ELEVATE THE EXCELLENCE OF ELECTRONICS

MEETINGS & COURSES:
February 1-6

CONFERENCE & EXHIBITION:
February 4-6

SAN DIEGO CONVENTION CENTER | CA

ADVANCE REGISTRATION 20% SAVINGS DEADLINE IS APPROACHING
REGISTER BY DECEMBER 19

ipcapexexpo.org | #ipcapexexpo
Welcome to IPC APEX EXPO 2020, a special anniversary year for IPC. 2020 marks the twentieth year of **IPC APEX EXPO**, an event that continues to be the best place to network with peers, re-connect with fellow committee members, participate in professional development courses, listen to a fascinating keynote, and experience our show floor, host to top-rated suppliers, innovators and experts in the electronics industry.

We are thrilled to celebrate our 20th anniversary with all of you. Your dedication and involvement in **IPC APEX EXPO** is directly responsible for the success of this event, and your efforts clearly illustrate how the entire industry comes together to Elevate the Excellence of Electronics. This is the place to be to create new relationships and new opportunities, and to enjoy this vibrant, ever evolving industry.

Not only are we celebrating 20 years of a successful tradeshow, but for the past 19 years, the Trade Show News Network (TSNN) has recognized **IPC APEX EXPO** as a top U.S. trade show. It's a tremendous accomplishment for IPC, and we are very proud of the recognition. For the past several years, **IPC APEX EXPO** has experienced both attendance and net-square-footage growth. Last year, **IPC APEX EXPO 2019** welcomed more than 9,000 professionals from 45 countries. We look forward to an even larger crowd this year.

We’d love to connect with you personally and on social media as well. Use the hashtag #IPCAPEXEXPO on your Twitter, Facebook or Instagram feed to share your **IPC APEX EXPO** experience, to post photos and to continue the conversation with our social community. Post your thoughts on LinkedIn and consider joining our IPC LinkedIn group.

Sincerely,

Mikel Williams
Board Chairman, IPC
President and CEO, Targus

facebook.com/IPCAssociation
linkedin.com/company/ipc-association-connecting-electronics-industries/
twitter.com/IPCassociation
ipc.org/youtube
instagram.com/ipcassociation/
<table>
<thead>
<tr>
<th>All Activities</th>
<th>Supporting Associations</th>
<th>Media Supporters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 Schedule at a Glance</td>
<td>AIM Global, Inc.</td>
<td>eBOM</td>
</tr>
<tr>
<td>What's New @ IPC APEX EXPO 2020?</td>
<td>China Printed Circuit Association (CPCA)</td>
<td>EDACafe</td>
</tr>
<tr>
<td>Exhibition</td>
<td>European Institute of Printed Circuits (EIPC)</td>
<td>EPP Europe</td>
</tr>
<tr>
<td>Keynote Session</td>
<td>Hong Kong Printed Circuit Association (HKPCA)</td>
<td>Circuits Assembly</td>
</tr>
<tr>
<td>Networking/Special Events</td>
<td>Korea Printed Circuit Association (KPCA)</td>
<td>Electronics Sourcing North America (ESNA)</td>
</tr>
<tr>
<td>Management Meetings</td>
<td>MicroElectronics Packaging and Test Engineering Council (MEPTEC)</td>
<td>Global SMT &amp; Packaging</td>
</tr>
<tr>
<td>Technical Conference</td>
<td>Mesago Messe Frankfurt Group</td>
<td>i4.0 Today</td>
</tr>
<tr>
<td></td>
<td>SAE International</td>
<td>Mexico EMS</td>
</tr>
<tr>
<td></td>
<td>Surface Mount Technology Association (SMTA)</td>
<td>PCB007</td>
</tr>
<tr>
<td></td>
<td>Taiwan Printed Circuit Association (TPCA)</td>
<td>PCB Design007</td>
</tr>
<tr>
<td></td>
<td>WEAR Conference</td>
<td>Power Electronics World</td>
</tr>
</tbody>
</table>

**POLICIES:** From the first meeting until the close of the event, any function not sanctioned as part of the “official program” is strictly prohibited. IPC does not permit solicitation by non-exhibiting companies. Any individual who is observed participating in activities to solicit or sell products to event attendees or exhibitors without having a booth at the event will be asked to leave immediately.
EXHIBITS OPEN

TUESDAY | FEBRUARY 4
10:00 am–6:00 pm

WEDNESDAY | FEBRUARY 5
9:00 am–6:00 pm

THURSDAY | FEBRUARY 6
9:00 am–2:00 pm

SATURDAY | FEBRUARY 1
8:00 am–5:00 pm
IPC Standards Development Committee Meetings

SUNDAY | FEBRUARY 2
8:00 am–5:00 pm
IPC Standards Development Committee Meetings

8:00 am–11:00 am
Professional Development Courses

12:00 pm–3:00 pm
Professional Development Courses

1:00 pm–2:30 pm
CCC Meeting
by invitation only

3:00 pm
CCC Reception
by invitation only

MONDAY | FEBRUARY 3
7:30 am–9:00 pm
EMS Management Meeting and Dinner

8:00 am–5:00 pm
IPC Standards Development Committee Meetings

9:00 am–12:00 pm
Professional Development Courses

12:00 pm–1:30 pm
Awards Luncheon

2:00 pm–5:00 pm
Professional Development Courses

5:00 pm–6:00 pm
Newcomers Networking Reception

5:30 pm–6:30 pm
International Reception

TUESDAY | FEBRUARY 4
7:00 am–8:00 am
Hall of Fame Breakfast
by invitation only

7:30 am–8:30 am
Speaker Breakfast

8:30 am–9:30 am
Keynote Session

9:45 am–10:00 am
Ribbon Cutting Ceremony

10:00 am–10:30 am
Posters Presented
by Authors*

10:00 am–5:00 pm
IPC Standards Development Committee Meetings

10:00 am–6:00 pm
Exhibits Open*

12:00 pm–1:30 pm
Luncheon | IPC Annual Meeting

1:30 pm–3:00 pm
Technical Conference Sessions

3:30 pm–5:00 pm
Technical Conference Sessions

5:00 pm–6:00 pm
Show Floor Reception*

6:00 pm–7:30 pm
Women in Electronics Reception*

WEDNESDAY | FEBRUARY 5
7:30 am–8:30 am
Speaker Breakfast

8:00 am–5:00 pm
IPC Standards Development Committee Meetings

9:00 am–6:00 pm
Exhibits Open*

10:00 am–10:30 am
Poster Presentations
by Authors*

10:30 am–12:00 pm
Technical Conference Sessions

12:00 pm–1:30 pm
Awards Luncheon

1:30 pm–3:00 pm
Technical Conference Sessions

2:30 pm–3:30 pm
Ice Cream Social on the Show Floor*

3:30 pm–5:00 pm
Technical Conference Sessions

4:30 pm–5:00 pm
Poster Presentations
by Authors*

6:00 pm
Exhibitor Networking Functions

6:00 pm–7:30 pm
Trivia Networking Night

THURSDAY | FEBRUARY 6
7:30 am–8:30 am
Speaker Breakfast

8:00 am–3:00 pm
IPC STEM Program

8:00 am–5:00 pm
IPC Standards Development Committee Meetings

8:00 am–5:00 pm
PERM Meeting No. 43

9:00 am–10:00 am
Technical Conference Sessions

9:00 am–12:00 pm
Professional Development Courses

9:00 am–2:00 pm
Newcomers Networking Reception

10:00 am–10:30 am
Poster Presentations
by Authors*

10:30 am–12:00 pm
Technical Conference Sessions

1:00 pm
Passport to Prizes Winner Drawing

FRIDAY | FEBRUARY 7
8:00 am–5:00 pm
PERM Meeting No. 43

* = Event Essentials, included with registration.
WHAT’S NEW @ IPC APEX EXPO 2020?

