

9th Liège Conference on Materials for Advanced Power Engineering

September 27th – 29th, 2010

Liège • Belgium



The 9th Liège Conference on Materials for Advanced Power Engineering will be held on September 27th – 29th, 2010 at the Palais des Congrès in Liège, Belgium. The achievements of the European materials development projects carried out in the COST Actions 536 ‘Alloy Development for Critical Components of Environmentally Friendly Power Plant’ and 538 ‘High Temperature Plant Lifetime Extension’ which are ended in 2009 and 2008, respectively, will be reviewed. In addition, the broad field of current materials research for high efficiency, low-emission and zero emission power plants are reported.

Following the well established format of previous Liège conferences, a series of review papers will describe the European materials developments carried out in the COST Actions 536 and 538. Invited lectures by internationally recognized experts will present the status within the other topics mentioned above. Sessions concerning new energy technologies and materials perspectives for the next decade are planned. Contributions on all issues to be presented at the conference are welcome. They will be presented in the form of posters combined with reviewed proceedings.

Additionally, there are more than 100 poster contributions, covering a variety of topics in the main areas of advanced steam cycle plants and of gas turbines. Abstracts of all the papers to be presented at the Conference either orally or as posters may be found on the Conference web-site

www.fz-juelich.de/iwv/iwv2/liege/

We can now look forward to a very stimulating and enjoyable meeting – REGISTER NOW.

See you in Liège!

Tilmann Beck
Conference Chairman

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Congress Venue

The 9th Liège Conference on Materials for Advanced Power Engineering will be held at the Palais des Congrès in Liège, only a 20 minute walk from the City Centre. In the Palais des Congrès there are two large conference rooms, numerous smaller conference rooms, a large Expo-Foyer and a restaurant. Luncheons will be served in the restaurant and refreshments during the sessions in the Expo-Foyer.

Liège is located in the eastern part of Belgium close to the triangle formed by the Belgian, Dutch and German borders, about 100 km east of Brussels (Belgium), 240 km south of Amsterdam (The Netherlands) and 120 km west of Cologne (Germany). Liège is the third-largest city in Belgium and is a major economic and commercial centre. It is an important river port and benefits from its position at the intersection of major transport routes. The glorious events in its history have brought the city a large number of churches and museums. Perhaps the most striking features of Liège are its liveliness and the character of its people who are renowned for their friendliness, hospitality and light-hearted irreverence for authority. This reputation is enhanced by the many students from the Sart Tilman campus, who fill the cafes, bars and small restaurants in the „carré“ (the area between Rue du Pot-d'Or, Rue St-Adalbert, Rue St-Gilles and Boulevard de la Sauvenière) after nightfall.

How to Reach Liège and the Palais des Congrès

By train

There are direct train services from Brussels, Paris, Cologne and Maastricht to Liège. The Palais des Congrès is a 10-minute walk from the Liège Guillemins, the main railway station. Web address: www.b-rail.be/main/index.html

By car

There are excellent motorway connections from all directions to Liège. In Liège the signs will direct you to the ample parking facilities around the Palais des Congrès.

By air

The international airport in Belgium is Brussels Airport Zaventem.

Web address: **www.brusselsairport.be**

From Brussels Airport Zaventem, Liège can be reached by train within 90 minutes. There are airport trains to the railway station Brussels Nord from where direct trains leave for Liège every hour.

Low cost airlines operate out of Charleroi Airport (Brussels South) with a shuttle bus service to Charleroi railway station which has regular connections to Liège Guillemins.

Web address: **www.charleroi-airport.com**

Registration and Payment

For registration and payment please use the following link:

www.fz-juelich.de/conference/liege9/registration

Cheques to be made payable to Forschungszentrum Jülich, Conference Service, 52425 Jülich, Germany

Reference: Liège 2010 and participant's name

Registration Fees

Participant: 600 €

Discount-Student Rate: 250 €

After 15 August 2010, a late registration surcharge of 50 € will be applied.

The fees include the Conference fee, the ice-breaker party on 26th September, lunches on 27th and 28th September, the Conference Dinner on 28th September and refreshments during the sessions.

For accompanying persons who wish to have lunches at the Palais des Congrès and to attend the Conference dinner, a charge of 100 € will be made.

