

## Organisational information

For registration please use the registration form which is available on the ECPE web page: [www.ecpe.org](http://www.ecpe.org)  
> ECPE Events > ECPE Workshop: Advances in Thermal Materials and Systems for Electronics > Registration Form

[www.ecpe.org/ecpe-events](http://www.ecpe.org/ecpe-events)

### Deadline for registration:

- **1 December 2015**

### Participation fee:

- **€595,-** \* for industry
- **€445,-** \* for universities/institutes
- **€150,-** \* for students/PhD students  
(copy of student ID requested)  
(limited number only)  
(optional dinner: €50,-\* extra fee)

\*plus 19 % German VAT

- The participation fee includes dinner, lunch, coffee/soft drinks and a CD with the workshop presentations. Students/PdD students can book the dinner for an extra fee of €50,-\*.
- A printed version of the workshop handout is available on request (€50,-\*).
- With the confirmation of registration by email you are registered for the workshop and the invoice will be sent by post.
- Three participants from each ECPE member company free of charge. Allocation in sequence of registration.
- Further information (hotel list and maps) will be provided after registration and is available on the ECPE web page.
- In case of cancellation after **24 November 2015** or non-attendance 50 % of the participation fee is payable.

## Organisational information

**Organiser** ECPE e.V.  
90443 Nuremberg, Germany  
[www.ecpe.org](http://www.ecpe.org)

**Chairmen** Prof. Eckhard Wolfgang,  
ECPE e.V .  
David L. Saums,  
DS&A LLC  
Dr. Olaf Wittler,  
Fraunhofer IZM

**Organisation** Lena Somschor, ECPE e.V.  
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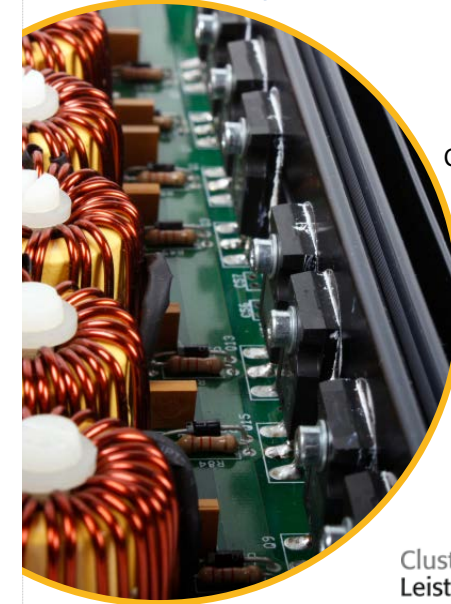
**Venue** Caritas-Pirckheimer-Haus (CPH)  
Königstrasse 64  
90402 Nuremberg  
Germany



## Programme

### ECPE Workshop

### Advances in Thermal Materials and Systems for Electronics



8 – 9 December 2015  
Caritas-Pirckheimer-Haus  
Nuremberg  
Germany

in cooperation with



# ECPE Workshop

## Advances in Thermal Materials and Systems for Electronics

8 - 9 December 2015  
Nuremberg, Germany

System integration of power electronics systems yields to many improvements, like electrical performance, reduced size and weight and finally less cost. Thermal management is, however, becomes more complex and calls for increasing attention.

The first day deals with Thermal Interface Materials (TIM): As there are many different TIMs in use, the workshop will start with a classification of materials, properties, and applications. Case Studies will show the potential of different TIM materials. Next TIM reliability will be discussed from the testing and characterization point of view under consideration of the physics of failure.

The second day starts with thermal management of advanced substrates, like embedded power boards and substrates with channels for liquid cooling. Case studies describing double-side cooling and two-phase cooling demonstrate the maximum cooling capability. Finally thermal management solutions for power electronics systems will be discussed.

**Chairmen:**  
**Prof. Eckhard Wolfgang (ECPE e.V.)**  
**David L. Saums (DS&A LLC)**  
**Dr. Olaf Wittler (Fraunhofer IZM)**

All presentations and discussions will be in English language.

# Programme

## Tuesday, 8 December 2015

9:00	Start of Registration / Welcome Coffee
9:30	<b>Welcome, Opening</b> E. Wolfgang, T. Harder, ECPE e.V. (D)
9:50	<b>Overview: Classification, Properties, Applications</b> D. Saums, DS&A LLC (US)

### Case Studies TIM

10:50	<b>Graphite &amp; Phase Change Films</b> W. Reitberger-Kunze, Aavid Kunze (D)
11:10	<b>Dielectric TIM Materials</b> T. d. Lantzer, DuPont E&C (US)
11:30	<b>High Efficient Liquid GapFiller Materials</b> H. Schuh, Bergquist (D)
11:50	<b>User Experience with High Performance TIM Material</b> Stefan Hopfe, Semikron

12:10 Table Top Exhibition

12:30 Lunch

### TIM Reliability

13:40	<b>Overview: TIM Reliability</b> O. Wittler, Fraunhofer IZM (D)
14:20	<b>Overview: Thermal Characterisation of Ageing</b> A. Griesinger, Zentrum für Wärmemanagement (D)
15:00	<b>Discussion</b>

15:30 Coffee break & Table Top Exhibition

### Test & Measurement

16:30	<b>Comparison of Thermal Measurements for Interconnect Materials</b> T. Krebs, Heraeus Deutschland (D)
16:50	<b>TIM Tester T3ster</b> A. Vass-Varnai, Mentor Graphics (HU)
17:10	<b>Thermal Characterization of TIM and Die Attach Materials by the TIMA Platform</b> M. Abo-Ras, Nanotest (D)
17:30	<b>Discussion</b>
18:00	<b>End of 1<sup>st</sup> Workshop Day</b>

20:00 Dinner at Restaurant 'Bratwurst Röslein'  
Nuremberg, Germany

# Programme

## Wednesday, 9 December 2015

### Thermal Management of Substrates

8:30	<b>Cool Systems with SiC and GaN</b> B. Eckardt, Fraunhofer IISB (D)
9:10	<b>Overview: Thermal Management of Embedded Power Boards</b> T. Gottwald, Schweizer Electronic (D)
9:50	<b>Metal TIMs</b> K. Vijay, Indium Corp. (UK)
10:10	<b>Discussion</b>

10:30 Coffee break

### Case Studies Integrated Coolers

10:50	<b>Chip on Heatsink Technology</b> R. Dilsch, Ceram Tec (D)
11:10	<b>Ceramic Multilayer Substrates with Integrated Cooling Channels</b> U. Partsch, Fraunhofer IKTS (D)
11:30	<b>Vortex LCP Wcoid Plates</b> L. Caporale, Aavid Thermalloy (I)
11:50	<b>Individual Heating Foils</b> C. Lehenberger, Andus Electronic (D)
12:10	<b>Discussion</b>

12:30 Lunch

### Case Studies Systems

13:40	<b>High Voltage Power Modules with Increased Surge Current Capability</b> U. Waltrich, Fraunhofer IISB (D)
14:00	<b>Double Side Cooled Power Modules from Infineon</b> I. Yoo, Infineon (D)
14:20	<b>Double-Sided Cooling &amp; Transient Thermal Buffering for Power Modules</b> B. Wunderle, TU Chemnitz (D)
14:50	<b>High Performance Passive Two-Phase Cooling Systems</b> V. Dupont, CALYOS (B)
15:20	<b>Two-Phase Liquid Cooling</b> T. Shedd, Ebullient LCC (USA)
15:50	<b>Final Discussion</b>

16:20 End of Workshop