

# **iMAPS New England**

**43<sup>rd</sup> Symposium & Expo - Tuesday May 3<sup>th</sup> 2016**  
**Holiday Inn Boxborough Massachusetts**

## **“3D & Beyond”**

### **Advance Program**



### **“Explore the Future of Microelectronics”**

**Dr. John Blum, Chapter President**

**Dmitry Marchenko & Dr. Parshant Kumar**  
**Symposium Technical Chairs**

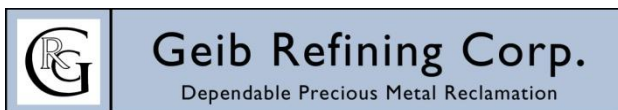
### **KEYNOTE ADDRESS**

### **“Trillion Sensors for Health Care”**

**Presented by Ahmed A. Busnaina, Ph.D.**

**Director NSF Nano Center, Northeastern University**

### **2016 SYMPOSIUM GOLD SPONSORS**



# **iMAPS New England 43rd Symposium**

## **Technical Program**

### **Session A: RF and Microwave - Innovations & Emerging Technologies 8:30-11:30 AM**

**Tom Terlizzi & Dr. Tracey Vincent – Co-Chairs**

**"Investigation of Electromagnetic Field Coupling  
from DC-DC Buck Converters to Automobile AM/FM Antennas"**  
Patrick DeRoy – CST, Framingham, MA

**"ECLIPS: Embedded Cooling Layer – Integrated Power System"**  
Al Wasserzug – Cirexx International, Louisville, KY

**"High Dielectric Constant, Low Loss Additive Manufacturing Materials  
for RF/Microwave Applications"**  
Caprice Gray – Draper, Cambridge, MA

**"How to simulate RF materials considering accuracy and speed"**  
Dr. Tracey Vincent – CST, Framingham, MA

**"Addressing the Design Challenges of RF/Millimeter Wave Semiconductor Packaging"**  
Craig Vieira – Ametek - ECP, New Bedford, MA

**"Future of QML Hermetic ICs"**  
Timothy J. Flaherty - Golden Altos Corporation, Milpitas, CA

### **Session B: High Reliability Interconnects 8:30-11:30 AM**

**Mike McKeown & Bill Boyce – Co-Chairs**

**"Heavy Copper Wire Bonding for Mass Production"**  
Mike McKeown – Hesse Mechatronics, Mineola, NY

**"Understanding the Role of Ultrasonic Welding in Wire Bonding"**  
Lee Levine – Process Solutions Consulting, Inc., New Tripoli, PA

**"Configurations for Robust Gold Stitch-to-Substrate Wire Bond Attachment"**  
William Boyce – Smart Microsystems, Elyria, OH

**"Process Optimization on Advanced AI Wirebond Tools"**  
Matthew Kurtz – Rochester Electronics, Newburyport, MA

**"Submicron Au Particles for Low Temperature Au to Au Bonding"**  
William (Bud) Crockett - Tanaka Kikinzoku Kogyo K.K., San Jose, CA

**"Wire Bonding onto Niobium for Superconducting Applications"**  
Dr. Michael Hamilton - Auburn University, Auburn, AL  
& Mike McKeown - Hesse Mechatronics, Mineola, NY

### **Session C: SMT and Electronics Packaging 8:30-11:30 AM**

**Tina Barclay & Mike Martel – Co-Chairs**

**"Improving Electronics Assembly Process Through Organic-Metal Final Finish"**  
Dr. Rita Mohanty – Enthone Electronics Solutions, Waterbury, CT

**"20 Year Shelf Life Study for Surface Finishes"**  
Gerard O'Brien, D. Hillman – STandS Group, Richmond, KY

**"Flexible Electronics – Packaging Design"**  
Tina Barclay – TAS Consulting, Mendon, NY

**"System Level Technical Analysis for EO Sensors"**  
Michael Meier – MJM & Associates, Rochester, NY

**"Applying New Approaches to Emerging SMT PCB Stencil Printing Challenges"**  
Michael L. Martel – MMC Marketing, Bristol, RI

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### **Session D: Printed Electronics 8:30-11:30 AM** **James Zunino III & Katherine Duncan – Co-Chairs**

**“Application of inkjet printing technology”**

**Michael Carr** – New Jersey Institute of Technology, Newark, NJ

**“Electrical Characterization of Traditional and Aerosol Inkjet Printed Conductors under Tensile and Strain”**

**Jake Rabinowitz** – Northeastern University, Boston, MA

**“Fully Printed Conformal Antenna and Sensors on 3D Plastic, Ceramic, and Metallic Substrates”**

**Mike O’Reilly** – Optomec, Inc., Albuquerque, NM

**“Next Flex - Flexible Hybrid Electronics Manufacturing Innovation Institute”**

**James Zunino III** – U.S. Army RDE Command (ARDEC), Picatinny Arsenal, NJ

**“America Makes and Status of Research in Multi-Functional Printing”**

**Dr. Eric MacDonald** – University of Texas, El Paso, TX

**“Title: SuperScript - Next Generation Additive Manufacturing System”**

**Dr. Kenneth Church** – Sciperio / nScript, Orlando, FL

### **Session E: Medical Device Packaging 1:00-3:00 PM**

**Steve LaFerriere & Tom Green – Co-Chairs**

**“Hermetic Packaging of Implantable Devices: How did we get here? And where are we going?”**

**Heather Dunn** – Cirtec Medical, Longmeadow, MA

**“A Transistor-less, Wireless Neural Implant”, Dr. Daniel Freeman** – Draper, Cambridge, MA

**“RF companion chip based on PICS technology for small and reliable medical device packaging: application to Ultra-Low Power RF Implants”, Dr. Mohamed Mehdi Jatlaoui** – IPDiA, Caen Area, France

