

## Thermal Spray Crossing Borders

Maastricht, The Netherlands

June 2 – 4, 2008

Application  
Highlights:

Automotive

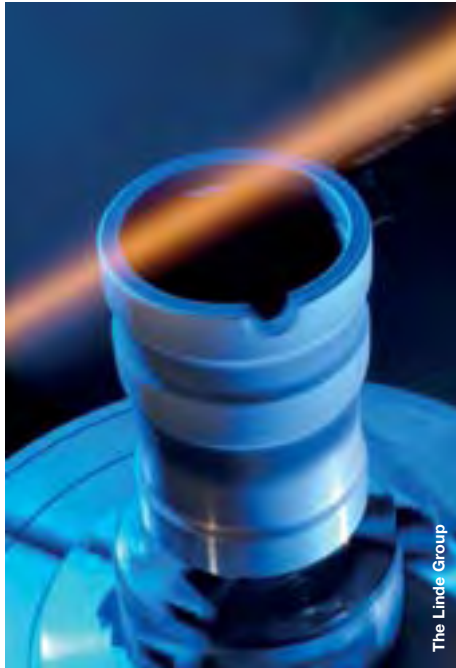
Solid Oxide Fuel Cell

Gasturbines

Biomedical Coatings

Printing and Paper

Young Scientists



## Final Program

Organizers:



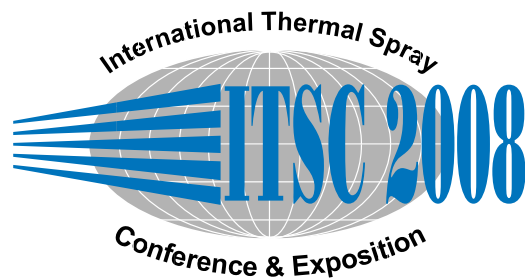
DVS - German Welding Society  
ASM International - Thermal Spray Society (TSS)  
IIW International Institute of Welding

Sponsors:



NIL - Netherlands Institute of Welding  
VTS - Vereniging voor Thermische Spuittechnieken

# Sponsoring



DVS – The German Welding Society is pleased to announce the following sponsors of ITSC 2008 conference:

## Gold Sponsors:

The logo for Sulzer, consisting of the word 'SULZER' in a bold, blue, sans-serif font.

Sulzer Metco AG (Switzerland)

Sulzer Metco



VTS – Vereniging voor  
Thermische Spuittechnieken  
(The Netherlands)

## Silver Sponsors:



Durum Verschleiss-Schutz GmbH  
(Germany)



The Linde Group (Germany)

## Bronze Sponsors:



Flame Spray Technologies by  
(The Netherlands)



GTV Verschleiss-Schutz GmbH  
(Germany)



H.C. Starck (Germany)



Medicoat AG (Switzerland)

Are you interested? Further sponsors are welcome.  
Please contact: [tagungen@dvs-hg.de](mailto:tagungen@dvs-hg.de)

# Welcoming Address from the Organizers

## The worldwide leading Conference of Thermal Spray returns to Europe!

Welcome to the International Thermal Spray Conference and Exposition 2008!

DVS - German Welding Society, ASM Thermal Spray Society and IIW International Institute of Welding proudly present the ITSC 2008 in Maastricht, The Netherlands.

As our local Dutch partner for this event, we introduce NIL - Netherlands Institute of Welding and VTS - Vereniging voor Thermische Spuittechnieken.

Over the past years, ITSC has become the most valuable worldwide exchange market for trends in thermal spraying.

At this year's event, we feature the latest developments in thermal spray applications, technology and science. We address key developments in several market focused symposia.

To strengthen the Thermal Spray Technology in its existing and future markets, ITSC 2008 broadens its use-oriented "**Special Highlights**" for growing and upcoming applications:

- **Automotive**
- **Biomedical Coatings**
- **Gasturbines**
- **Printing and Paper**
- **Solid Oxide Fuel Cell**

With the philosophy "**one day one market**" ITSC 2008 offers application oriented information straight forward towards the practical needs with an optimum of time invest for different industries.

There are 41 sessions with over 220 oral- and 140 poster presentations from 32 countries at ITSC 2008 that provide the most important source of thermal spray technical information available.

Additionally, more than 40 exhibitors will provide the conference attendees with optimum information about their current and ongoing developments.

ITSC becomes more and more an important stage for emerging professionals in thermal spraying. In the "**Junior Session**" promising young talents, both from industry and universities, share their work. This session is accompanied by a special poster exposition. All visitors to this session can elect their favorite contribution, and the winner will be announced on the awards banquet.

DVS - The German Welding Society – in cooperation with the GTS – Association of Thermal Spraying – is supporting thermal spraying constantly and substantially in Germany and worldwide. Support is given in the fields of

research, techniques, guidelines, papers, standards, regulation and certification, and in the field of personal training. Products and services are created and offered. It is our clear understanding – and we follow this strategy strictly – that all aspects of thermal spraying – research, techniques, training and certification – should be strongly linked. Once again ITSC in Europe is one of the best opportunities to link people and to strengthen our techniques.

