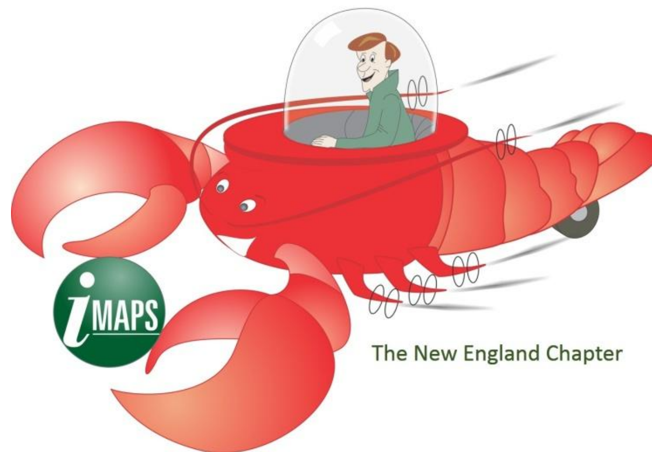
iMAPS New England

44th Symposium & Expo - Tuesday May 2nd, 2017
Boxboro Regency Hotel & Conference Center
Boxborough, Massachusetts

"The Jetsons 2017"

Advance Program



"The Future of Microelectronics"

Jon Medernach, Chapter President

Dr. Parshant Kumar, Symposium Technical Chair

KEYNOTE ADDRESS

"From Interconnect to Innovation in the DoD"
Dr Livia Racz, MIT Lincoln Lab

2017 SYMPOSIUM GOLD SPONSORS

iMAPS New England 44th Symposium & Expo

Technical Program

Morning Sessions

Session: Nanoelectronics and Optoelectronics
Chairs: Yi Qian – MRSI & Jin Li - Cambridge Technology

Grand Challenges and Timelines for Electronic-Photonic Integration
Lionel Kimerling - MIT/AIM Photonics
Standoff Chemical Sensing Wireless Network
Xuejun Lu - UMass Lowell
Quantum Cascade Laser Power Scaling Developments
Jeffrey Shattuck, Robin Huang - Forward Photonics
Wafer-level Integration and Packaging of Micro-Concentrating Photovoltaics
JJ Hu and Team - MIT
Challenges in Optical Sensor Module Packaging - Evolving from Past into Future
Julia Ying Zhao, David Bolognia - Analog Devices
Automated Die Bonding for High Volume Optoelectronics Manufacturing:
Speed, Accuracy, and Flexibility
Peter Cronin - MRSI

Session: MEMS and Nano Systems
Chairs: Robert White - Tufts University & Rick Morrison - Draper

Miniature Multiwire Systems
Caprice Gray Haley, Anthony Kopa, Andrew Magyar, Amy Duwel, Brian Smith,
Sara Barron, Mitch Meinhold & Seth Davis - Draper
A New Manufacturing Process for Fabricating 3D Interconnects for MEMS and ICs
Cihan Yilmaz - Flex
MEMS Packaging for Reliable, Low Pressure Sensing in Automotive Applications
Matt Lasorsa, Sam MacNaughton & Giff Plume - Sensata
Low Temperature, Hermetic Packaging of a MEMS Electric Field Sensor
Douglas Gauthier, Daniel Reilly, James Bickford & Stephanie Golmon - Draper
Advanced Integration program at BRIDG and the reliability issues with 2.5D / 3D integration
Amit Kumar - Bride
Tuning the Resonance Frequency of Piezoelectric MEMS Microphones by Sizing Acoustic Ports
Yu Hui, Jongsoo Choi & Robert Littrell - Vesper MEMS

Session: RF and Microwave - Innovations and Emerging Technologies
Chairs: Tom Terlizzi - GM Systems & Dr. Chandra Gupta - RF & Microwave Solutions

Microwave and Millimeter Wave Multi-Chip Module Manufacturing
Earle Stewart, HXI & David Robbins, Monzite
Challenges of Microwave Assembly
Jay Chudasama - Agile Microwave Technology
Design and Analysis of Antennas for a Modern Smartwatch
Dr. Tracey Vincent - Computer Simulation Technologies
Visual Identification of Organic Residue on Microelectronic Components
via In-Process Visible Light Fluorescence
Tristan Baldwin - BAE Systems
Hermetic System-in-Package for High Power RF MEMS Switch
Chris Keimel - Menlo Micro
Device Physics Matters in RF Designs and Manufacturing
Dr Chandra Gupta - RF & Microwave Solutions

Key Note Luncheon Speaker : Dr Livia Racz, MIT Lincoln Lab
"From Interconnect to Innovation in the DoD"

*i*MAPS New England 44th Symposium & Expo
Technical Program
Afternoon Sessions

Session: Medical Device Packaging
Chairs: Caroline Bjune – Draper & Steve LaFerriere - YOLE Developpment