TECHNICAL CONFERENCE FEATURING THE FUNDAMENTALS PROGRAM

The Fundamentals Program is a new option for those attending the Technical Conference. Geared toward adding value to the attendee experience, the program provides curated content covering the many facets of the electronics industry. Attendees will gain a broader view of the industry and will learn important terminology and background as preparation for content on new studies and technologies presented at the technical conference. Sessions will include topics presented by subject matter industry experts, interactive panel sessions, and opportunities for attendees to learn the secrets of success from our valued presenters. Plan your trip to arrive early so that you can take part in this exciting new Monday program! (Included with All-Access Package registration)

Program to include:
> Intro to IPC and Standards Basics
> Safety/EHS – Environmental Standards
> Circuit Board Design and Fabrication
> Life Skills Panel
> Components and Terminology
> Soldering Process
> Test
> Surface Reliability Considerations
> Long Term Reliability
> Hot Topics Panel

NEW in 2020, IPC is offering the Single Session Pass! This is available when you register and will get you admission to a single technical conference session. It’s perfect for seeing a friend’s presentation, getting the latest information on your favorite topic, or meeting subject matter experts on a specific issue.

Member: $99 | Nonmember: $120

VISIT IPCAPEXEXPO.ORG/NEW for more details!
IPC APEX EXPO 2020 EXHIBITORS

5N Plus Micro Powders
ABBA Roller, Division of IRP Group
ABO Electronics Technology Co., Ltd.
AccuAssembly Canada
Accu-Assembly Inc.
Acculogic Inc.
Accu-Tech Laser Processing
Acroname, Inc.
Aculon Inc.
Advanced Test Equipment Rentals
Advanced West Inc.
Aegis Software
AGC-Nelco
Agfa Materials Corporation
AI Technology, Inc.
AIM Solder
AIM, Inc.
Air & Water Systems, LLC
AIRTECH International, Inc.
AIR-VAC Engineering Company
Akometrix
All Flex Flexible Circuits and Heaters
All4-PCB (North America) Inc.
Allfavor Technology Inc.
Allied High Tech Products, Inc.
Alltemated, Inc.
Altx
American Hakko Products
AMERIVACS
ANA Trading Corp., USA
ANDA Technologies USA, Inc.
Apollo Seiko
Arlon EMD
ASC International, Inc.
Ascentec Engineering
Ascentech LLC/Inspectis
ASG, Division of Jergens, Inc.
ASM
ASTER Technologies
Asys Group Americas Inc.
ATCO (Advanced Techniques)
A-tek Systems
atg - Luther & Maelzer GmbH
Atotech USA LLC
Austin American Technology Corporation
Autosplice, Inc.
Aven International, Inc.
Bare Board Group
Blackfox Training Institute, LLC
BlueRing Stencils
Bowman XRF
BPM Microsystems
Brady Corporation
BTG Labs
BTU International, Inc.
Burkle North America, Inc.
C.A. Picard
cab Technology, Inc.
CalcuQuote
CCL Design Electronics
Cencorp Americas LLC
CeTaQ Americas
Checksum, LLC
Chemcut Corporation
Chemtronics
China Printed Circuits Association (CPCA)
CHT USA
Cimetrix, Inc.
CIMS USA, Inc.
Circuit Foil
Circuits Assembly
Clariant Cargo & Device Protection
Cluso Vision Systems
Comgiscan
Comco Inc.
Computrol Inc.
Condair Inc.
Conductive Containers, Inc.
Conecuss LC
Control Micro Systems
Convention Data Services
Co-tech Development
Count On Tools, Inc.
Creative Electron, Inc.
Crystal Mark, Inc.
CTI Systems
Custer Consulting Group
CYBEROPTICS Corporation
Daniels Manufacturing Corporation
Data I/O Corporation
DCT USA, LLC
DDM Novastar, Inc.
De Nora
Dediprog Technology
Digital test Inc.
DIS Inc.
Dongguan U-Bond Material Technology Co., Ltd.
Downstream Technologies
DP Patterning
DuPont Specialty Products
Eastman Kodak Company
eBOM.com
ECD
EDACAFE.com
EIPC, European Institute for the PCB Community
ELANTAS PDG, Inc.
Electra Polymers Ltd.
Electrolube/HK Wentworth America, Inc.
Electronics Sourcing
North America
Engineered Materials Systems, Inc.
Entrada Group
EPP/EPP Europe
Equipment Technologies, Inc.
Eqip-Test Kft.
ESSEMTEC USA
ETernal Technology
Europlacer Americas
Exatron
Excellon Automation
Excelta Corporation
Fancort Industries
FASTtechnologies
FCT Solder
Feeder Finger by ATS
Feinmetall USA LLC
Finetech
Fischer Technology Inc.
FKN Systek
Flex007
Flexible Circuit Technologies
Fluke Process Instruments
Fralock
Fuji America
Glennbrook Technologies Inc.
Global SMT & Packaging
Gorilla Circuits
GPD Global Inc.
GreenSource Fabrication LLC
GS SMT Ltd.
GSC (Garland Service Company)
Guangdong Boyu Electronic Co., Ltd.
Han’s Laser Corp
Hanwha Techwin Automation Americas, Inc.
Heidenhain Corporation
Heller Industries
Henkel Corporation
HEPCO Inc.
Heraeus Electronics
Hirox-USA, Inc.
Hitachi High-Tech Analytical Science
Hong Kong Printed Circuit Association (HKPCA)
Humiseal, Chase
Electronic Coatings
I-007eBooks
IBE SMT Equipment
IBL Technologies LLC
ICAPE Group
I-Connect007
IDENTCO
ILA Solutions
Indium Corporation
INGUN USA, Inc.
Inmar Solutions LLC
Inno Circuits Limited
InnoLas Solutions GmbH
Inovaxe Corporation
Insulectro
InsuFab
Integrated Process Systems, Inc.
Intraratio
Inventec Performance Chemicals
IPC
IPC Education Foundation
IPC Validation Services
IPTE, LLC
Isola
I-Source Technical Services Inc.
iTAC Software AG
ITC Intercircuit NA
ITEQ Corporation
ITW EAE, a division of Illinois Tool Works, Inc.
JBC Tools USA Inc.
JETPCB-USA
JLCPCB
JNJ Industries, Inc.
JTAG Technologies
Kulicke & Soffa Industries, Inc.
Koh Young Technology Inc.
Koki Solder America Inc.
Kolver USA
Korea Printed Circuits Association (KPCA)
Kulicke & Soffa Industries, Inc.
Kurtz Ersa Inc.
KYZEN Corporation
Laserssels
LiloTree
Lin Horn Technology Co., Ltd.
LiSat
Lista/Vidmar
LPKF Laser & Electronics
M&O Shanghai Electronics Co., Ltd.
MB Plating Racks
MacDermid Alpha
Electronics Solutions
Manncorp, Inc.
marco Systemanalyse und Entwicklung GmbH
Matrix Electronics Limited
Mek Americas LLC
MEPTEC
Metcal
Mexico EMS
Meyer Burger Technology AG
MicroCare Corporation
MicroScreen LLC
Microtek Laboratories China
Mid America Taping and Reeling, Inc.
Ming Chiang Precision Co., Ltd.
Miraco Inc.
MIRTEC Corp.
MP elektronik
technologies s.r.o.
MTA Automation, Inc.
Multi/Cable Corporation
MYCRONIC INC.
National Technical Systems
Nihon Superior Co., Ltd.
Nikon Metrology
Nix of America
Nordson ASYMTEK
Nordson DAGE
Nordson MATRIX
Nordson SELECT
Nordson SONOSCAN
Nordson Test and Inspection
Nordson YESTECH
Notion Systems
NovaCentrix
Novagard
NRD, LLC - Staticmaster
nScrypt, Inc.
NSI Laser
NSWC Crane
Nutek Americas Inc.
O.C. White Co.
Oak Mitsui Inc.
Oak-Mitsui Technologies LLC
Oasis Scientific Inc.
Ohmega Technologies Inc.
Omron Inspection System
On Site Gas Systems Inc.
OptimalPlus
Optiris Infrared Sensing, LLC
Orobotech Inc.
P. Kay Metal, Inc.
PACE Worldwide
PacTech USA Inc.
Panasonic
Parker Hannifin
PARMI USA INC.
PCB007
PCBDesign007
Peak Industrial
Pemtron Technology
Pentagon EMS
Photo Etch Technology
Pillarhouse USA Inc.
Plasma Etch, Inc.
Plasma Ruggedized Solutions
Pluritec North America, Ltd.
Polar Instruments
Powatec GmbH
Power Electronics World
PPG Aerospace
Practical Components, Inc.
Precise Automation, Inc.
Printed Circuit Design & Fab
PRINTPROCESS AG
ProEx
PT. Solder Indonesia
Purex Inc.
PVA
PVA TePla America Inc.
Q Corporation/Division of Nance Mfg.
QA Technology Company, Inc.
QRP Gloves, Inc.
Qualitek International, Inc.
Quality Circuits Inc.
Quantum Storage Systems
Quasys AG
Quik-Tool, LLC
QxQ Inc.
RBP Chemical Technology
Real Time with...IPC
Rehm Thermal Systems LLC
Resources Unlimited Co USA
Rogers Corporation
RPS Automation/Hentec Industries Inc.
SAE International
Saki America, Inc.
Sanmina
Saturn Electronics and Glory Faith
ScanCAD International, Inc.
Scheugenpflug
Schilling Inc.
Schippers & Crew, Inc.
Schleuniger, Inc.
SCHUNK Electronic Solutions
Scienscope International Corp.
Scoop
SEC
SEHO North America, Inc.
Seica Inc.
Seika Machinery, Inc.
Senju Comtek Corp. (SMIC)
Sheldahl Flexible Technologies, Inc.
Shenzhen Jaguar Automation Equipment Co., Ltd.
Shenzhen JDB Technology Co., Ltd.
Shenzhen Jufeng Solder Co., Ltd.
Shenzhen Sprint PCB Co, Ltd.
Shenzhen X-Mulong Circuit Co., Ltd.
Exhibitor List as of September 10, 2019