With ITSC a substantial worldwide personal and technical network is created.

Whether you are an expert, an experienced engineer or scientist, or completely new to thermal spray, ITSC 2008 promises you the latest state of the art in thermal spray technology, valuable resources, and networking opportunities. The knowledge and experiences shared between you, the authors, instructors, students and exhibitors at this outstanding three-day-event is why thermal spray will continue to flourish in the next decades, with ever-increasing new market segments and new commercial opportunities.

ITSC 2008 is an opportunity not to be missed!

A very special thank you not only to the numerous authors of lectures and poster contributions, but also to the experts who are making themselves available for the Program Committee, Session Chairs, and the employees of all societies involved. It has been due to their work that a contribution has been made for the successful staging of the conference. Thanks to them for this most important parts of the conference preparations.

DVS is proud to be an active member of the international family of Thermal Spraying and we wish all authors, all exhibitors and all visitors, all our partners and friends – a great time here in Maastricht and a big success.

Last but not least, ITSC once again is stepping forward to the North American region in 2009:

Bookmark your calendar now for ITSC in Las Vegas, Nevada, USA in May 2009.



Klaus Middeldorf  
Chief Executive Officer  
DVS - German Welding Society

# Time Schedule

## Monday, June 2, 2008

Time	Auditorium 2	Room 04 (Brussels)	Room 05 (Paris)	Room 08 (Rome)
10:00	Opening Plenary Lecture			
11:05	Break (for changing rooms)			
11:10	Automotive	Wear Protection 1	New Equipment 1	Powders, Wires, Gases 1
12:30	Opening of Exposition and Poster Session			
13:00	Lunch Break			
14:00	Solid Oxide Fuel Cell 1	Wear Protection 2	New Equipment 2	Plasma Spraying and Plasma Transferred Arc 1
15:20	Coffee Break			
15:40	Solid Oxide Fuel Cell 2	Printing and Paper – Hard Chrome Replacement	Powders, Wires, Gases 2	Plasma Spraying and Plasma Transferred Arc 2
17:20	Exhibitor Reception and Poster Session, Expo Foyer, Trajectum			

## Tuesday, June 3, 2008

Time	Auditorium 2	Room 04 (Brussels)	Room 05 (Paris)	Room 08 (Rome)
08:20	Plenary Lecture			
09:05	Break (for changing rooms)			
09:10	Gasturbines 1	Corrosion Protection 1	Arc Spraying, Laser	Fe-based Materials 1
10:30	Coffee Break			
10:50	Gasturbines 2	Corrosion Protection 2	Case Studies and Further Applications 1	Nanomaterials 1
12:50	Lunch Break and Poster Session			
13:40	Gasturbines 3	New Equipment 3	Case Studies and Further Applications 2	Plasma Spraying and Plasma Transferred Arc 3
15:20	Coffee Break			
15:35	Junior Session			
20:00	ITSC 2008 Awards Banquet, La Caverne de Geulhem			

## Wednesday, June 4, 2008

Time	Auditorium 2	Room 04 (Brussels)	Room 05 (Paris)	Room 08 (Rome)
08:20	Cold Spraying 1	HVOF and Flame Spraying	Characterization 1	Pre- and Post-Treatment
10:20	Coffee Break			
10:40	Cold Spraying 2	Gasturbines 4	Characterization 2	Diagnostics and Sensors 1
12:40	Lunch Break			
13:40	Cold Spraying 3	Gasturbines 5	Biomedical Coatings	Diagnostics and Sensors 2
15:20	Coffee Break			
15:40	Cold Spraying 4	Nanomaterials 2	Polymers, Environmental-Friendly Coatings, Non Destructive Testing	Ceramics

## Thursday, June 5, 2008

Excursions				
Industrial Tour				
Linde Golf Challenge ITSC 2008				

Sponsoring	.....	Inside Front Cover
Welcoming Address from the Organizers	.....	1
Time Schedule	.....	2
Contents	.....	3
Technical Program	.....	4
Poster Session	.....	26
Research / AIF Poster Session	.....	34
Exposition	.....	36
Industrial Forum	.....	38
Education Courses	.....	40
General Information		
Registration Information	.....	43
Hotel Information	.....	44
Tips for The Netherlands	.....	44
Social Events		
Social Events	.....	45
Excursions	.....	45
Industrial Tour	.....	45
Linde Golf Challenge ITSC 2008	.....	46
Conference Committees and Endorsing Sponsors	.....	47
List of Authors, Session Chairs, Co-Authors	.....	48
Reservation Form for Hotels	.....	67
Registration Form	.....	Inside Back Cover

## Imprint

Photos by courtesy of:  
 Sulzer Metco AG (Switzerland) – Illustrations © Sulzer Metco / R. Segesseemann  
 The Linde Group (Germany)  
 Durum Verschleiss-Schutz GmbH (Germany)  
 Administration Office Maastricht

