
Accelerated Testing of Beams Subjected to Random Vibration.....	476
<i>S. Fan, A. Gupta, M. B. Gharwala</i>	
Risk Analyses for the Ground Transportation of Hazardous Chemicals: Establishing a Framework	490
<i>R. Hessian Jr.</i>	

Chemcial Agent Contaminated Spill Material Surface Evaporation Considerations	522
<i>R. Hessian Jr.</i>	
Plasma Particle Detection: A New Method for Particle Detection During Wafer Processing	536
<i>S. Hjelmervik</i>	
Comparison of Aerodynamic Noise Data from Two Space Shuttle Wind Tunnel Tests Performed 31 Years Apart	N/A
<i>R. Burrows</i>	
Charge Measurement and Control in Clean Room Environments.....	568
<i>M. E. Hogsett</i>	
AMC and SMC Contamination Control Issue Gowning 101.....	604
<i>C. Chapman</i>	
Multi-drop, Simultaneous, Synchronous Sampling Smart Sensor Network System.....	637
<i>A. Karolys</i>	
The Application of a Shock-on-Random Environment	656
<i>J. P. Kirk</i>	
Automated CO₂ Composite Spray Cleaning System for Hard Disk Drive (HDD) Rework Parts	672
<i>D. Jackson, G. Knoth, N. Sorbo</i>	
Physics and Fundamentals of Particle Counting	699
<i>S. Kochavar</i>	

VOLUME II

Statistical Regression Analysis of Biological Sensor Performance Data.....	744
<i>D. Leighton, M. Cushing</i>	
Development of a Test System to Replicate the Shock Profiles Through Small Arms Accessories.....	773
<i>N. Linden</i>	
Surface Cleaning Efficiency Test Method	799
<i>K. Macdougall</i>	
Airborne Contamination Control in Healthcare Facilities	822
<i>J. McGill</i>	
Evaluation of a Distributed Sensing System Using Simple Bending Beams	883
<i>D. Banaszak, E. Medina</i>	
MIL-STD-810G - Method 525 and Application of TWR to General Time Traces.....	920
<i>R. G. Merritt</i>	
Testing in Extreme Environments at the McKinley Cliimatic Laboratory	976
<i>K. Molder, C. Securda</i>	
Electrostatic Charge Control Considerations	994
<i>J. A. Montoya</i>	
Managing Microbes.....	1017
<i>G. A. Mosley</i>	
Updating Mil-Std-810 to Address High Speed Weather Encounter Testing	1065
<i>B. Moylan, G. Russell</i>	
Trends in Vibration Testing & System Design.....	1084
<i>Author Unknown</i>	

Atmospheric Dispersion Modeling Analysis of a Catastrophic Break in an HCI Delivery Line.....	1109
<i>A. Neuber, B. Ekberg, J. Mattrey</i>	
Summary of IEST-RD-DTE012.2: Handbook for Dynamic Data Acquisition and Analysis, Second Edition	1129
<i>Author Unknown</i>	
ESA Large Space Simulator Pumping System	1148
<i>A. Popovitch, J. P. Bouchery</i>	
Temperature Compensating MEMS Accelerometers with Programmable Signal Conditioners	1162
<i>B. Ryden</i>	
Multiscale Design of Rain Simulator.....	1177
<i>K. Knasiak, R. J. Schick, W. Kalata</i>	
Computation of Energy Terms in the Response of a SDOF System	1185
<i>D. O. Smallwood</i>	
Using a Modified Harmonic Wavelet (HWT) Transform to Characterize Mechanical Shock.....	1213
<i>D. O. Smallwood</i>	
Using CFD Modeling to Assess the Risk to Cleanroom Operations due to a Local Disaster Event	1234
<i>A. Solberg, K. Kibbee</i>	
Computational Fluid Dynamics Airflow Modeling for Ambient Breeze Tunnels	1257
<i>T. J. Stadterman, T. Krolewski</i>	
Testing of Cleanroom Components for Cleanroom & Sterilization Applications	1266
<i>S. Stevens</i>	
Random Vibration Kurtosis Control.....	1280
<i>J. G. Van Baren</i>	
Random Testing/Time Waveform Replication	1321
<i>D. Van Baren</i>	
Validating Data to Justify Measurement Uncertainty Analysis	1338
<i>P. L. Walter</i>	
Durability of Ground Vehicle Components	1359
<i>G. O. White</i>	
Shock and Vibration Transducer Selection	1389
<i>J. S. Wilson</i>	
Achieving Sustainability and Cost-Effectiveness: Developing and Implementing Best Practices in Cleanroom Design and Operation.....	1425
<i>T. Xu</i>	
MIL-STD-810G Development Update.....	1453
<i>F. Zapata</i>	
Vibration Durability Assessment for SAC vs SnPb Solders.....	1500
<i>Y. Zhou, A. Dasgupta</i>	
Author Index	