Shin-Etsu Silicones
Siemens PLM Software
Siemens Electronics
Signal Integrity Journal
Silicon Semiconductor
Simplimatic Automation
Sims Recycling Solutions
Smart Sonic
Smart Splice LLC
SMarTsol Technologies
SMT North America Inc.
SMT Today Ltd.
SMT Worldwide
SMT007
SMTXTRA USA
Solderstar LLC
Sono-Tek
South-Tek Systems
SPEA America
Specialised Machine Software Ltd.
Specialty Coating Systems
Speedprint Technology
Stannol LLC
StaticStop, a division of SelectTech, Inc.
Stellar Technical Products
STI Electronics
Subinitial LLC
Sunshine Global Circuits
Super PCB
SuperDry
TAGARNO
Taiwan Printed Circuit Association (TPCA)
Taiyo America Inc.
Tamura H.A. Machinery, Inc.
TCT Circuit Supply
TDK-Lambda Americas
TeDeum
TE Connectivity
Techcon
Technica - PCB
Technica - SMT
Technical Devices Company
Techspray
Teradyne, Inc.
Test Research USA Inc.
TEXMAC Inc.
The RAMPF Group, Inc.
Thermaltronics USA Inc.
Ticer Technologies
Tintronics Industries
TMP, A Division of French Technologies
Tongtai Machine & Tool Co., Ltd.
Top Talent Search Experts, LLC
Topline
Trans-Tec America LLC
Tronex Technology, Inc.
U.S. Tech
Ucamco USA
UL LLC
United Resin Corporation
Unitron Ltd.
Universal Instruments Corp
Uniweld Electronic Ltd.
USA MicroCraft
Uyemura International Corporation
Vayo (Shanghai) Technology Co., Ltd.
Ventec International Group
VERMES Microdispensing
Via Mechanics (USA), Inc.
Virtual Industries, Inc.
Viscom, Inc.
ViscoTec America Inc.
VisiConsult X-ray Systems & Solutions GmbH
Vision Engineering Inc.
ViTrox Technologies
Sdn. Bhd.
V.J. Electronix, Inc.
VKS - Visual Knowledge Share
VonRoll
VRS Marking
V-TEK, Inc. (V-TEK International)
Weiss Technik North America, Inc.
Weller Tools
Wiring Harness Manufacturers Association (WHMA)
Wiring Harness News
WNIE Online (What’s New in Electronics)
XACTPCB Ltd.
Xiamen Bolion Tech Co., Ltd.
XJTAG
X-Treme Series Auto Dry Cabinets
Yamaha Motor Corporation
YMT Co., Ltd.
YXLON
ZEISS Industrial Quality Solutions
ZESTRON Corporation
Zmetrix, Inc.
Zymet, Inc.

PASSPORT TO PRIZES

Drawing is Thursday at 12:30 pm | IPC Bookstore

Travel around the show floor collecting stickers from participating exhibitors and enter for a chance to win an exciting prize!

Apple TV | Alexa | AWAY carry-on | Sonos speakers | iRobot
We are pleased to announce IPC APEX EXPO 2020 opening keynote speaker will be aerospace legend, BURT RUTAN!

Aerospace entrepreneur and Virgin Galactic spacecraft designer Burt Rutan was described by Newsweek as “the man responsible for more innovations in modern aviation than any living engineer.” A bold visionary with a passion for the advancement of technology, he founded the aerospace research firm Scaled Composites and was named one of “the world’s 100 most influential people” by TIME.

Rutan designed the legendary Voyager, the first aircraft to circle the world nonstop without refueling. He also created SpaceShipOne, the world’s first privately funded spacecraft, which won the $10 million Ansari X Prize, offered in an effort to spur the development of affordable space tourism.

In a joint venture with Virgin’s Richard Branson, Rutan formed “The Spaceship Company” to manufacture and market spaceships for the new commercial space-flight industry.

Rutan is currently working on two projects: the Stratolaunch — part airplane, part spaceship — with Microsoft co-founder Paul Allen, and the SkiGull, an amphibious aircraft that runs on the same gas we use for cars and boats.

In his keynote presentation at IPC APEX EXPO 2020, Rutan will speak about the new era in commercial space travel and the new race for space.
Monday | February 3
12:00 pm–1:30 pm Awards Luncheon
5:00 pm–6:00 pm Newcomers Networking Reception
   Join us for tips on how to make the most of your experience, meet other first timers, enjoy refreshments and just chill!
5:30 pm–6:30 pm International Reception

Tuesday | February 4
8:30 am–9:30 am Keynote Session — Burt Rutan
9:45 am–10:00 am Ribbon Cutting Ceremony
12:00 pm–1:30 pm Luncheon and IPC Annual Meeting
5:00 pm–6:00 pm Show Floor Reception
6:00 pm–7:30 pm Women in Electronics Reception
   This popular event provides a unique and relaxed opportunity to connect with female industry peers, build your network, share experiences and have a few laughs. We’re extra excited this year to welcome guest speaker jet dragster driver for Larsen Motorsports and Florida Institute of Technology, Elaine Larsen!

Wednesday | February 5
12:00 pm–1:30 pm Awards Luncheon
2:30 pm–3:30 pm Ice Cream Social on the Show Floor
5:15 pm–7:00 pm MIT Meet and Greet
6:00 pm–7:30 pm Trivia Networking Night
   Do you have a vast reservoir of “useless” trivia to draw upon? Or, do you just want to have a fun-filled evening? Have we got the event for you! Join us for IPC APEX EXPO 2020 Trivia Networking Night! Trivia topics include: movies, music, news and everyone’s favorite topic...SCIENCE! Come, challenge last year’s champions and earn your bragging rights!
6:00 pm Exhibitor Networking Functions

Elaine Larsen
Elaine Larsen is a 2X World Champion jet dragster driver, mentoring the next generation of High-Performance Vehicles Specialists. Giving women a chance to be behind the wheel in this male dominated industry is her focus for 2020 and beyond.
**IPC EMS MANAGEMENT MEETING**

**TAKE YOUR EMS COMPANY TO THE NEXT LEVEL OF EXCELLENCE**

Monday | February 3

Gain international perspective and hear firsthand how your peers are achieving goals and strengthening their organizations to ensure growth. This 100% peer driven program developed by the EMS Steering Committee members is centered around key themes addressing the most pressing challenges in manufacturing. Join us for candid peer-to-peer discussions on these topics and more to discover new opportunities to optimize your efficiency, effectiveness and profitability.