## Monday, June 2, 2008

**Auditorium 2**  
(with simultaneous translation)

10:00

**Opening**

**Plenary Lecture:**

**H. Flegel, President of DVS / Daimler AG, Stuttgart/Germany**

**Modern applications of thermal spray technology in automotive industry**

11:05

**Break (for changing rooms)**

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Automotive

**Highlight**

**Coatings on cylinder liners and piston fire faces, testing of coatings and means of surface preparation for inner diameter coatings**

**Session Chair: C. Coddet, J. Wesemann**

11:10

**Insulated piston fire face for diesel engines**

A. Tricoire\*, B. Kjellman, J. Wigren, M. Vanvolsem, L. Aixala

11:30

**Plasma transferred wire arc spraying of novel wire feedstock onto cylinder bore walls of AISi engine blocks**

T. Schläfer\*, K. Bobzin, F. Ernst, J. Zwick, F. Schreiber, A. Schwenk, M. Hahn, C. Verpoort

11:50

**Increase in graphite carbon in plasma sprayed cast iron coatings based on flying droplet diagnostic**

Y. Tsunekawa\*, T. Kozaki, K. Iwata, M. Okumiya

12:10

**Characterization of nanocrystalline thermally sprayed coatings by means of 4-point bending fatigue tests**

A. Fischer, M. Hahn\*

### Wear Protection 1

**Special processes for coatings against wear, improved surface roughness of as sprayed coatings, improved sliding behavior**

**Session Chair: T.W. Clyne, S. Hartmann**

**Development of near net-shape coatings for wear and corrosion protection**

T. Bause\*, F. Bach, K. Möhwald, M. Erne

**Erosion, abrasive and friction wear behavior of iron aluminide coatings sprayed by HVOF**

S. Dosta, J. Guilemany, N. Cinca\*, S. Sampath

**Cavitation erosion for WC cermet coatings prepared by HVOF**

H. Mizuno\*, I. Aoki, S. Tawada, H. Ibe, K. Sato, J. Kitamura

**A comparative study of cold sprayed and HVOF MCrAlY coatings**

K. Triantou\*, C. Sarafoglou, D. Pantelis, D. Christoulis, V. Guipont, M. Jeandin, A. Zaroulias, M. Vardavoulias

**Monday, June 2, 2008**



**Break (for changing rooms)**

**11:05**

**Room 05  
(Paris)**

**Room 08  
(Rome)**

**New Equipment 1**

Latest developments in thermal spray equipment, modern multiple arc plasma guns, optimized powder feeder, new vacuum processes

Session Chair: P. Hanneforth, F.-W. Bach

**Operational characteristics of locally fluidized powder feeders**  
M. Spaulding\*

**New process to achieve high production rates during thermal spraying of thick coatings**  
V. Uhlenwinkel\*, L. Achellis

**Development of WC-Co coatings deposited by warm spray process**  
P. Chivavibul\*, M. Watanabe, S. Kuroda, J. Kawakita, M. Komatsu, K. Sato, J. Kitamura

**Coanda-assisted spray manipulation**  
B. Smith\*, D. Allen

**Powders, Wires, Gases 1**

New powder mixtures and cored wires, support and distribution of industrial gases for thermal spraying

Session Chair: M. Ducos, H. Burkard

**The gas industry and its support in the field of thermal spraying**  
W. Krömmer\*, P. Heinrich

**Intelligent gas supply systems for thermal spraying**  
W. Krömmer, E. Brune\*

**Current situation and development tendency of thermal spraying materials in China**  
Y. Yu\*

**Effects of plasma spray distance on properties of Ni-Al intermetallic coating by utilizing of mechanically alloyed powders**  
M. Moshref Javadi\*, H. Edris, M. Salehi

**11:10**

**11:30**

**11:50**

**12:10**

## Monday, June 2, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

12:30

**Opening of Exposition and Poster Session**

13:00

**Lunch Break**

### Solid Oxide Fuel Cell 1

**Highlight**

Coatings for SOFC components for mobile and stationary applications, thermal and electrical insulation by thermal sprayed ceramic coatings

Session Chair: R. Schmid, D. Stöver

14:00

**Insulation and sealing of metal supported SOFC devices by plasma sprayed ceramic layers**

J. Arnold\*, A. Ansar, U. Maier, R. Henne

14:20

**APS-triplex and LPPS-thin film as advanced plasma spraying technologies for industrialization of SOFC components**

M. Gindrat\*, A. Refke, R. Damani

14:40

**Development of a sealing technical layer for SOFCs applications**

N. Caron\*, L. Bianchi, S. Méthout

15:00

**High performance solid oxide fuel cells (SOFCs) made by atmospheric plasma spraying (APS)**

R. Vaßen\*, A. Hospach, D. Hathiramani, V. Haanappel, I. Vinke, J. Mertens, D. Stöver

### Wear Protection 2

Special processes for coatings against wear, improved surface roughness of as sprayed coatings, improved sliding behavior

Session Chair: J. Takeuchi, E. Vogli

**Analytic hierarchy process (AHP) analysis for experts' knowledge and experience when obtaining high quality wear protective APS- $\text{Al}_2\text{O}_3$  film**