Cancellation

If written cancellation is received before 15 August 2006, the conference fee will be refunded minus a cancellation fee of 100 €. Thereafter no refunds are possible. All refunds will be made after the conference.

Hotel Accommodation

The local organization has appointed a professional Hotel Reservation Service in Cologne to make room reservations well in advance and to handle all hotel bookings.

This Hotel Reservation Service can offer hotel accommodation in different price categories in Liège only **until 31 July 2010**.

To avoid disappointment we advise you to make hotel reservations as soon as possible. If you wish to reserve accommodation, use the following link:

www.fz-juelich.de/conference/liege9/hotel

All prices below are quoted in Euros per room, per night including breakfast, taxes and service charges.

If you prefer to arrange your hotel accommodation by yourself here is the address of the tourist office:

Tourist Office of the City of Liège
Féronstrée 92
B 4000 Liège, Belgium
Phone: +32(0)42219221
Fax: +32 (0) 4 221 92 22
office.tourisme@liege.be
www.liege-tourisme.be

Preparing your Contributions

Oral Presentations

Facilities will include an electronic projection system. Speakers are reminded of the importance of using only clear and high quality slides.

Media Check

The media check counter is located in front of the lecture room.

Participants should bring powerpoint presentations two hours in advance of each session in order to avoid last minute preparation and confusion. For early morning sessions, prepare them the day before. Specialist personnel will help you.

Poster Presentations

The poster exhibition will be in the Expo-Foyer of the Palais des Congrès. One display board (98 cm high x 148 cm wide) will be provided for each poster. Assistance and mounting materials will be available.

All posters will be displayed during the whole conference and the authors are requested to be present at their poster during the poster session.

Guidelines for Posters

- The size should not exceed 138 cm width and 98 cm height.
- The lettering should be readable from at least 1 m distance.
- The message should be clear without verbal explanation.
- Text should be kept to a minimum, while figures and tables should be large.
- Keep in mind that more does not mean better, so do not overload your poster.
- It is essential that the author is present during the assigned period of the poster sessions.

Prizes will be awarded to the best posters.

Social Program

Sunday, 26th September 2010 18:00 – 21:00 hours

All participants and accompanying persons are cordially invited to the Ice Breaker Party at the Hotel Holiday Inn, located adjacent to the Palais des Congrès.

Participants are kindly asked to check-in and pick up the conference material at this time.

Monday, 27th September 2010 17:00 – 19:30 hours

At the end of the first meeting day all participants and accompanying persons are cordially invited to an Informal Reception in the Expo-Foyer of the Palais des Congrès.

Tuesday, 28th September 2010 from 20:00 hours

Conference Dinner at „La Maison de Metallurgie“ just a few minutes walk from the Palais des Congrès.

Other Activities

Various local tour operators offer sightseeing trips during the week of the congress and the days thereafter. Congress participants, their partners and accompanying persons can book these tours at the Tourist Office of the City of Liège. The tours include:

- City walks with authorized guides
- Visits to the museums of Liège
- Excursions to the numerous castles in the vicinity of Liège.

You can also reach several interesting and historic cities and locations easily by train. Liège has direct railway connections with Brussels, Ghent, Bruges, Antwerp and Cologne. Famous museums, such as the Royal Museums of Art in Brussels and the Wallraf-Richartz-Museum/Museum Ludwig in Cologne can be visited by using public transportation.

General Information

Weather and Dress

For the meeting we have ordered pleasant, sunny, and dry weather. The weather in Liège in September is usually mild (average temperature around 12 – 16°C). However, some rain may be expected, and therefore we advise you to bring a raincoat.

Shopping and Banking Hours

Shops are generally open from 9:00 to 18:00 hours. Shops are closed on Sundays. Regular banking hours are from 8:30 to 15:30 hours on Monday to Friday.

Car Parking

Free car park at the Palais des Congrès.

Language

The official language of the Conference is English. There will be no simultaneous translation.

Certificates for Attendance

Certificates of attendance and receipt of conference fee will be given during your registration in Liège.

Visa

It is your responsibility to check if you need a visa for entering Belgium. Check at your Belgium embassy or consulate. A Belgium visa entitles you to travel within the European Union.