- Electronics Component Lifecycles & Obsolescence
- Lean Manufacturing
- Intelligent Manufacturing Application for High Mix Low Volume
- Tariff Update
- Military Spending
- NIST Cybersecurity Framework Adoption Requirements
- Predictive Maintenance
- IPC CFX & the Next Phase of Industry 4.0
- Top Challenges Roundtable
- Motivating and Engaging Employees
- Market Update - The Impact of the Global Market on North America

Hear from companies like: Tempo Automation, Siemens, Aegis Software, John Deere, McAlister, MRA

**Attendance Requirement:** must be a senior level executive of an EMS company to attend. Includes Monday meeting, Monday luncheon and EMS Dinner (for IPC member companies only)

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**STANDARDS DEVELOPMENT EXECUTIVE MEETINGS**

**CCC COMMITTEE CHAIRMAN COUNCIL** (BY INVITATION)

Sunday | February 2 | Meeting 1:00 pm–2:30 pm | Reception 3:00 pm

This meeting of all task group, subcommittee and committee chairs is for general committee updates and discussion of IPC technical programs.

**TAEC: TECHNICAL ACTIVITIES EXECUTIVE COMMITTEE** (BY INVITATION)

Monday | February 3 | 5:00 pm–6:30 pm

This committee comprises leaders of all IPC general Committees and oversees IPC’s standardization efforts.
IPC APEX EXPO’s Technical Conference has the highest quality, industry-reviewed content in the electronics manufacturing industry. This year’s program will include all presentations you’ve come to expect on the latest studies, newest technologies, and advanced materials and processes. Additionally, you’ll find the interACTION sessions which will cover hot industry topics in unconventional formats that encourage attendee participation. Register for the full technical conference, a day pass, or NEW this year, a single session pass if a particular topic strikes your fancy.

FOCUSED SESSION TOPICS:

- Advances in Dispensing
- Automated End-of-line Testing
- Bottom Termination Component (BTC) Challenges
- BTC Design for Cleanability
- Enhanced Final Surface Finishes
- E-textiles
- Flexible Circuits
- Flux Residue Considerations

- Industry 4.0/ Connected Factory Exchange (CFX)
- Materials for Automotive Applications
- Novel Soldering Processes
- PCB Fabrication Process Improvements
- Reliability Testing
- Rework Process Improvements
- Semi-Additive Processes (SAP)
- Weak Microvia Interface Mitigation

For up-to-date program information, consult the app or ipcapexexpo.org.

PRESENTED BY

- A.T.E. Solutions Inc
- Aegis Industrial Software
- Air-Vac Engineering Company, Inc.
- ASM NEXX
- ASU
- Atotech GmbH
- Auburn University
- Averatek
- BYU - Idaho
- Calumet Electronics
- Cimetrix
- Collins Aerospace
- Curtiss Wright
- Draper
- Dymax
- EFT Plating Services
- Engineered Materials Systems, Inc.
- FCT Assembly, Inc.
- Fischer Technology, Inc.
- Flex
- Gold Circuit Electronics Ltd.
- Heller Industries Inc.
- Henkel Corporation
- i3 Electronics
- IBM Corporation
- imec-CMST
- Indium Corporation
- INGUN USA, Inc.
- Intel Corporation
- Intrafracion
- ISU Petasys
- ITWEAE
- JPL-NASA
- Keysight Technologies
- Koki Solder America
- lilioTree
- Lockheed Martin Missile & Fire Control
- MacDermid Alpha Assembly Solutions
- Mentor A Siemens Business
- Microtek Laboratories China
- Mycronic
- Nexio PC
- NovaCentrix
- nS crypt, Inc
- ON Semiconductor
- Orbotech
- Osaka University
- PDF Solutions
- Raytheon Company
- Robert Bosch GmbH
- Rogers Corporation
- Royal Circuit Solutions
- Shenzhen SISOLVER Technologies Ltd
- Siemens PLM
- SMART Group
- TactoTek
- UMD CALCE
- Uyemura International
- ZESTRON
- ZSK Stickmaschinen GmbH
- And more....
INTERFACE WITH INDUSTRY ORGANIZATIONS @ IPC APEX EXPO 2020

Monday | February 3
**AIAG:** The Automotive Industry Action Group is presenting a professional development course with Steve Mitchell on Sunday! Join us for this two-part workshop “Leadership: Effective Problem-Solving”

Tuesday | February 4
**WBENC:** New for IPC APEX EXPO Technical Conference, Mia Delano of The Women’s Business Enterprise National Council will be presenting a session @ the intersection titled: “Why Your Supply Chain Needs Diversity”

Wednesday | February 5
**iNEMI:** Sessions @ the Intersection of the International Electronics Manufacturing Initiative and IPC APEX EXPO
Technology Forum interACTION Sessions on PCB Challenges and Needs for Emerging Applications

> **Session 1:** Needs Driven by Application for Different Market Segments
> **Session 2:** Technology Developments Evolving Material and Fabricator Expectations

MEMBERS OF THE TECHNICAL PROGRAM COMMITTEE:
Beverley Christian, Ph.D. | High Density Packaging User Group (HDPUG)
Bhanu Sood, Ph.D. | NASA Goddard Space Flight Center
Brian Toleno, Ph.D. | Microsoft Corporation
David H. Hoover | TTM Technologies
Jason Keeping | Celestica Inc.
Julie Silk | Keysight Technologies
Karl A. Sauter | Oracle America, Inc.
Weifeng Liu, Ph.D. | Flex
Martin Goetz, Ph.D. | Northrop Grumman Corporation
Miloš Lazić | Indium Corporation
Russell H. Nowland | Nokia Corporation
Sandra Nelle | Atotech Deutschland GmbH
Stanton Rak, Ph.D. | Continental Automotive Systems
Udo Welzel, Ph.D. | Robert Bosch GmbH

NEW in 2020, IPC is offering the Single Session Pass! This is available when you register and will get you admission to a single technical conference session. It’s perfect for seeing a friend’s presentation, getting the latest information on your favorite topic, or meeting subject matter experts on a specific issue.

**Member:** $99 | **Nonmember:** $120

VISIT IPCAPEXEXPO.ORG/NEW for more details!
ASSEMBLY

PD10 | NON-CONTACT ADDITIVE TECHNOLOGIES IN CONTEMPORARY ELECTRONICS PRODUCTION AND RELATED FIELDS
Sunday | February 2 | 12:00 pm–3:00 pm
Instructor: Gustaf Mårtensson, Mycronic
This course will begin with a set of challenging applications to highlight specific aspects of the demands of the SMT industry with respect to application specifications. An array of industrially interesting materials will be described together with specific applications for these materials, including dispensing, jet printing and inkjet. Hands-on exercises will be included in the course to encourage deeper understanding of certain areas.

PD13 | RELIABILITY OF ELECTRONICS – THE ROLE OF INTERMETALLIC COMPOUNDS
Monday | February 3 | 9:00 am–12:00 pm
Instructor: Jennie Hwang, H-Technologies Group
Intermetallic compounds play an increasingly critical role to the performance and reliability of solder interconnections in the chip level, package level and board level of lead-free electronics. This course covers the relevant and important aspects of intermetallic compounds ranging from scientific fundamentals to practical application scenarios. Attendees are welcome to bring their own selected systems for deliberation.

PD17 | TROUBLESHOOTING YIELD PROBLEMS IN A LEAD FREE WORLD
Monday | February 3 | 9:00 am–12:00 pm
Instructor: Ray Prasad, Ray Prasad Consultancy Group
This course focuses on three major areas of defects in SMT: design, assembly and the quality of incoming materials. The objective of this course is to provide an understanding of root causes of major defects in SMT and through hole tin-lead and Pb-free assemblies and ways to prevent them. You are also encouraged to bring your pesky defects for class discussion and root cause analysis.