S. Hirose\*, S. Kitahara, K. Sonoya, A. Ohmori, K. Mori

**Tribological behavior comparison of alumina coatings manufactured by APS with micrometric powder and agglomerated nanometric powders**

H. Ageorges\*, J. Darut, A. Denoirjean, G. Montavon, P. Fauchais

**Comparative analysis of tribological properties of cermet detonation sprayed coatings**

I. Smurov\*, V. Ulianitsky, À. Shtertser, S. Zlobin

**CFD optimized nozzles for increased particle velocities and lowered gas consumption in the HVOF spraying process**

C. Rupprecht, B. Wielage, G. Paczkowski\*, R. Menzen, G. Weissenfels, H. Bernhardt, M. Runkel

15:20

**Coffee Break**



## Monday, June 2, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

**Opening of Exposition and Poster Session**

**12:30**

**Lunch Break**

**13:00**

### New Equipment 2

Latest developments in thermal spray equipment, modern multiple arc plasma guns, optimized powder feeder, new vacuum processes

Session Chair: X. Huang, W. Herlaar

**Processing of wear resistant ceramic coatings by HFPD**

M. Parco\*, G. Barykin, I. Fagoaga, C. Vaquero

**A new way in HVOF technology – CFD optimized topgun® airjet for powder and wire**

C. Rupprecht\*, B. Wielage, G. Paczkowski, G. Weissenfels, R. Menzen, H. Bernhardt, M. Runkel

**Homogenization of coating properties in atmospheric plasma spraying – technical objectives and first results of a DFG funded research group**

K. Hartz, F. Bach, K. Bobzin, J. Schein\*, K. Möhwald, D. Parkot, I. Petkovic, G. Forster, S. Zimmermann

**Gaseous pulse detonation spraying: current status, challenges and future perspective**

Y. Kharlamov\*

### Plasma Spraying and Plasma Transferred Arc 1

New trends and modified plasma processes for the application of ceramic-based coatings

Session Chair: Y. Borisov, J. Wilden

**Atmospheric IC-plasma spraying of coatings – a too little attended alternative?**

B. Dzur\*

**VPS tungsten coatings sprayed by direct current (DC) and inductive coupled (IC) plasma**

H. Gruner, J. Moens\*, P. Gruner

**Gas permeability of porous plasma sprayed coatings**

K. Wittmann-Ténéze\*, J. Pereira, N. Caron

**Co-deposited ceramic/polymer coatings for tailored insulation**

S. Gulizia\*, D. Jahedi

**14:00**

**14:20**

**14:40**

**15:00**

**Coffee Break**

**15:20**

## Monday, June 2, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Solid Oxide Fuel Cell 2

**Highlight**

Coatings for SOFC components for mobile and stationary applications, thermal and electrical insulation by thermal sprayed ceramic coatings

Session Chair: Y. Tsunekawa, R. Vaßen

15:40

**Suspension thermal spraying of reduced temperature solid oxide fuel cell (SOFC) components**

J. Oberste Berghaus\*, J. Legoux, C. Moreau, R. Hui, R. Maric

16:00

**Plasma sprayed deposits as oxygen electrode for solid oxide fuel cells and high temperature electrolyzers**

A. Ansar\*, G. Schiller, O. Patz, J. Gregoire, Z. Ilhan

16:20

**Thermal spray fabrication of cermet supported tubular solid oxide fuel cells**

C. Li\*, C. Li, G. Yang

16:40

**Effect of substrate and cathode parameters on the properties of suspension plasma sprayed solid oxide fuel cell electrolytes**

D. Waldbillig\*, O. Kesler, Z. Tang, A. Burgess

17:00

**Very low pressure plasma spraying of yttria stabilized zirconia for solid oxide fuel cell electrolytes**

N. Spinhirne\*, D. Hirschfeld, R. Williamson, A. Hall

17:20

### Printing and Paper - Hard Chrome Replacement

**Highlight**

Modern coating systems for long lasting printing performance, latest coating developments for rolls in paper machines; Optimized coatings for replacing galvanic hard chrome coatings

Session Chair: K. Tani, G. Langer

**Thermal spray coatings in paper making and printing**

H. Jungklaus\*

**Applications of thermal spraying for OEMs in the printing industry**

J. Döring\*, G. Langer

**Applications of thermally sprayed coatings in paper machinery with high surface roughness**

J. Döring, F. Kremsner\*, R. Polak

**Automated substrate cooling system for HVOF coating operations**

Z. Zurecki\*, R. Ghosh, T. Mebrahtu, M. Thayer, S. Stringer

**A life cycle comparison of hard chrome and thermal sprayed coatings: A case example of aircraft landing gears**

N. Krishnan\*, A. Vardelle, J. Legoux

### Exhibitor Reception and Poster Session, Expo Foyer, Trajectum

The following Awardings are planned:  
René Wasserman Prize / GTS Ring of Honor / Hall of Fame

