

postage

Empa
Nese Cetinkaya
Laboratory for Joining and
Interface Technology
Überlandstrasse 129
CH-8600 Dübendorf

Further information

Date Friday, November 10, 2006

Registration PhD students CHF 50.–
Fee Participants from academia CHF 180.–
Participants from industry CHF 380.–
including proceedings, lunch and refreshments

Registration deadline **October 16, 2006**
Registrations will be confirmed via E-Mail.
You will be billed after registration is completed.

Registration online www.empa.ch/diamond

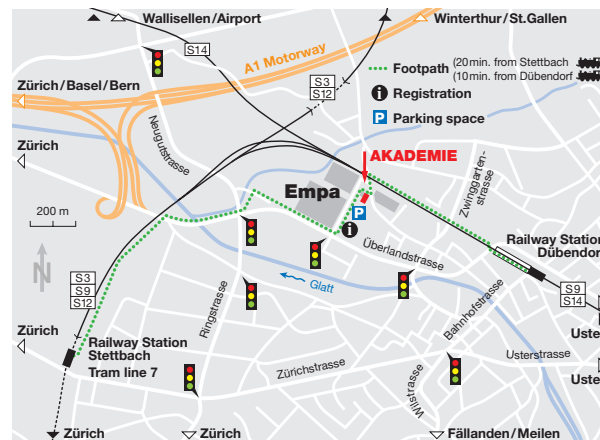
Cancellation Full refunds will be made until October 16, 2006. After October 16, 2006 an administrative fee of CHF 30.– will be charged.

Information, Registration Empa
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www.empa.ch/abt124
www.empa.ch/abt126

Directions



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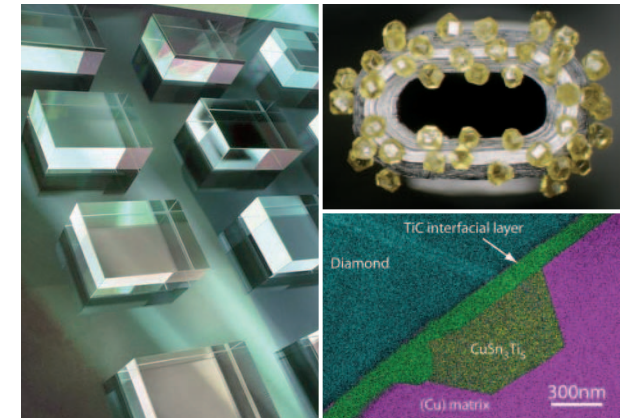
ExtreMat

Zentrum für Wissenstransfer

Conference

High-performance diamond-based composites

Innovations in superabrasives and thermal management



Empa, CH-8600 Dübendorf
AKADEMIE, Überlandstrasse 129

Friday, November 10, 2006
08.45–17.00

Registration online at
www.empa.ch/diamond

■ Subject

Diamonds – no longer confined to being a «girl's best friend» – have evolved to an advanced high-performance material with steadily increasing technological and economic impact. Owing to the nature of its atomic bonding structure diamond features unique combinations of physical, mechanical and chemical properties such as extreme hardness, high chemical resistance and exceptional thermal conductivity. These properties are well known and have been widely used for abrasive and machining applications for many years. Recent achievements in the processing of synthetic diamond and CVD-diamond have expanded the technological applications of diamond and given rise to numerous innovations. Examples include extremely wear and corrosion resistant coatings, heat sinks with unmatched heat dissipation abilities and semi- or super-conducting layer structures.

The exploitation of the inherent properties of diamond often requires diamond to be bound onto a metallic substrate or incorporated into a metallic matrix. The resulting mechanical and physical performance of the material is in turn governed by the microstructural characteristics of the interface between the constituent materials. Hence, the understanding and control of the mechanisms of interface formation are crucial for the successful implementation of these materials and the products made therewith.

■ Objective

This one-day conference will provide an overview of recent technological advances and related applications based on diamond and diamond composites with particular focus on cutting tool and thermal management issues. The conference also aims at enhancing the understanding of the basic materials science aspects pertaining to the relationships between materials chemistry, processing technologies, microstructural aspects and the physical and mechanical properties of the final products.

■ Target audience

R&D representatives from industry, manufacturers and end users of advanced diamond-based materials for use in superabrasives and thermal management issues. Scientists, engineers and technicians interested in the materials, properties and aspects related to the manufacture of high performance diamond-based composites.

■ Organizing Committee

Dr Manfred Roth	Empa, Dübendorf
Prof. Dr Lukas Rohr	Empa, Thun
Dr Ulrich Klotz	Empa, Dübendorf
Dr Olivier Beffort	Empa, Thun

This conference is co-organized together with the ExtreMat Consortium as a training activity within the framework of the Integrated European Project «ExtreMat» (Contract NMP-CT-2004-500253) with financial support by the European Community.
www.extremat.org

■ Programme

08.45 **Welcome address**
Prof. Dr L. Schlapbach, CEO Empa

09.00 **Session 1: Diamond and diamond/metal composites**

Processing and properties of synthetic and coated diamonds

W. Kubsch, K. Proske, Diamond Innovations

Metallic glasses as a matrix material for diamond reinforced composites

M. Siegrist, Prof. Dr J. Löffler, ETH Zürich

Interfacial nanostructure of diamond-metals joints

Dr U. Klotz, Empa

Coffee break

11.00 **Session 2: Superabrasive tools and joining**

Overview on diamond tools

Dr T. Magg, Diamant-Gesellschaft Tesch GmbH

Grinding tools to be engineered – methods and concepts

Prof. Dr K. Wegener, ETH Zürich

Manufacture of diamond cutting tools

Dr M. Boretius, Listemann AG

Vacuum brazing of CVD-diamond on hard-metal substrates

Prof. Dr W. Tillmann, Uni Dortmund

13.00 **Lunch**

14.20 **Session 3: Thermal management and semiconductors**

Thermal management requirements on materials for micro- and power-electronics

Dr S. Gunturi, Dr D. Schneider, ABB

Diamond Materials –

Metallisation & Thermal management applications

Dr X. Tang, Element Six

Coffee break

Manufacturing and applications of diamond-composites for thermal management

Dr H. Wildner, S. Knippscheer, Plansee

Development of high thermal conductivity aluminium/diamond composites

Dr S. Kleiner, Dr O. Beffort, Empa

Microwave sintering of diamond

Dr S. Vaucher, Empa

Closing and Apéro

Registration Form

Conference

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Ms Mr Prof. Dr Student

Name _____

First Name _____

Organisation _____

Address _____

Phone _____

Fax _____

E-Mail _____

Date _____

Signature _____