PD26 | TROUBLESHOOTING AND PROCESS OPTIMIZATION - LESSONS LEARNED FROM A DECADE OF BOARD TALK
Thursday | February 6 | 9:00 am–12:00 pm
Instructors: Phil Zarrow & Jim Hall, ITM Consulting
In 25 years of consulting, Phil and Jim have seen it all! You may be familiar with their popular podcast (started before podcasts existed), Board Talk, which addresses industry issues with deep understanding and a sense of humor. Join the “Assembly Brothers” for a journey through troubleshooting the most common defects in SMT with an emphasis on identifying the fundamental root causes, and an entertaining overview of best practices.

A full description with more details can be found on the app/website
**PD04 | INTRODUCTION TO JTAG – CONCEPTS, TOOLS & DESIGN FOR TEST (DFT)**

Sunday | February 2 | 8:00 am–11:00 am  
**Instructor:** David Ruff, XJTAG

Learn the basics of boundary scan and how you can use it across the product lifecycle to improve designs, reduce re-spins and enhance test coverage, fault diagnosis and production yields on complex BGA-populated circuits.

**PD06 & PD12 | DESIGN FOR EXCELLENCE: DFM (DESIGN FOR MANUFACTURING), DFR (DESIGN FOR RELIABILITY), DFA (DESIGN FOR ASSEMBLY) AND MORE - TWO-PART**

Sunday | February 2 | 8:00 am–11:00 am and 12:00 pm–3 pm  
**Instructor:** Dale Lee, Plexus

In Part 1, this course will review elements and opportunities of conducting a design for excellence program including; defining how success is measured, supplier documentation accuracy, globalization issues, understanding of PCB fabrication technologies and process, and limitations of industry standards (fabrication, design, assembly). Part 2 will cover the impacts of z-axis variations and introduce the concept of design-for-matched-process (DFMP). We’ll also provide examples of several opportunities within z-axis control and DFMP for yield improvement through manufacturing tooling design, SMT and PTH assembly process matching, environmental controls and test fixture development. For maximum benefit, register for both parts.

**PD15 | PCB DESIGNERS GUIDE TO FLIP-CHIP, WLP, FOWLP, 2D, 2.5D AND 3D SEMICONDUCTOR PACKAGE TECHNOLOGIES**

Monday | February 3 | 9:00 am–12:00 pm  
**Instructor:** Vern Solberg, Solberg Technical Consulting

This course has been developed to better enable the product designer and manufacturing specialist to evaluate a broad number of semiconductor packaging methodologies. The examples shown will furnish both physical and monetary benefits gained using multiple die packaging as well adverse concerns related to supply-chain obstacles and infrastructure limitations.

**PD23 | MICRO PACKAGING ON ORGANIC MATERIALS**

Thursday | February 6 | 9:00 am–12:00 pm  
**Instructor:** David Carmody, San Diego PCB Design

This advanced course will focus on a detailed review of a design that was done by San Diego PCB. It was an attempt to package a 0.15mm BGA style flip chip and convert the connections to a standard 0.8mm BGA package to be used on a PCB. Details include how it was constructed with HDI, Ormet vias, and the materials of the day. Some of those items have been updated significantly so we will cover current techniques/materials. We will also cover what happens to signal integrity and fabrication cost drivers dealing with features of such minute scale.

*A full description with more details can be found on the app/website*
PROFESSIONAL DEVELOPMENT COURSES

**PD28 | PART PLACEMENT CHOICES AND CONSEQUENCES**
Thursday | February 6 | 9:00 am–12:00 pm  
**Instructor:** Susy Webb, *Design Science*

If a new board works electrically but won’t interface properly with the rest of its system, it may require costly and time-consuming redesign and retesting. Designers must understand the board, electrical and system needs, as well as typical placement and routing guidelines and the consequences of not adhering to them.

**PD02 | PCB LEADERSHIP LESSONS FROM HISTORY’S MOST RUTHLESS LEADERS**
Sunday | February 2 | 8:00 am–11:00 am  
**Instructor:** Steve Williams, *TRA Consulting*

Thousands of books have been written about the great leaders throughout history that have served as role models for generations of business executives. But what about the lessons that can be learned from the dark side, the names you won’t typically find in the business section of your local bookstore; history’s rogues, outlaws and femme fatales? The cast of characters chosen for this course may be some of history’s most ruthless, but they are also some of the most successful leaders in history, and much can be learned from them.

**PD14 | EFFECTIVE PROBLEM-SOLVING WORKSHOP – & PD19**
**TWO-PART**
Monday | February 3 | 9:00 am–12:00 pm and 2:00 pm–5:00 pm  
**Instructor:** Steve Mitchell, *AIAG*

This course reflects OEM and supply chain best practices surrounding problem solving methodology and concepts used today. Attendees will learn how to use and apply steps and tools in the AIAG Effective Problem-Solving Guide by completing case study exercises and will gain the necessary knowledge to drive positive change in their organizations’ existing problem-solving cultures and competencies. For maximum benefit, register for both parts.

**PD24 | FOSTERING TEAM EFFECTIVENESS IS A NEW COMPETITIVE ADVANTAGE**
Thursday | February 6 | 9:00 am–12:00 pm  
**Instructor:** Melanie Proshchenko, *Honeycomb Team Solutions*

Research shows that the health of the connections between people we work with can have a profound impact on the accountability, productivity, and collective outcomes within our teams. Join your colleagues in exploring how to be strategic about our most difficult people problems and apply practical tools to building purposeful connections and common ground without the fluffy team building.

A full description with more details can be found on the app/website
PCB FABRICATION

PD03 | AN ENHANCED COPPER FOIL DESIGN FOR HIGH-SPEED APPLICATIONS IN 2020 AND BEYOND
Sunday | February 2 | 8:00 am–11:00 am
Instructor: Frank Lee, Co-tech Development
To meet the requirements of next generation technology in high-speed and high-frequency applications using low loss and ultra-low loss material and be cost effective, the structure of copper foil and surface treatment have become more and more important to affect signal integrity. However, the role of copper foil is the key factor to improve the performance of high-speed/high-frequency products.

PD20 | WEEDING OUT PCB FABRICATION DEFECTS BEFORE ASSEMBLY
Monday | February 3 | 2:00 pm–5:00 pm
Instructor: Bihari Patel, Bihari Patel SMT Connection Inc.
With global sourcing of PCBs as a common reality, it is critical that quality PCBs enter the assembly process to achieve high first pass yields. This course will highlight potential deficiencies in PCB fabrication and the strengths exhibited by following best practices to differentiate between fabricators. This course will also cover key testing and results for Pb-free assembly processes. Attendees are encouraged to bring in their samples and issues for hands-on discussion.

PD21 | PCB FABRICATION BASICS: PROCESS AND SPECIFICATION
Monday | February 3 | 2:00 pm–5:00 pm
Instructor: Jim Vanden Hogen, San Diego PCB
This course will review the entire multi-layer PCB fabrication process, explaining how PCB design plays into the numerous fabrication steps and how the finished product plays into the assembly arena. Physical samples taken from many of the PCB fabrication process steps will be available for inspection and scrutiny. This course will cover fabrication drawings and the many important pieces of information they should contain.

PD27 | DRY FILM RESIST RELATED IMAGING TOPICS
Thursday | February 6 | 9:00 am–12:00 pm
Instructor: Sean Hill, Eternal Technology
This course is intended as an introduction to imaging for new process engineers, or as a refresher for more experienced engineers or production managers. Course topics include the establishment of a DFR imaging process on a given equipment set, benchmarking yields, use of control techniques to maintain process performance, tips to enhance process establishment, maintain control and to avoid problems on a day-to-day basis at each point in the process.