## Monday, June 2, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Powders, Wires, Gases 2

**New powder mixtures and cored wires, support and distribution of industrial gases for thermal spraying**

**Session Chair:** L.-M. Berger, M. van Wonderen

**The influence of milling parameters on the properties of the milled powders and micro-plasma spraying coatings**

D. He\*, P. Hou, J. Jiang, Q. Zhao

**Characteristics of high-SiC- / high-TiC-containing thermal spray coatings regarding operating conditions**

T. Grund\*, B. Wielage, M. Nebelung, S. Thiele, A. Wank, A. Schwenk

**Microstructure and properties of HVOF sprayed WC- (W, Cr) 2C-Ni coatings**

L. Berger\*, C. Jordan, T. Naumann, S. Saaro, M. Kašparova, F. Zahálka

**Characterizations of cold sprayed Ni-Al<sub>2</sub>O<sub>3</sub> composite coating with relatively large Ni-coated alumina powder**

W. Li\*, C. Zhang, H. Liao, J. Li, C. Coddet

**Hollow droplets micro explosive thermal spraying: fundamentals**

O. Solonenko\*, I. Gulyaev, A. Smirnov

### Plasma Spraying and Plasma Transferred Arc 2

**New trends and modified plasma processes for the application of ceramic-based coatings**

**Session Chair:** M. Dorfman, F. Kremsner

**Influence of the spray angle on characteristics for atmospheric plasma sprayed hard material based coatings**

B. Krebs\*, W. Tillmann, E. Vogli

**Plasma spraying of metal coatings using CO<sub>2</sub> based gas mixtures**

L. Pershin\*, J. Mostaghimi, L. Chen

**Effective parameters in axial injection suspension plasma spray process of alumina-zirconia ceramics**

F. Tarasi\*, M. Medraj, A. Dolatabadi, J. Oberste Berghaus, C. Moreau

**Numerical and experimental study for the development of a hollow cathode plasma gun**

Y. Shu\*, J. Stanisic, J. Stanisic, P. Mohanty

**Numerical investigation of the influence of injection modes in the solution precursor plasma spraying**

Y. Shan\*

15:40

16:00

16:20

16:40

17:00

### Exhibitor Reception and Poster Session, Expo Foyer, Trajectum

The following Awardings are planned:  
René Wasserman Prize / GTS Ring of Honor / Hall of Fame

17:20

## Tuesday, June 3, 2008

**Auditorium 2**  
(with simultaneous translation)

08:20

**Plenary Lecture:**  
**D. Stöver, Forschungszentrum Jülich GmbH, Jülich/Germany**  
**Advanced thermal spray opportunities in energy systems**

09:05

**Break (for changing rooms)**

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Gasturbines 1

**Highlight**

Coatings for mobile and stationary turbines, protection against wear, high temperature corrosion and thermal stresses, clearance control coatings for a better efficiency

Session Chair: M. Hertter, S. Wilson

09:10

**Advanced knowledge system for coatings and the gas turbine MRO industry**  
P. Chandler\*, W. Hall, N. Shadbolt, H. Alani, M. Szomszor

09:30

**Development of new surface preparation of turbine components for deposition of MCrAlY coatings with zero pollution interface**  
C. Giolli, D. Russo\*, G. Rizzi, A. Scrivani

09:50

**Development of oxide dispersion strengthened MCrAlY coatings**  
M. Brühl\*, K. Bobzin, F. Ernst, K. Richardt

10:10

**Deposition mechanism of cold sprayed MCrAlY coatings focused on nanostructure**  
Y. Ichikawa\*, T. Miyazaki, K. Ogawa, M. Jeandin, T. Shoji

### Corrosion Protection 1

Corrosion protection through thermal sprayed coatings including cathodic and high temperature corrosion, coating of large areas for offshore facilities and comparable applications

Session Chair: M. Jeandin, A. Kirsten

**Corrosion performance of arc sprayed Zn, Zn/Al 85/15 coatings on ductile iron pipe**  
A. Turk, A. Gulec\*, O. Cevher, F. Ustel, F. Yilmaz

**Predicting quenching and cooling stresses within HVOF deposits**  
J. Stokes\*

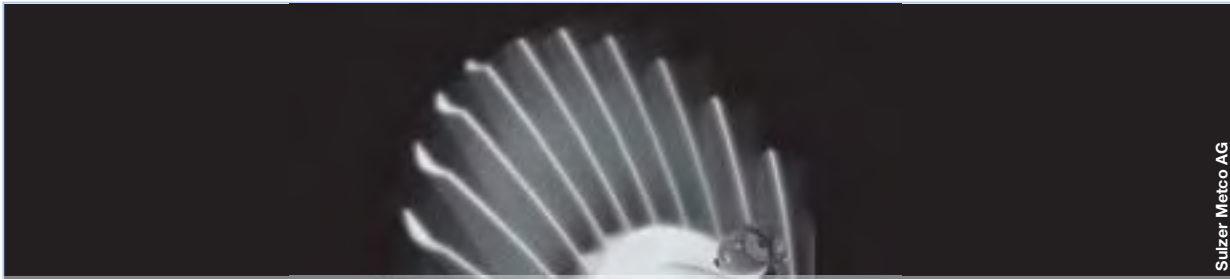
**Mechanical properties of tungsten and tungsten alloys made by vacuum plasma spray**  
T. McKechnie\*, S. O'Dell

