

# IMAPS New England Chapter Technical Meeting

Thursday, November 16, 2023 - An In-Person Meeting

## Location

Luna Rossa Restaurant  
1699 Shawsheen Street  
Tewksbury, MA 01876

## PRESENTATION

**"A Wire Bonding Tutorial  
The Ultrasonic Bonding Mechanism"**  
**By Lee Levine, Process Solutions Consulting**



**Presenter:** Lee Levine is Principal Consultant at Process Solutions Consulting, Inc. where he consults and trains on Wire Bonding, SEM with EDS for FA, and statistical analysis with DOE. He spent 20 years as Sr. Staff Metallurgist for K&S where he wrote approximately 70 technical papers and received 4 patents. He has a B.S Eng in Metallurgy and Materials Science from Lehigh University, Bethlehem, PA. IMAPS has awarded him the Daniel Hughes and the John Wagnon Awards for his technical contributions.

**Abstract** Wire bonding is the dominant method of semiconductor and microelectronic device interconnection worldwide. Trillions of wire bonds are produced annually in high-volumes at well controlled facilities with very low defect rates. It remains the lowest cost method of chip interconnection.

Ultrasonic energy is the principal driving force in wire bonding. It reduces the forces required, allowing deformation to occur at significantly lower stress than would otherwise be required. High-frequency ultrasonics provide higher strain rates, allowing faster, better controlled deformation that is required for precise high-yield bonding and high productivity.

Reliability and size of the intermetallic (IMC) weld formed during wire bonding is critical to the long-term reliability of the device. The initial mixture formed by co-deformation of the bonding surfaces quickly resolves into the equilibrium phases described by phase diagrams. All five of these phases can be present in a successful bond as it grows and transforms due to temperature and time. Measurement of intermetallic coverage is an important part of process qualification and should be performed periodically to ensure process stability. A discussion of IMC measurement techniques is included.

## SCHEDULE (times approximate)

5:30 PM	Registration, Socializing, Networking & Cash Bar
6:30 PM	Dinner Italian Buffet
7:30 PM	Wire Bonding Tutorial: The Ultrasonic Bonding Mechanism By Lee Levine, Process Solutions Consulting, Inc.

The Pre-Registration Fee is \$30 for IMAPS Individual Members, \$35 for Non-Members. Pre-Registration ends on November 10, after which the fee increases by \$5, including At-Door Registrations which will be allowed but limited. Also, a number of Registrations will be accepted for "Meeting Only, Without Dinner" at \$5.

Registrants will receive an E-Mail invoice that can be paid in advance or At-Door. Cancellations must be received by 3:00 p.m. Monday 11/13... or The Chapter will bill you for the registration fee. Options: To cancel a registration, contact Matt Bracy: matt@msdsales.com

## INFORMATION & REGISTRATION