Embedding of Active Components in LCP for Implantable Medical Devices
Susan Bagen - Micro Systems Technologies
Low-Cost Electronically-Controlled Prostheses for Transfemoral Amputees
Molly Berringer - MIT/Draper
The Use of Advanced Microelectronic Packaging Techniques to Miniaturize Implantable Neuro Stimulators
Jim Ohneck - AEMtec
Chromatic Mechanical Response in 2-D Layered Transition Metal Dichalcogenide (TMDs) based Nanocomposites
BalaJi Panchapakesan - WPI
Dragonfleye - Ultraminiature Cybernetic Insect Control Using Optogenetics
Carlos Segura - Draper
Thread Based Sensors and Interconnects for Medical Diagnostics
Meera Punjiya, Hojat Rezaei, Pooria Mostafalu and Sameer Sonkusale - Tufts

Session: Thermal Management
Chair: Dave Saums - DS&A

Automation of Die Attach of Si onto Cu using BondFlow™
Richard Koba - Materion
Market, Regulatory, Packaging, and Thermal Design Issues for Implantable Medical, Handheld, and Mobile Devices
Dave Saums - DS&A
Efforts Toward a Board Level Holistic Thermal and EMI Solution for Mobile Electronic Devices
Eugene Pruss, Jason Strader - Laird Technologies
Thermal Test Chip for Thermal Characterization and Qualification of Materials, Packages and Systems
Mohamad Abo Ras - Berliner Nanotest
Improved Heat Dissipation for High-Power Systems via Nanocopper-Based Metal SMT
Alfred Zinn - Lockheed Martin/Kuprion
Electronic Coolants for Liquid Chillers and Direct Refrigerant Chillers for Electronic Systems
Randy Owen, KO Concepts

Session: Printed Electronics
Chairs: Katherine Duncan - US Army & Dr. Craig Armiento - UMass Lowell

Printing 2D and 3D Nanostructures for Electronics and Sensors
Cihan Yilmaz - Flex Hybrid Institute
Inkjet Printable Etching and Plating Resist
Balantrapu Krishna - Dow Chemical
3D Printing of Flexible and Stretchable Interconnects
Mike O'Reily & Mike Renn - Optomec
Use of 3D Printed Antennas for RF Energy Harvesting Purposes
Charlotte Blair - ANSYS
MIT Nano Centre Introduction
Dennis Grimard - MIT Nano Centre

iMAPS New England 44th Symposium & Expo

Technical Program

All Day Poster Session

Chairs: Dr. Tom Marinis - Draper & Amaresh Mahapatra - Linden Photonics

Fabrication and Characterization of Novel Low Inductance Micro-Coaxial Cables
Daniela A. Torres, S.C Barron, A. Kopa, M.R Miller, A.P Magyar, P.H. Lewis, M.W. Meinhold, C.L. Gray - Draper & R.D White - Tufts University, Medford, MA

Optimal Design of Longitudinal-Fin Heat Sinks Accounting For Simultaneously Developing Flow and Conjugate Effects
Georgios Karamanis, Marc Hodes - Tufts

Drone Delivery of Cold Chain Medical Supplies Viability and Efficacy
Michael Beinor, Evan Bosia, Scott Cazier, Keegan Train, Jianyu Liang, Gregory Fischer - Worcester Polytech Institute

Verifying Electronic Component Cleanliness using Ion Chromatography
Scott Mazur - Benchmark Electronics

Fabrication of Conformal Electronics Packaging with Microfluidic Eutectic Metal Interconnects
Nikolas Kastor, Robert D. White - Tufts University

2017 Symposium GOLD SPONSORS

EXHIBITORS AS OF April 20, 2017

NTK
Laser Services
Air Products and Chemicals
Photofabrication Engineering
Micro Systems Technologies
Coining
MSD
AdTech Ceramics
NN
PEP
GENERAL METAL FINISHING
LFG Micro
Finetech
Geib Refining
CWI Technical Sales
KemLab/Transene
Innovative Fabrication
utz technologies
XYZTEC
MicroChem
Cirexx International
Epoxy Technology
Neu Dynamics Corp
Nordson EFD
Riv
EMSL Analytical
P/M INDUSTRIES
Materion
Heraeus Electronics
Metallix Refining
AI Technology
iMAPS New England
Remtec
Honle UV America
MMS Technical Sales
Hesse Mechatronics
Creyr Innovation
MRSI Systems
Gowanda Electronics
Centerline Technologies
Kyocera Semiconductor Components
Palomar Technologies
SETNA
Thin-Films Research
UBOTIC
Sonoscan
Advance Reproductions
Century Seals
ATV Technologie
EMA Sales & Marketing
Boston Micro-Components
Mini-Systems
TEN TECH LLC
STELLAR INDUSTRIES
Ferro Corporation
Proton Onsite
Golden Altos

www.imapsne.org