**Corrosion protection of municipal solid waste incinerator superheaters by HVOF thermal spray coatings**  
S. Dosta, J. Guilemany, M. Torrell\*, J. Miguel

10:30

**Coffee Break**

## Tuesday, June 3, 2008



### Thermal Barrier Coatings

**Break (for changing rooms)**

**09:05**

**Room 05  
(Paris)**

**Room 08  
(Rome)**

#### Arc Spraying, Laser

Ongoing developments in the field of arc spraying including possibilities for modeling this widely known surface coating technology

**Session Chair: R. Unger, F. Schreiber**

##### Wire arc spraying technology for spraying particle reinforced coatings

F. van Rodijnen\*, S. Knapp, J. Wilden, S. Jahn, S. Reich, G. Fischer

##### Microstructure and wear behavior of arc sprayed WC-12Co /FeCrB and WC-12Ni /FeCrB composite coatings

D. He\*, B. Fu, J. Jiang, X. Li

##### Modeling of oxygen intake by particles at arc spraying

Y. Korobov\*, V. Boronenkov

##### Suspension plasma sprayed alumina coating structures: operating parameters vs. coating architecture

G. Montavon, O. Tingaud\*, A. Grimaud, A. Denoirjean, V. Rat, J. Coudert, P. Fauchais, T. Chartier

#### Fe-based Materials 1

Due to the worldwide rise of material costs Fe-based materials are becoming more and more a suitable alternative to established hard phase coatings

**Session Chair: T. Warda, W. Tillmann**

##### Influence of spray parameters and nozzle geometry on microstructure and properties of HVOF sprayed FeCr-VC coatings

S. Schuberth\*, B. Wielage, T. Grund, H. Pokhmurska

##### Thermally sprayed coatings with stochastic microstructures for thermomechanically high stressed surfaces

B. Dröbller\*, F. Bach, K. Möhwald

##### Development of structurally amorphous coatings using a high velocity oxygen fuel method

O. Racek\*, P. Michlik, B. Beardsley

##### Arc sprayed coatings obtained from iron based cored wires under high temperature abrasive wear conditions

H. Pokhmurska\*, M. Student, Y. Sirak, B. Wielage, T. Grund

**09:10**

**09:30**

**09:50**

**10:10**

**Coffee Break**

**10:30**

## Tuesday, June 3, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Gasturbines 2

**Highlight**

Coatings for mobile and stationary turbines, protection against wear, high temperature corrosion and thermal stresses, clearance control coatings for a better efficiency

Session Chair: E. Turunen, F. Ladru

10:50

**Technology advances in compressor and turbine abrasives**

M. Dorfman\*, S. Wilson, D. Sporer, P. Sheedy

11:10

**Tailor-made coatings for turbine applications using the triplex pro 200**

K. Richardt\*, K. Bobzin, F. Ernst, J. Zwick, D. Sporer

11:30

**Towards highly sintering resistant nano-structured  $ZrO_2$ -7wt%  $Y_2O_3$  coatings for TBC applications by employing differential sintering**

R. Lima\*, B. Marple

11:50

**Effect of water vapor on EBCs which have top coat various bonded and free silicates**

G. Erdogan\*, F. Ustel, H. Toplan, T. Terzi

12:10

**Newest light weight closed loop electric arc spray gun**

M. van Wonderen\*, R. Luding, I. MacMillan

12:30

**Metal foam sandwich structure as a high temperature heat exchanger**

H. Salimijazi\*, L. Pershin, J. Mostaghimi, T. Coyle, S. Chandra

### Corrosion Protection 2

Corrosion protection through thermal sprayed coatings including cathodic and high temperature corrosion, coating of large areas for offshore facilities and comparable applications

Session Chair: A. Melzer, M. de Bonte

**FeNiW-coatings for casting molds in the aluminium industry**

S. Jahn\*, J. Wilden, V. Drescher, S. Reich

**Corrosion of alumina-based coatings**

C. Stahr\*, L. Berger, M. Herrmann, D. Deska

**Effect of Al on the performance of Ni-based PTA coatings**

A. d'Oliveira\*, F. Cangué

**Degradation behavior of HVOF sprayed Ni-based coatings on superalloy in 40% $Na_2SO_4$ -60% $V_2O_5$  environment at 900°C**

R. Mahesh\*, S. Kamal, A. Modi, R. Jayaganthan, S. Prakash

**Properties of 316L stainless steel coatings sprayed by HVOF process**

Z. Zeng\*, N. Sakoda, T. Tajiri, S. Kuroda

**Application of HVOF for thermal spraying of Zn-Al**

I. Gorchach\*

12:50

**Lunch Break and Poster Session**

## Tuesday, June 3, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Case Studies and Further Applications 1

Showing the broad variety of thermal spraying in different examples, special processes and also specialized materials apart from standard coatings offer new possibilities and also new markets