**“Packaging Architecture for an Implanted System that Monitors Brain Activity and Applies Therapeutic Stimulation”**

**Caroline Bjune** – Draper, Cambridge, MA

**“Electronics Packaging Methods and Materials for Implantable Medical Devices”**

**Susan Bagen** – Micro Systems Technologies, Inc, Mesa, AZ

### **Session F: 3D and Beyond 1:00-3:00 PM**

**Maria Durham & Dr. A.F. M. Anwar – Co-Chairs**

**“Room Temperature Fast Flow Reworkable Underfill for LGA”**

**Dr. Wusheng Yin** – YINCAE Advanced Materials, LLC, Albany, NY

**“Beyond Chip Stacking---Quilt Packaging Enabled 3D Systems”**

**Jason Kulick** – Indiana Integrated Circuits, South Bend, IN

**“Challenges facing electrochemical deposition in wafer level packaging”,**

**Thomas Richardson** – MacDermid Enthone Electronics Solutions, Waterbury, CT

**“Liquid Metal Interconnects for Conformable Sensor Packaging Enabling Inertial Measurements of Animals and Soft Robots”, Nikolas Kastor & R.D. White** – Tufts University, Medford, MA

**“Printed Transceiver Circuit for System-on-chip Sensor and Processor”**

**Peter H Lewis** – Draper, Cambridge, MA

### **Session G: Nanoelectronics & Optoelectronics Packaging 1:00-3:00 PM**

**Dr. Alkim Akyurtlu & Dr. Joey Mead – Co-Chairs**

**“Beyond CMOS: Wafer Scale Heterogeneous Integration of III-Vs and Other Dissimilar Materials with Si CMOS to Create Intelligent Electronics/Micro-systems”, Dr. Thomas Kazior** – Raytheon Integrated Defense Systems, Andover, MA

**“Synthesis and Preparation of Sn/Ag Nanosolder Paste for Micro/Nano-Electronics Assembly and Packaging”**

**Evan Wernicki** – University of MA Lowell, Lowell, MA

**“Scalable Nano and Microscale Printing of Sensors and Electronics”**

**Dr. Ahmed Busnaina** – Northeastern University, Boston, MA

**“Packaging of MEMS for Aerodynamic Measurements”, Dr. Robert White** – Tufts University, Medford, MA

**“Thermogravimetric Study of Dicyandiamide for Application in CVD Growth Process of Single Layer Film of Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>)”, Abdul M. Syed** – Univ. of MA Lowell, Lowell, MA

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**Session H: Poster Session 9:00 AM to 4:30 PM**  
**Dr. Zhiyong Gu & Dr. Rita Mohanty – Co-Chairs**

**Authors Review 2:00 PM – 3:30 PM**

**“High-resolution Inkjet and 3D Printing”,**  
**Yang Gou – University of Connecticut, Storrs, CT**

**“Optical Approaches for Glucose Biosensing”**  
**Jun Chen – University of Connecticut, Storrs, CT**

**“Screen-printed Electrode (SPE) based Solid-State pH Sensor”**  
**Qiuchen Dong – University of Connecticut, Storrs, CT**

**“Fluorescent Carbon nano-particles (CNPs) for Explosive Sensing”**  
**Sichen Zhang – University of Connecticut, Storrs, CT**

**“Protein Microspheres with Unique Autofluorescence for Non-invasively Tracking and Modelling of Their In Vivo Biodegradation”, Xiaoyu Ma – University of Connecticut, Storrs, CT**

**“Thermogravimetric Study of Dicyandiamide for Application in CVD Growth Process of Single Layer Film of Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>)”**  
**Michael Masaki – University of MA Lowell, Lowell, MA**

**“Novel 3D Vertically Aligned Platinum Nanowire Array as Electrocatalysts for Direct Methanol Fuel Cells”, Daniel Chuqing Liu – University of MA Lowell, Lowell, MA**

**“Melting Behavior and Morphology Change of Metallic Nanowires Using Femtosecond Laser Irradiation”, Jirui Wang – University of MA Lowell, Lowell, MA**

**“Counterfeit Component Prevention and Detection”**  
**Scott Mazur – Benchmark Electronics, Nashua, NH**

### **EXHIBITORS AS OF April 19, 2016**

Advance Reproductions	MICRO SYSTEMS TECHNOLOGIES
AI TECHNOLOGY	MicroChem
American Ceramic Society – New England Section	Mini-Systems
ATV Technologie GmbH	MMS TECHNICAL SALES
Centerline Technologies	MRSI Systems
Cirexx International	MSD MICROELECTRONIC SYSTEMS DISTRIBUTORS
CREYR INNOVATION	Netzsch Instruments
CWI TECHNICAL SALES	NTK Technologies
EMA Sales & Marketing	P/M INDUSTRIES
Epoxy Technology	PALOMAR TECHNOLOGIES
Ferro Ceramic Grinding	Photofabrication Engineering
Finetech	Precision Automation & Assembly
Geib Refining	PROTON ON SITE
Golden Altos	Quick-Pak
Good-Ark Semiconductor	Remtec
GOWANDA ELECTRONICS	Riv
Heraeus Electronics	Semiconductor Equipment Corp
Hesse Mechatronics	Sonoscan
i3Electronics	Stellar Industries
iMAPS New England	TANAKA KIKINZOKU INTERNATIONAL
Innovative Fabrication	TAS Consulting
JEOL USA	Ubotic
Kemlab/Transene	UTZ Technologies
Kyocera America	Viatec Instruments
Laser Services	XYZTEC
LFG Micro	YINCAE Advanced Materials
METALLIX REFINING	