

## General Information

### Symposium Venue

The symposium will be held at Forschungszentrum Jülich, Auditorium (Building No. 04.7).

### Start of the Symposium:

Monday, 9th Nov. 2009, 12:15,  
Registration 10:00 – 12:15

### End of the Symposium:

Tuesday, 10th Nov. 2009, 15:00

### Oral Presentations

The Auditorium is equipped with computer and video beamer.

### Registration and Fee

The deadline for registration is 30th October 2009.

### Fees for

Participants:	EUR 150
for registration after 30th October:	EUR 200
Students:	EUR 80
for registration after 30th October:	EUR 100

### Accommodation and Transfer

We have reserved a number of rooms (please book yourself with reference WSP11) at hotels in Jülich, which will be held for TBC Symposium Participants until 15th Oct. 2009. Reservations received after this date will be accepted on a space available basis.

Hotel Kaiserhof - EUR 67

Phone: +49-(0)2461 68070

FAX: +49-(0)2461 680777

<http://www.kaiserhof-juelich.de>

Hotel Am Hexenturm - EUR 57

Phone: +49-(0)2461 97060

FAX: +39-(0)2461 54684

<http://www.hotel-hexenturm.de>

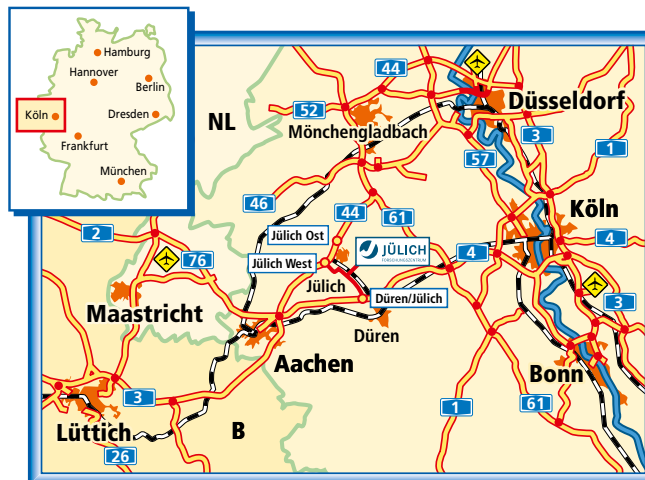
Stadthotel - EUR 54

Phone: +49-(0)2461 931190

FAX: +49-(0)2461 931190

<http://www.stadthotel-juelich.de>

## How to reach us:



Research Centre Jülich is situated southeast of Jülich and is clearly signposted on all access roads.

[www.fz-juelich.de/portal/researchcentre/dataandfacts](http://www.fz-juelich.de/portal/researchcentre/dataandfacts)

### Further Information

#### Symposium Committee

Chairmen:	Prof. Dr. Detlev Stöver, Dr. Robert Vaßen
Co-Chairmen:	Dr. Daniel E. Mack, Dr. Georg Mauer, Dr. Tanja Steinke,

Additional information is available at our website:

<http://www.fz-juelich.de/conference/wsp11>

or contact the conference service

Forschungszentrum Jülich GmbH

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The 11th Jülicher Werkstoffsymposium is sponsored by Sulzer Metco.

Mitglied der Helmholtz-Gemeinschaft



## 11. Jülicher Werkstoffsymposium

Processes and materials for tomorrow's thermal barrier coatings

9th – 10th November 2009

### Invitation and Registration



## Processes and materials for tomorrow's thermal barrier coatings

Over the past decades thermal barrier coatings (TBCs) have become an integral part of hot section components in advanced gas turbines. Despite of the encouraging development within the TBC area future needs will hardly be met by the current state of the art of technology. Demands are including higher efficiency and hence higher combustion temperatures, reduced lifecycle costs with improved reliability of the coatings and advanced methods for remaining lifetime prediction or monitoring and finally, the use of new, often corrosive, fuels.

As a continuation of the previous symposia in 2001 and 2004 on thermal barrier coatings and thermal spray technology this symposium will present different approaches to meet these challenges: In the first session advanced manufacturing routes will be the focus also including several attractive new deposition processes for TBCs. In the second session testing methods and advanced lifetime models will be presented. Finally, new coating systems will be discussed in the last session.

The symposium will end with the official start-up of our up-graded VPS facility delivered by Sulzer Metco, which can now be operated at low chamber pressures (~ 1 mbar) for deposition from the gas phase. A get-together with drinks and buffet will be provided.