Session Chair: R. Knight, T. Schläfer

**Airtight coatings produced by very low pressure plasma spraying**

C. Verdy\*, C. Zhang, D. Sokolov, H. Liao, D. Klein, C. Coddet

**Innovation of ultra-fine structured alloy coating having superior high temperature corrosion resistance**

X. Ma\*, J. Roth, D. Gandy, F. Frederick

**Study on gas permeation behavior through atmospheric plasma sprayed yttria stabilized zirconia coating**

H. Liao\*, C. Zhang, C. Coddet, C. Li, C. Li, G. Yang

**Systematic approach to design new protective coatings to a biofuel boiler plant**

E. Turunen, T. Varis\*, S. Tuurna, K. Penttilä

**Detonation flame sprayed diamond-bronze coatings for grinding applications**

W. Tillmann\*, E. Vogli, J. Nebel

**High temperature oxidation performance of WC-Co coatings by detonation gun spray on a boiler steel**

H. Saheet\*, M. Kaur, S. Prakash

### Nanomaterials 1

Most coating materials gain superior coating performance when applied as nano-structured coating, new designed materials and optimized processes show promising results for this

Session Chair: S. Siegmann, G. Reiners

**Characterization and properties of ceramic nanostructured coatings elaborated by thermal spraying of suspensions**

F. Toma\*, L. Berger, T. Naumann, C. Stahr, S. Langner

**Microstructural, tribological and corrosion aspects of thermally sprayed Ti-Cr-Si-O coatings showing icosahedral phases**

S. Siegmann, P. Bandyopadhyay\*, M. Hadad, C. Jaeggi

**Friction and wear properties of plasma sprayed nanostructured chromium oxide coatings**

Q. Li\*, S. Li, W. Yang

**Fabrication of bulk nanocrystalline ceramic materials**

T. Chraska\*, K. Neufuss, J. Dubsky, P. Ctibor, M. Klementova

**Improving the properties of HVOF sprayed Cr<sub>2</sub>O<sub>3</sub> by nanocomposite powders**

T. Varis\*, J. Knuutila, T. Suhonen, U. Kanerva, J. Silvonen, J. Leivo, E. Turunen

**Characterization of HVOF sprayed nano crystalline NiCrAlY coating**

G. Rayudu\*, A. Khanna, G. Kumar

**Lunch Break and Poster Session**

10:50

11:10

11:30

11:50

12:10

12:30

12:50

## Tuesday, June 3, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Gasturbines 3

**Highlight**

Coatings for mobile and stationary turbines, protection against wear, high temperature corrosion and thermal stresses, clearance control coatings for a better efficiency

Session Chair: E. Brenner, T. Duda

13:40

**Self healing thermal barrier coatings**  
W. Sloof, V. Kochubey\*

14:00

**Failure mechanism for thermal fatigue of thermal barrier coating systems**  
C. Giolli\*, A. Scrivani, G. Rizzi, F. Borgioli, L. Lusvarghi, G. Bolelli

14:20

**Effect of undercooling on solidification of YSZ splats**  
H. Liu\*, M. Bussmann, J. Mostaghimi

14:40

**Damage development in an air plasma sprayed thick thermal barrier coating system**  
H. Brodin\*, S. Johansson

15:00

**A numerical assessment of the failure of plasma sprayed thermal barrier coatings**  
S. Asghari, M. Salimi, M. Salehi\*

15:20

### New Equipment 3

Latest developments in thermal spray equipment, modern multiple arc plasma guns, optimized powder feeder, new vacuum processes

Session Chair: C. Moreau, K. Bobzin

**Comparison of coating stresses produced by high velocity liquid fuel and triplex pro 200 plasma guns using in-situ coating stress measurement**  
R. Molz\*, A. Valarezo, J. Colmen, S. Sampath

**KINETIKS® 4000 – new perspective with cold spraying**  
H. Höll\*, P. Richter

**Large-A plasma torch for surface chemistry applications and CVD processes – a status report**  
S. Zimmermann\*, E. Theophile, K. Landes, J. Schein

**Standard HVOF process compared to the HVOF process for internal coating with fine powders**  
G. Matthäus\*, W. Brandl, G. Marginean, D. Ackermann

**Detailed analysis of the plasma jet of F4 and delta torches by means of tomography**  
F. Dschung\*, G. Forster, J. Schein

**Coffee Break**



**Aerospace Solutions**

Sulzer Metco AG



## Tuesday, June 3, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Case Studies and Further Applications 2

Showing the broad variety of thermal spraying in different examples, special processes and also specialised materials apart from standard coatings offer new possibilities and also new markets

Session Chair: M. Nestler, C. Hofmann

**Molten zinc corrosion of WC-Co coatings in Al-added zinc bath**  
T. Huang\*

**Electrically conductive flame sprayed aluminium coatings on textile substrates**  
J. Voyer\*, P. Schulz, M. Schreiber

**Effects of SO<sub>2</sub> on decay durability of the 8YZ coating having metal or cermet under coat**  
K. Hamashima\*, Y. Ishikawa