A full description with more details can be found on the app/website.
QUALITY AND RELIABILITY

PD05 | OPTIONS TO TACKLE ELECTRONICS ASSEMBLY CLEANING
Sunday | February 2 | 8:00 am–11:00 am
Instructor: Barbara Kanegsberg, BFK Solutions LLC
This course addresses specific cleaning problems facing designers and assemblers of high value electronic assemblies. Attendees will gain the skills to provide cost-effective, reliable assemblies that meet customer requirements. Challenges include assemblies with small, tightly packed components, long required product lifetimes, zero-fail criteria, as well as technical and regulatory restrictions on available cleaning chemistries and methods.

PD09 | SEMICONDUCTOR RELIABILITY VS EOS
Sunday | February 2 | 12:00 pm–3:00 pm
Instructor: Stevan Hunter, ON Semiconductor and ESDA
This course highlights semiconductor reliability as it is designed/built in and shows how electrical overstress (EOS) jeopardizes reliability through electrically induced physical damage (EIPD). Recommended operating conditions and absolute maximum ratings (AMR), including electrostatic discharge (ESD) withstand voltages, are published to instruct customers for operation with full reliability. When semiconductor products are returned and EIPD found, customers must work together with the manufacturer to seek root cause, because there is no way to determine cause from the damaged die alone.

PD11 | ECM FOR THE REST OF US: HOW ECM AFFECTS ALL ELECTRONIC ASSEMBLIES AND BEST-PRACTICE TECHNIQUES TO MITIGATE ECM-RELATED FAILURES WHILE COMPLYING WITH THE NEW IPC CLEANLINESS TESTING REQUIREMENTS
Sunday | February 2 | 12:00 pm–3:00 pm
Instructor: Mike Konrad, Aqueous Technologies
Electro-chemical migration (ECM) was historically only an issue for very high reliability electronic assemblies placed into harsh environments. Modern circuit assemblies consist of smaller, more densely placed components. IOT is more frequently placing circuit assemblies in unfamiliar and harsh environments while automotive electronics stretch the critical importance of reliability. Best practice methods for the evaluation of potential ECM failures and ECM mitigation techniques will be presented.

PD16 | PROCESS CONTROL FOR PCB SURFACE RELIABILITY: INTRODUCTION FOR A NOVEL TEST METHOD
Monday | February 3 | 9:00 am–12:00 pm
Instructor: Elizabeth Kidd, BTG Labs
This course will address best practices for process control to assure the surface reliability of PCB assemblies. The latest amendment to J-standard-001 updates how “cleanliness” of assemblies should be verified to avoid common PCB surface reliability foes including dendritic growth, current leakage and conformal coating failures. We will cover how to implement a comprehensive process control program and introduce test methods to achieve robust results for high-reliability requirements.

A full description with more details can be found on the app/website
PD18 | PCB QUALITY METRICS THAT DRIVE RELIABILITY  
Monday | February 3 | 2:00 pm–5:00 pm  
Instructor: Bhanu Sood, Ph. D, NASA Goddard Space Flight Center  
The quality of PCBs continues to play a crucial role in the implementation of functions and the overall reliability of electronic products. This course will discuss a wide range of failure mechanisms that influence the reliability of PCBs under varied stress conditions. These mechanisms can be related to how PCB materials are selected, designed, manufactured, inspected, tested and used in their final use conditions.

PD22 | CHALLENGES OF IMPLEMENTING AND IMPROVING A BATCH WASH SYSTEM  
Monday | February 3 | 2:00 pm–5:00 pm  
Instructor: Bill Capen, Honeywell  
There are many considerations to implement a batch cleaning process safely, correctly, cost effectively, and with the least amount of down time to the manufacturer of reliable electronic assemblies. This course provides an overview of the details and actions that must be completed to correctly implement the removal of “no-clean” flux residues using a batch style chemistry wash system.

PD25 | GENERATING OBJECTIVE EVIDENCE FOR J-STD-001 REV G AM 1  
Thursday | February 6 | 9:00 am–12:00 pm  
Instructor: Doug Pauls, Collins Aerospace  
Resistivity of Solvent Extract (ROSE) testing has been the industry norm for determining acceptably clean electronic assemblies. With the release of IPC-J-STD-001 Revision G, Amendment 1, this practice is considered obsolete and should only be used for process monitoring. How then does one determine if manufactured product has acceptable residue levels if ROSE is not used?

SUPPLY CHAIN

PD01 | INTERNATIONAL CONTRACTING FOR EMS SUPPLY CHAIN AND CUSTOMER CONTRACTS  
Sunday | February 2 | 8:00 am–11:00 am  
Instructor: Jeffrey Roth, F&B Law Firm, P.C.  
Are you up to date on best practices in international contracting when considering both EMS supply chain and EMS customer contracts for the purchase and sale of goods? This course will cover rules associated with common law and civil law contracting jurisdictions, related contract styles and authority, cultural issues, and handling local legal counsel.

PD08 | SUPPLY CHAIN MANAGEMENT IN THE 21ST CENTURY  
Sunday | February 2 | 12:00 pm–3:00 pm  
Instructor: Steve Williams, TRA Consulting  
The shift away from vertical integration has pushed the topic of supply chain management to the forefront of strategic planning for many manufacturers. Having a supply chain that provides a competitive advantage will be the differentiator in today’s business environment. 

A full description with more details can be found on the app/website.
STANDARDS DEVELOPMENT COMMITTEE MEETINGS

IPC standards are accepted worldwide for nearly every stage of the electronic product development cycle. By attending Standards Development Committee Meetings, you can actively participate in the development, review and update of these industry-critical standards and guidelines. These meetings are open to all attendees, unless noted otherwise.

ELECTRONIC PRODUCT DATA DESCRIPTION

2-15F OBSOLETE AND DISCONTINUED PRODUCT TASK GROUP
Tuesday | February 4

2-16 DIGITAL PRODUCT MODEL EXCHANGE (DPMX) SUBCOMMITTEE
Monday | February 3

2-17 CONNECTED FACTORY INITIATIVE SUBCOMMITTEE
Monday | February 3

2-19A CRITICAL COMPONENTS TRACEABILITY TASK GROUP
Monday | February 3

2-19B TRUSTED SUPPLIER TASK GROUP
Monday | February 3

E-31B MATERIALS DECLARATION TASK GROUP
Monday | February 3

E-31H CONFLICT MINERALS DATA EXCHANGE TASK GROUP
Tuesday | February 4

E-31K MATERIAL DECLARATION DATA EXCHANGE FOR AEROSPACE AND DEFENSE TASK GROUP
Thursday | February 6

7-31F IPC/WHMA-620 TASK GROUP
Wednesday | February 5

7-31FS IPC/WHMA-A-620 SPACE ELECTRONIC ASSEMBLIES ADDENDUM TASK GROUP
Monday | February 3

7-31H /7-31K JOINT MEETING – IPCCHDBK-620 HANDBOOK AND WIRE HARNESS DESIGN TASK GROUPS
Wednesday | February 5

7-31J ELECTRONIC BOX ASSEMBLIES TASK GROUP
Thursday | February 6

7-31M FIBER OPTIC CABLE ACCEPTABILITY TASK GROUP
Monday | February 3

7-34 THERMAL PROFILING GUIDE TASK GROUP
Tuesday | February 4

7-35 ASSEMBLY AND JOINING HANDBOOK SUBCOMMITTEE
Wednesday | February 5

E-TEXTILES

D-70 E-TEXTILES COMMITTEE
Tuesday | February 4

ASSEMBLY AND JOINING

5-21E SOLDER STENCIL TASK GROUP
Wednesday | February 5

5-21F BALL GRID ARRAY TASK GROUP
Wednesday | February 5

5-21G FLIP CHIP MOUNTING TASK GROUP
Wednesday | February 5

5-21H BOTTOM TERMINATION COMPONENTS (BTC) TASK GROUP
Tuesday | February 4
## ASSEMBLY AND JOINING CONT’D

### 5-21K IPC-SM-817 SMT ADHESIVE TASK GROUP
- Tuesday | February 4

### 5-21M COLD JOINING/PRESS-FIT TASK GROUP
- Wednesday | February 5
- Thursday | February 6

### 5-22A/7-31B SYNERGY MEETING – J-STD-001 & IPC-A-610 TASK GROUPS
- Saturday | February 1

### 5-22A J-STD-001 SPACE ELECTRONIC ASSEMBLIES TASK GROUP
- Sunday | February 2
- Monday | February 3

### 5-22AS J-STD-001 TASK GROUP
- Tuesday | February 4

### 5-22F J-STD-001 HANDBOOK TASK GROUP
- Tuesday | February 4

### 5-22H REFLOW OVEN PROCESS CONTROL SUBCOMMITTEE AND THERMAL PROFILING GUIDE TASK GROUP – JOINT MEETING
- Tuesday | February 4