Liability

The Organising Committee cannot accept liability for personal accidents or loss of or damage to the private property of participants and accompanying persons, either during or indirectly arising from the 8th Liège Conference.

Registration Desk

The conference registration desk will be open on Sunday, 26 September 2010, from 18:00 to 21:00 h during the Ice-Breaker Party at the Hotel Holiday Inn, located adjacent to the Palais des Congrès.

From 27 to 29 September 2010, the registration desk will be open from 8:30 h onwards at the Palais des Congrès.

Useful Telephone Numbers

Conference Secretariat

before the meeting	+ 49 (0) 24 61 61 38 33
Palais des Congrès	+ 32 4 343 01 44
Hotel Reservation Service	+49 (0) 221 2077311
Tourist Office Liège	+ 32 (0) 4 221 92 21
Travel Agency Carlson Wagonlit	+ 32 (0) 4 222 44 00
Police	100
Emergency	110
Liège Taxi	+ 32 (0) 4 367 50 40
Taxi Business Cars	+ 32 (0) 4 349 02 02

In case you need additional information do not hesitate to contact the conference secretariat.

Address Where You Can be Reached

9th Liège Conference
c/o Palais des Congrès,
Esplanade de l'Europe 2,
B 4020 Liège, Belgium

9th LIEGE Conference – Preliminary Program

Sunday, September 26th

18:00 – 21:00 *Ice Breaker Party*

Monday, September 27th

08:00 – 09:15 *Registration*

09:15 – 10:00 *Inaugural Session*

09:15 – 09:30 **Welcome addresses from ULg and
Forschungszentrum Jülich**

09:30 – 10:00 **Introducing Lecture: Dr. P. Deschamps
(European Commission)**
Energy, Power Generation and Materials
in a Carbon Constrained World

10:00 – 12:30 **Materials for Advanced Steam Power
Plants (Chairman: J. Hald)**

10:00 – 10:30 **M. Fukuda (National Institute of
Material Science, Japan)**
Advanced USC Technology Development
in Japan

10:30 – 11:00 **H. Tschaffon (E.ON Energie AG,
Germany)**
700°C Power Plant Technology - Status
and Challenge

11:00 – 11:20 **T. U. Kern (Siemens Energy Sector,
Germany)**
The European Efforts in Development of
New High Temperature Rotor Materials –
COST 536

11:20 – 11:40 **Boiler Materials and Welding**
t. b. d.

11:40 – 12:00 **J. Hald (Technical University of
Denmark, Denmark)**
Development Status and Future Possibili-
ties for Martensitic Creep Resistant Steels

- 12:00 – 13:30 **Lunch**
- 13:30 – 17:00 **Gas Turbine Materials**
(Chairman: J. Oakey)
- 13:30 – 14:00 **M. Nazmy (Alstom Power, Switzerland)**
+ A. Scholz (Technical University of Darmstadt, Germany)
Modelling of Microstructure and Mechanical Property Changes in Gas Turbine Alloys
- 14:00 – 14:30 **U. Glatzel (University of Bayreuth, Germany)**
Development of the Single Crystal Reduced Density Nickel Base Superalloy LEK 94
- 14:30 – 15:00 **L. Remy (EDM, France), J. Y. Guédou (SNECMA, France)**
Recent trends (or advances) in superalloys research for critical aero-engine components
- 15:00 – 15:30 **Coffee Break**
- 15:30 – 16:00 **H. Harada (National Institute of Material Science, Japan)**
Development of Superalloys for a 1700°C Ultra-Efficient Gas Turbine
- 16:00 – 16:30 **U. Schulz (Deutsches Zentrum für Luft- und Raumfahrt, Germany)**
Recent developments of thermal barrier coatings for advanced gas turbines
- 16:30 – 17:00 **J. Nicholls (Cranfield University, United Kingdom)**
Influence of Bondcoat Composition and Process Parameters on the Lifetime of EB-PVD Thermal Barrier Coatings
- 17:00 – 19:30 **Reception and poster session**