## Programme

### 9th November 2009

10:00 – 12:15 Registration (+ lunch ticket)

12:15 [Welcome and introduction](#), D. Stöver, Forschungszentrum Jülich GmbH (D)

#### Advanced manufacture and processing of TBCs

Chairmen: J.R. Nicholls, D. Roth-Fagaraseanu

12:30 [High performance and highest quality coating and repair production facility for industrial gas turbine parts](#), F. Ladru, M. Riemann, A. De Weze, Turbine Airfoil Coating and Repair GmbH (TACR) (D)

13:00 [Enhanced and innovative processes in IGT coatings manufacturing: From the laboratory](#)

[scale to the production](#), C. Giolli, A. Lanzi, M. Spagnoli, G. Rizzi, A. Giorgetti, A. Scrivani, Turbocoating SpA (I), A. Scrivani, Artec Srl (I)

13:30 [Tools and technologies used at Volvo Aero to ensure a stable and reproducible TBC production](#), L. Östergren, Volvo Aero Corp. (S)

14:00 [Highly segmented thermal barrier coatings: Fabrication, properties and thermal cycling behaviour](#), M. Karger, R. Vaßen, D. Stöver, Forschungszentrum Jülich GmbH (D)

14:30 [Potential of suspension plasma spraying for improved thermal barrier coatings](#), A. Guignard, G. Mauer, R. Vaßen, D. Stöver, Forschungszentrum Jülich GmbH (D)

15:00 Coffee break

15:30 [Thermal conductivity and new manufacturing methods for TBC systems](#), U. Schulz, S. Tang, German Aerospace Center (D)

16:00 [Actual status of plasma spray vapor deposition at 1 mbar](#), K. von Niessen, H.M. Höhle, M. Gindrat, Sulzer Metco (CH)

#### Performance of TBCs

Chairmen: L. Östergren, U. Schulz

16:30 [Non destructive characterisation and integrity assessment of APS TBC by photothermal techniques](#), F. Cernuschi et al., Cesi Ricerca (I)

17:00 [Sintering of zirconia-based TBCs under service conditions](#), T.W. Clyne, I.O. Golosnoy, A. Cipitria, University of Cambridge (UK)

17:30 [Risk-based modelling of the cyclic oxidation lifetimes of EB-PVD thermal barrier coatings](#), L. Chirivi, J.R. Nicholls, Cranfield University (UK)

18:15 Bustransfer to buffet at Burg Obbendorf

21:00 Transfer to hotels in Jülich

### 10th November 2009

#### Performance of TBCs

Chairmen: L. Östergren, U. Schulz

8:30 [Performance and life prediction of TBCs for power generation gas turbines](#), S. Lampenscherf, Siemens (D)

9:00 [Damage evolution and lifetime prediction of APS TBCs under isothermal and thermo-cyclic loadings](#), T. Beck, Forschungszentrum Jülich GmbH (D)

9:30 [Development and validation of coatings for advanced gas turbines](#), H.P. Bossmann, Alstom (CH)

10:00 Coffee Break

#### Advanced TBC systems

Chairmen: T.W. Clyne, H.P. Bossmann

10:30 [Effect of metallurgical, manufacturing and testing parameters on long term cyclic oxidation behaviour of MCrAlY overlay and bond coatings for gas turbine applications](#), W.J. Quadackers, P. Song, R. Vassen, D. Naumenko, L. Singheiser, Forschungszentrum Jülich GmbH (D)

11:00 [Novel TBCs for gas turbine applications](#), N. Curry, N. Markocsan, P. Nylen, University West (S), X.-H. Li, Siemens Turbomachinery (S), A. Tricoire, Volvo Aero Corp. (S), M. Karlsson, Sulzer Metco (S)

11:30 [European developments in the area of sensor coatings](#), J. Feist, Southside Thermal Sciences (STS) Ltd (UK)

12:00 [Processing and microstructural optimization of alternative TBC materials](#), D.E. Mack, R. Vaßen, D. Stöver, Forschungszentrum Jülich GmbH (D)

12:30 [Advanced high temperature coatings for aero engines](#), D. Roth-Fagaraseanu, Rolls-Royce Deutschland (D)

13:00 – 13:10 [Concluding remarks](#), R. Vaßen, Forschungszentrum Jülich GmbH (D)

13:30 Official start-up of our upgraded VPS facility: LPPS-PVD & CVD

Get-together with drinks & buffet

Optional labtour

15:00 End