### 5-23A PCB SOLDERABILITY SPECIFICATIONS TASK GROUP
- Wednesday | February 5

### 5-23B COMPONENT AND WIRE SOLDERABILITY TASK GROUP
- Wednesday | February 5

### 5-24A FLUX SPECIFICATION TASK GROUP
- Tuesday | February 4

### 5-24B SOLDER PASTE TASK GROUP
- Tuesday | February 4

### 5-24C SOLDER ALLOY TASK GROUP
- Monday | February 3

### 5-24F UNDERFILL MATERIALS DESIGN, SELECTION AND PROCESS TASK GROUP
- Monday | February 3

### 5-24G IPC POLYMERIC STANDARD TASK GROUP
- Tuesday | February 4

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**TO TAKE ADVANTAGE OF THE 20% SAVINGS DEADLINE.**

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INFORMATION IS SUBJECT TO CHANGE. VISIT IPCAPEXEXPO.ORG FOR UPDATES.
STANDARDS DEVELOPMENT COMMITTEE MEETINGS

ASSEMBLY AND JOINING CONT’D

5-33G LOW PRESSURE MOLDING TASK GROUP
Monday | February 3

5-45 REFLOW OVEN PROCESS CONTROL SUBCOMMITTEE AND THERMAL PROFILING GUIDE TASK GROUP – JOINT MEETING
Tuesday | February 4

SPVC SOLDER PRODUCTS VALUE COUNCIL
Wednesday | February 5

PRINTED ELECTRONICS

D-61A FLEXIBLE PRINTED ELECTRONICS DESIGN STANDARD TASK GROUP
Wednesday | February 5

D-64 PRINTED ELECTRONICS FINAL ASSEMBLY SUBCOMMITTEE
Sunday | February 2

RIGID PRINTED BOARDS

D-31B IPC-2221/2222 TASK GROUP
Tuesday | February 4

D-32 THERMAL STRESS TEST METHODOLOGY SUBCOMMITTEE
Monday | February 3

D-33A JOINT MEETING – IPC-A-600 AND IPC-6012 TASK GROUPS
Sunday | February 2

D-33AM IPC-6012 MEDICAL DEVICE ADDENDUM TASK GROUP
Monday | February 3

D-33AT IPC-6012 TRAINING COMMITTEE
Monday | February 3

D-35 PRINTED BOARD STORAGE AND HANDLING SUBCOMMITTEE
Monday | February 3

D-36 PRINTED BOARD PROCESS CAPABILITY, QUALITY AND RELATIVE RELIABILITY BENCHMARK TEST SUBCOMMITTEE
Monday | February 3

PB-FREE SOLDERING

8-80 PERM MEETING NO. 43
Thursday | February 6
Friday | February 7

MANAGEMENT

8-41 TECHNOLOGY ROADMAP SUBCOMMITTEE
Wednesday | February 5

V-CCC COMMITTEE CHAIRMAN COUNCIL (BY INVITATION)
Sunday | February 2

V9-10A IPC EMS COUNCIL STEERING COMMITTEE MEETING
Tuesday | February 4

FABRICATION PROCESSES

3-11G CORROSION FOR METAL FINISHES TASK GROUP
Thursday | February 6

4-14 PLATING PROCESSES SUBCOMMITTEE
Monday | February 3

BASE MATERIALS

3-11 LAMINATE/PREPPREG MATERIALS SUBCOMMITTEE
Monday | February 3

3-11F UL/CSA TASK GROUP
Tuesday | February 4

3-12A METALLIC FOIL TASK GROUP
Tuesday | February 4

3-12D WOVEN GLASS REINFORCEMENT TASK GROUP
Monday | February 3

3-12E BASE MATERIALS ROUNDTABLE TASK GROUP
Monday | February 3

4-33 HALOGEN-FREE MATERIALS SUBCOMMITTEE
Tuesday | February 4
STANDARDS DEVELOPMENT COMMITTEE MEETINGS

CLEANING AND COATING
5-22A ROSE ROSE WORKING GROUP
Tuesday | February 4
5-31J CLEANING COMPATIBILITY TASK GROUP
Monday | February 3
5-32A ION CHROMATOGRAPHY/IONIC CONDUCTIVITY TASK GROUP
Monday | February 3
5-32B SIR AND ELECTROCHEMICAL MIGRATION TASK GROUP
Monday | February 3
5-32C BARE BOARD CLEANLINESS ASSESSMENT TASK GROUP
Monday | February 3
5-32E CONDUCTIVE ANODIC FILAMENT (CAF) TASK GROUP
Tuesday | February 4
5-33A CONFORMAL COATING TASK GROUP
Tuesday | February 4
5-33AWG CONFORMAL COATING REQUIREMENTS WORKING GROUP
Wednesday | February 5
5-33B SOLDER MASK PERFORMANCE TASK GROUP
Wednesday | February 5
5-33C CONFORMAL COATING HANDBOOK
Tuesday | February 2

PACKAGED ELECTRONIC COMPONENTS
B-10A/JEDEC JOINT MEETING: PLASTIC CHIP CARRIER CRACKING TASK GROUP AND JEDEC JC-14.1
Monday | February 3
B-11 3-D ELECTRONIC PACKAGES SUBCOMMITTEE
Wednesday | February 5

PRINTED BOARD DESIGN TECHNOLOGY
1-10C TEST COUPON AND ARTWORK GENERATION TASK GROUP
Monday | February 3
1-13 LAND PATTERN SUBCOMMITTEE
Tuesday | February 4
1-14 DFX STANDARD SUBCOMMITTEE
Monday | February 3

ELECTRONIC DOCUMENTATION TECHNOLOGY
2-40 ELECTRONIC DOCUMENTATION TECHNOLOGY COMMITTEE
Tuesday | February 4

HIGH SPEED/ HIGH FREQUENCY INTERCONNECTIONS
D-21 HIGH SPEED/HIGH FREQUENCY DESIGN SUBCOMMITTEE
Wednesday | February 5
D-22 HIGH SPEED/HIGH FREQUENCY BOARD PERFORMANCE SUBCOMMITTEE
Wednesday | February 5
D-23 HIGH SPEED / HIGH FREQUENCY BASE MATERIALS SUBCOMMITTEE
Wednesday | February 5

TESTING
7-11 TEST METHODS SUBCOMMITTEE
Monday | February 3
7-12 MICROSECTION SUBCOMMITTEE
Wednesday | February 5
STANDARDS DEVELOPMENT COMMITTEE MEETINGS

HIGH SPEED/ HIGH FREQUENCY INTERCONNECTIONS CONT’D

D-24B BERESKIN TEST METHOD TASK GROUP
Tuesday | February 4

D-24C HIGH FREQUENCY TEST METHODS TASK GROUP: FREQUENCY-DOMAIN METHODS
Tuesday | February 4

D-24D HIGH FREQUENCY SIGNAL LOSS TASK GROUP
Tuesday | February 4

TERMS AND DEFINITIONS

2-30 TERMS AND DEFINITIONS COMMITTEE
Tuesday | February 4

XTRAS

V-TSL TECHNOLOGY SOLUTIONS COMMITTEE
Tuesday | February 4

EMBEDDED DEVICES

D-55/D55A EMBEDDED DEVICES PROCESS IMPLEMENTATION SUBCOMMITTEE AND EMBEDDED CIRCUITRY GUIDELINE TASK GROUP – JOINT MEETING
Tuesday | February 4

PROCESS CONTROL

7-24A PRINTED BOARD PROCESS EFFECTS HANDBOOK
Tuesday | February 4

PRODUCT RELIABILITY

6-10D SMT ATTACHMENT RELIABILITY TEST METHODS TASK GROUP
Tuesday | February 4

FLEXIBLE AND RIGID-FLEX PRINTED BOARDS

D-11 FLEXIBLE CIRCUITS DESIGN SUBCOMMITTEE
Wednesday | February 5

D-12 FLEXIBLE CIRCUITS SPECIFICATIONS SUBCOMMITTEE
Wednesday | February 5

D-13 FLEXIBLE CIRCUITS BASE MATERIALS SUBCOMMITTEE
Wednesday | February 5

D-15 FLEXIBLE CIRCUITS TEST METHODS SUBCOMMITTEE
Wednesday | February 5
The IPC Volunteers responsible for the development of IPC Certification programs will be divided into two sets of committees. IPC training committees will develop training materials and IPC certification committees will develop certification exams.