Tuesday, September 28th

- 08:30 – 10:30 **Materials for Nuclear Fusion and Fission**
(Chairman: T. Beck)
- 08:30 – 09:00 **N. Lopes Cardozo (Eindhoven University of Technology, Netherlands)**
Clearing the seven obstacles on the road to fusion power
- 09:00 – 09:30 **J. Linke (Forschungszentrum Jülich, Germany)**
Development and evaluation of plasma facing materials for future thermonuclear fusion reactors
- 09:30 – 10:00 **B. Raj (Indira Gandhi Center for Atomic Research, India)**
Development of Materials and Manufacturing Technologies for Indian Fast Reactor Programme
- 10:00 – 10:30 **D. Buckthorpe (AMEC, United Kingdom)**
Materials Challenges for the Next Generation of Fission Reactor Systems – to be confirmed
- 10:30 – 11:00 **Coffee Break**
- 11:00 – 12:30 **Solid Oxide Fuel Cells**
(Chairman: B. Kuhn)
- 11:00 – 11:30 **M. Mogensen (Risø National Laboratory for Sustainable Energy, Denmark)**
Materials and structural aspects of solid oxide electrochemical cells for conversion of electricity to hydrocarbons and reverse
- 11:30 – 12:00 **R. Steinberger-Wilckens (Forschungszentrum Jülich, Germany)**
Recent Developments in Solid Oxide Fuel Cells at Forschungszentrum Juelich and in Europe

- 12:00 – 12:30 **H. Yokokawa (National Institute of Advanced Industrial Science and Technology, Japan)**
Recent Activities of Solid Oxide Fuel Cell Research and Development in Japan
- 12:30 – 14:30 **Lunch**
- 14:30 – 17:00 **Corrosion, Thermomechanical Fatigue and Modelling**
(Chairwoman: J. Lecomte-Beckers)
- 14:30 – 15:00 **J. Wells (RWE Power, United Kingdom)**
Application of Tools for High Temperature Life Assessment – to be confirmed
- 15:00 – 15:30 **A. T. Fry, A. Aguera (National Physical Laboratory, United Kingdom)**
Steam Oxidation and the Evaluation of Coatings and Material Performance through Collaborative Research
- 15:30 – 16:00 **S. Holdsworth (Swiss Federal Laboratories for Materials Testing and Research, Switzerland)**
Advances in the Assessment of Creep Data
- 16:00 – 16:30 **P. Henderson / A. Hjörnhede (Vattenfall AB, Sweden)**
Combatting Corrosion in Biomass and Waste Fired Plants
- 16:30 – 19:00 **Reception and Poster session**
- 20:00 – 24:00 **Conference Dinner**

Wednesday, September 29th

- 09:00 – 13:30 **Zero-Emission Power Plants**
(Chairmen: J.Oakey / L. Singheiser)
- 09:00 – 09:30 **Speaker to be confirmed**
US Perspective in Fossil Energy Power
Production in a Carbon Constrained World
- 09:30 – 10:00 **R. Kneer (Rheinisch–Westfälische
Technische Hochschule Aachen,
Germany)**
OXYCOAL-AC: Innovative components
and concepts for the power plants of the
future
- 10:00 – 10:30 **A. Hjörnhede (Vattenfall, D)**
Preliminary Corrosion Results from
Vattenfall's 30 MW Oxyfuel Pilot Plant
- 10:30 – 11:00 **Speaker to be confirmed**
Experience with Integrated Gasifica-
tion Combined Cycle Plants and Future
Developments
- 11:00 – 11:30 **Coffee Break**
- 11:30 – 12:00 **P. Mathieu (Université de Liège,
Belgium)**
Advanced capture technologies in power
generation
- 12:00 – 12:30 **W. Meulenber (Forschungszentrum
Jülich, Germany)**
Ceramic Membranes for Gas Separation
in Advanced Fossil Fired Power Plants
- 12:30 – 13:00 **B. Bordenet (Alstom, France)**
Developments in Post-combustion CO₂
Capture Technologies – to be confirmed
- 13:00 – 13:30 **Closing Session**
Concluding remarks

... and how to find us:



Important dates

Reviewers' comments	May 15 th , 2010
Final manuscripts	June 15 th , 2010
Ninth Liège Conference	September 27 th - 29 th , 2010