

Registration (Fax Reply)

To: ECPE e.V.
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Register before **10 March 2009**

Participation fee:

- .. € 530,-*
- .. € 395,-* for university members

The fee includes dinner, lunch, coffee/soft drinks and a CD with the seminar presentations. A printed version of the seminar handouts is available on request (€ 42,- *).

- .. € 120,-* for students (shortened seminar package)

With the confirmation of seminar registration you will receive the invoice. (* plus 19 % VAT).

In case of cancellation after 10 March 2009 or non-attendance 50 % of the participation fee are payable.

Three participants from each ECPE member company free of charge. Allocation in sequence of registration.

Sender:

title, given name, name

company, department

full address

phone, fax

e-mail

date, signature

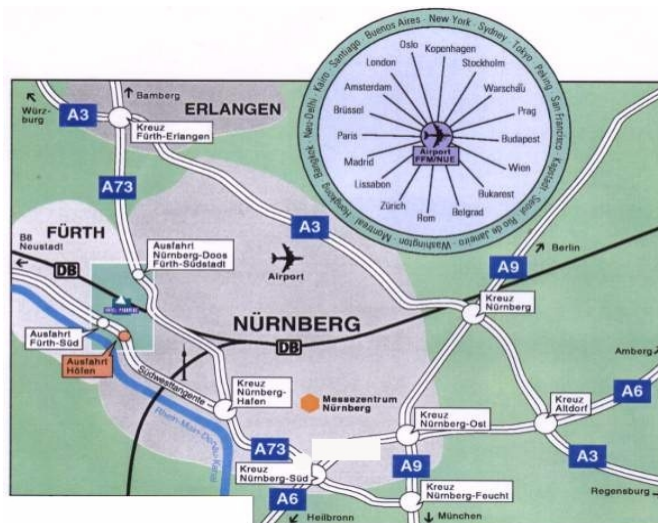
Organisational information

Organiser: ECPE e.V.
90443 Nürnberg, Germany
www.ecpe.org

Chair of seminar: Dr. Martin Maerz,
Fraunhofer Institute IISB
Thomas Harder, ECPE e.V.

Organisation: Ingrid Bollens, ECPE e.V.
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ingrid.bollens@ecpe.org

Place of seminar: Hotel Pyramide
Europa-Allee 1
90763 Fuerth, Germany



Further information (hotel list and maps) will be provided after registration.



**ECPE European Center for
Power Electronics e.V.**

Seminar Innovative Materials for Power Electronics

17 – 18 March 2009

**at Hotel Pyramide
Fuerth, Germany**

in cooperation with



**EUROPEAN
POWER
ELECTRONICS
AND
DRIVES**



Fraunhofer Institut
Integrierte Systeme und
Bauelementetechnologi

Introduction

ECPE Seminar Innovative Materials for Power Electronics - Electrical Engineering meets Material Science

17 – 18 March 2009
Fuerth/Nuremberg, Germany

Advanced materials are the key to many innovations in power electronics e.g. in packaging and inter-connection technologies, in thermal management as well as in active and passive component technology.

Therefore, we decided to select this important cross-functional topic for our ECPE Seminar held in the frame of the ECPE Annual Event 2009.

In power electronics, we have to stress the different materials in use to their limits. High power density is requiring excellent thermal conductivity, normally in combination with electrical insulation. The high voltages are challenging the dielectric properties, high currents ask for excellent electrical conductivity. Many different materials are needed in a power electronic system to meet all these often conflicting requirements. This leads to additional stresses resulting from the thermo-mechanics under electrical and thermal load cycles.

On the other side, materials and their manufacturability strongly influence the costs of components and assemblies in power electronics.

Dr. Martin Maerz (Fraunhofer IISB in Erlangen/Nuremberg) will chair the seminar together with Mr. Thomas Harder (ECPE). All presentations and discussions will be in English.

Programme

Tuesday, 17 March 2009

- 9:30 **Start of registration**
- 10:00 **Welcome Address and Introduction**
T. Harder, ECPE
- 10:15 **Innovative Materials – Key Enablers for High-Performance Power Electronics**
M. Maerz, Fraunhofer IISB

Joining and Substrate Materials

- 10:45 **Reliable Soldering for High Temperature and Temperature-Cycling Load**
NN
- 11:15 **Ag Sintering – A Highly Reliable Bonding Technology**
C. Goebel, Semikron
- 11:45 **Perspectives of Sintering with Nano-scale Ag Particles**
M. Knoerr, Fraunhofer IISB
- 12:00 **Case Study I: Ribbon Bonding with Two-Layer Al-Cu Ribbons**
NN
- 12:20 **Case Study II: Large Wire Bonding Using Fibre Reinforced Wire Materials**
J. Dalin, Univ. Freiburg

Lunch

- 13:45 **Direct Aluminum Bonded (DAB) Substrates**
H. Knoll, IXYS Semiconductor
- 14:00 **High Temperature PCB Substrates (200-250°C) based on Thermoplastic Polymers**
T. Apeldorn, TU Hamburg Harburg
- 14:30 **Advanced Materials for 3D Power Packaging**
NN
- 15:00 **Coffee Break**

- 15:30 **Thermally Optimised Adhesives**
M. Hof, Polytec

New Materials for Power Electronics Cooling

- 16:00 **Thermal Properties and Reliability of Advanced Metal-Diamond Composites**
S. Knippscheer, Plansee
- 16:30 **Carbon Material – An Overview of Materials and Applications**
D. Schneider, SGL Carbon Group

Programme

- 17:00 **Carbon Nano Tubes in Power Electronics**
S. Forero, FutureCarbon
- 17:30 **Materials Roadmap in Power Electronics**
E. Wolfgang, ECPE
- 18:00 **End of 1st day programme**
- 19:00 **Dinner**

Wednesday, 18 March 2009

Advanced Polymer Systems

- 8:30 a.m. **Thermal Conductive Polymers**
NN
- 9:00 **Case Study III: Polymer Heatsinks**
Fraunhofer IISB
- 9:30 **Soft-Magnetic Polymers**
S. Egelkraut, Univ. Erlangen

Passive Components

- 10:50 **Case Study IV: Passive Components for Power El. Based on Soft-Magnetic Polymers**
Fraunhofer IISB
- 11:10 **Dielectric and Insulating Materials in Power Electronics**
S. Guillemet, Univ. Toulouse
- 11:40 **Ceramic Functional Materials for Magnetics**
R. Lucke, FIT-Ceramics

Lunch

Power Semiconductor Devices & Technologies

- 13:15 **GaN – Perspectives for New Power Semiconductor Devices**
M. Schlechtweg, Fraunhofer IAF
- 13:45 **SiC – Perspectives for New Power Semiconductor Devices**
P. Friedrichs, SiCED
- 14:15 **Process Chain for Soldering Semiconductor Front Sides - from Development to Mass Production**
S. Landau, Infineon Technologies
- 14:45 **Final Discussion**
- 15:00 **End of seminar**