**TRAINING DEVELOPMENT COMMITTEE MEETINGS**

**ASSEMBLY AND JOINING**

5-22BT: J-STD-001
Training Committee

**PRODUCT ASSURANCE**

7-31AT: IPC-A-600
Training Committee

7-31BT: IPC-A-610
Training Committee

7-31FT: IPC WHMA-A-620
Training Committee

7-31MT: IPC-A-640
Training Committee

7-34T: IPC-7711/7721
Training Committee

**RIGID PRINTED BOARDS**

D-33AT: IPC-6012
Training Committee

**CERTIFICATION EXAM DEVELOPMENT COMMITTEE MEETINGS**

**ASSEMBLY AND JOINING**

5-22BCRT: J-STD-001
Certification Committee

**PRODUCT ASSURANCE**

7-31ACRT: IPC-A-600
Certification Committee

7-31BCRT: IPC-A-610
Certification Committee

7-31FCRT: IPC WHMA-A-620
Certification Committee

7-31MCRT: IPC-A-640
Certification Committee

7-34CRT: IPC-7711/7721
Certification Committee

**RIGID PRINTED BOARDS**

D-33ACRT: IPC-6012
Certification Committee

**IPC EMERGING ENGINEER PROGRAM**

Now accepting applications for the 2020 Emerging Engineer Program

**Deadline:** November 15, 2019

Visit ipc.org/emerging-engineer
**REGISTRATION OPTIONS**

**GROUP DISCOUNT:**
Register 4 colleagues from the same company location at the same time and deduct $100 from each eligible registration*.

**EXHIBIT HALL ONLY:**
Includes admission to the exhibit hall and event essentials.**
*Free through online registration until Saturday, February 1, 2020
$40 online and onsite after February 1, 2020.

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<td>&gt; All technical conference sessions</td>
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<td>&gt; Technical conference proceedings (provided online)</td>
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<td>&gt; PERM Meeting #43</td>
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<td>&gt; Up to five half-day professional development courses</td>
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<td>&gt; Fundamentals Program</td>
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<td>&gt; IPC luncheons (Monday-Wednesday)</td>
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**TECHNICAL CONFERENCE**

**FULL CONFERENCE**
Includes all technical conference paper sessions, conference proceedings (provided online) and standards development committee meetings. (luncheons not included)

|                      | NONMEMBER $780 | MEMBER $625 |

**ONE-DAY CONFERENCE**
Includes all technical conference paper sessions on the day of your choice (Tuesday, Wednesday or Thursday) and standards development committee meetings. (luncheons and conference proceedings not included)

|                      | NONMEMBER $445 | MEMBER $355 |

**EXECUTIVE MANAGEMENT PROGRAMS**

**EMS EXECUTIVE MANAGEMENT MEETING**
Attendance Requirement: must be a senior level executive of an EMS company to attend. Includes Monday meeting, Monday luncheon and EMS Dinner (for IPC member companies only).

|                      | NONMEMBER $850 | MEMBER $695 |

**EMS DINNER FOR GUEST**
(non-industry)

|                      | $150 ea |

**PROFESSIONAL DEVELOPMENT COURSES**

**HALF DAY COURSE**
Includes three hours of classroom instruction with supporting materials.

|                      | NONMEMBER $450 ea | MEMBER $360 ea |

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*Group Discount: Register 4 colleagues from the same company location at the same time and deduct $100 from each eligible registration.

**Exhibit Hall Only: Includes admission to the exhibit hall and event essentials.**

Free through online registration until Saturday, February 1, 2020
$40 online and onsite after February 1, 2020.

MEMBER $1,295
NONMEMBER $2,600

**Registration Options**

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Register 4 colleagues from the same company location at the same time and deduct $100 from each eligible registration.

**Exhibit Hall Only:**
Includes admission to the exhibit hall and event essentials.

Free through online registration until Saturday, February 1, 2020
$40 online and onsite after February 1, 2020.

All technical conference sessions
Technical conference proceedings (provided online)
Standards development committee meetings
PERM Meeting #43
Up to five half-day professional development courses
Fundamentals Program
IPC luncheons (Monday-Wednesday)
Show floor concession cash on Thursday
EMS Executive Management Meeting (must be a senior level executive of an EMS company to attend)
Event essentials**

**Technical Conference**

**Full Conference**
Includes all technical conference paper sessions, conference proceedings (provided online) and standards development committee meetings. (luncheons not included)

**One-Day Conference**
Includes all technical conference paper sessions on the day of your choice (Tuesday, Wednesday or Thursday) and standards development committee meetings. (luncheons and conference proceedings not included)

**Executive Management Programs**

**EMS Executive Management Meeting**
Attendance Requirement: must be a senior level executive of an EMS company to attend. Includes Monday meeting, Monday luncheon and EMS Dinner (for IPC member companies only).

**EMS Dinner for Guest** (non-industry)

**Professional Development Courses**

**Half Day Course**
Includes three hours of classroom instruction with supporting materials.

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**Half Day Course**
Includes three hours of classroom instruction with supporting materials.
STANDARDS DEVELOPMENT COMMITTEE MEETINGS **

COMMITTEE MEETINGS PLUS CONFERENCE*
Includes all technical conference paper sessions, conference proceedings (provided online), standards development committee meetings, PERM Meeting #43, IPC luncheons (Monday, Tuesday and Wednesday), and show floor concession cash (Thursday).

NONMEMBER MEMBER
$890 $710

COMMITTEE NETWORKING MEETINGS
Includes standards development committee meetings, One Free Technical Conference Session Pass, IPC luncheons (Monday, Tuesday and Wednesday), and show floor concession cash (Thursday).

NONMEMBER MEMBER
$220 ($225 ONSITE) $195 ($225 ONSITE)

COMMITTEE MEETINGS
Includes standards development committee meetings and One Free Technical Conference Session Pass (IPC luncheons are not included)

FREE WITH ADVANCE REGISTRATION ($50 ONSITE REGISTRATION)

EXHIBIT HALL

EXHIBIT HALL ONLY
FREE WITH ADVANCE REGISTRATION ($40 AFTER FEBRUARY 1)

ADDITIONAL ITEMS

INEMI TECHNOLOGY FORUM
Wednesday | February 5 | 1:30 pm – 5:00 pm
FREE

LUNCHEON
Monday – Wednesday | February 3–5
$60 ea

PERM MEETING #43
Thursday & Friday | February 6-7 | 8:00 am – 5:00 pm
$75

TECHNICAL CONFERENCE SINGLE SESSION PASS
(limit one per person)
$120 $99

TRIVIA NETWORKING NIGHT
Wednesday | February 5 | 6:00 pm – 7:30 pm
$30 ea

*Eligible registration includes:
All-Access Package, Full Conference, or the Committee Meetings Plus Conference

**Event Essentials include:
Exhibit Hall; Tuesday Show Floor Welcome Reception; Keynote Sessions; Sessions @ the Intersection; Poster Sessions; Newcomers Networking Reception; Women In Electronics Networking Reception; New Products Corridor; International Reception
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and Canada) between 8:00 am-5:00 pm (CST).