**Thermoelectric properties of plasma sprayed (Sr, Y) TiO<sub>x</sub> thick film**  
S. Sodeoka\*, M. Suzuki, T. Inoue, H. Obara

**Plasma sprayed coatings of high purity ceramics for semiconductor and flat panel display production equipments**  
J. Kitamura\*, H. Ibe, H. Mizuno, I. Aoki

### Plasma Spraying and Plasma Transferred Arc 3

New trends and modified plasma processes for the application of ceramic-based coatings

Session Chair: P. Chraska, K. Möhwald

**Parameters controlling properties of coatings sprayed by suspension plasma spraying**  
V. Rat, R. Etchart-Salas, J. Coudert, P. Fauchais\*

**Liquid precursor plasma spraying: modeling of the droplet breakup**  
A. Vardelle\*, C. Marchand, C. Chazelas, G. Mariaux

**Optimization of solution precursor plasma spray process by statistical design of experiment**  
Y. Wang\*, T. Coyle

**New approach to the problem of cathode wear in DC arc plasma torches**  
T. Kavka\*, J. Arnold, A. Syed, G. Roth, T. Kupke, G. Schneider

**Microplasma spraying of ZrO<sub>2</sub> coatings**  
Y. Borisov\*, S. Vojnarovitch, A. Kislitsa, A. Borisova, M. Karpets, A. Tunik

**Coffee Break**

13:40

14:00

14:20

14:40

15:00

15:20



The Linde Group

## Tuesday, June 3, 2008

**Auditorium 2**  
(with simultaneous translation)

### Junior Session

**Highlight**

This session will deal with different topics, most promising young talents, both from industry and universities will report shortly about their work. This session is accompanied by a special poster exposition. All visitors of this session are allowed to elect their favorite contribution, the winner will be announced on the awards banquet

Session Chair: K. Nassenstein, C.C. Berndt

- 15:35** **Thin and dense yttria partially stabilized zirconia electrolytes for IT-SOFC manufactured by suspension plasma spraying**  
G. Montavon, E. Brousse\*, P. Fauchais, A. Denoirjean, H. Ageorges, V. Rat, J. Coudert, K. Wittmann-Ténéze
- 15:40** **Plasma spray of free-standing components for bone tissue engineering**  
D. García-Alonso\*, J. Stokes, L. Looney
- 15:45** **Tribological study of thermosprayed specimens using wear resistance equipments**  
W. Tillmann, E. Vogli, A. da Cunha\*
- 15:50** **A numerical model for combustion and expansion in HVOF and suspension flame spraying**  
E. Dongmo\*, M. Wenzelburger, R. Gadow
- 15:55** **Process maps for thermal spray: tailoring physical properties of TiO<sub>2</sub> through understanding of particle state indicators**  
J. Colmenares-Angulo\*, V. Cannillo, S. Sampath, A. Sharma, A. Gouldstone
- 16:00** **Free- and constrained sintering model for plasma sprayed zirconia thermal barrier coatings**  
A. Cipitria\*, T. Clyne, I. Golosnoy
- 16:05** **Simulation of PYSZ-particles impact and solidification in atmospheric plasma spraying coating process**  
I. Petkovic\*, K. Bobzin, N. Bagcivan, D. Parkot
- 16:10** **A comparative microstructural investigation of nanostructured and conventional Al<sub>2</sub>O<sub>3</sub> coatings deposited by plasma spraying**  
D. Zois\*, M. Vardavoulis, A. Lekatou, I. Panagiotopoulos, A. Vazdirvanidis
- 16:15** **How long is the way to manufacture solid oxide fuel cells with suspension plasma spraying (SPS)?**  
O. Marchand\*, G. Bertrand

## Tuesday, June 3, 2008

**Auditorium 2**  
(with simultaneous translation)

<b>Numerical simulation of an electromagnetically controlled plasma jet during atmospheric plasma spraying</b> E. Brußies*, J. Stiller, R. Grundmann	<b>16:20</b>
<b>HVOF sprayed TiC-strengthened Fe-coatings as alternative for conventional carbide materials</b> T. Warda*, K. Bobzin, F. Ernst, K. Richardt, G. Reisel	<b>16:25</b>
<b>Influence of microstructure on thermal and optical properties of suspension plasma sprayed (SPS) and atmospheric plasma sprayed (APS) coatings</b> A. Stuke, H. Kassner*, R. Carius, D. Pitzer, R. Vaßen, D. Stöver	<b>16:30</b>
<b>Understanding coating formation in real time via monitoring of residual stress development</b> A. Valarezo*, E. Mari, S. Sampath	<b>16:35</b>
<b>Utilization of instrumented indentation on thermal sprayed coating mechanical property characterization</b> T. Suhonen*	<b>16:40</b>
<b>Advanced production of thermally sprayed prepregs for UD fiber reinforced light metal MMCs</b> M. Silber*, R. Gadow	<b>16:45</b>
<b>Peculiarities of abrasive wear of PEO layers obtained on arc sprayed aluminium coatings</b> T. Grund, D. Meyer*	<b>16:50</b>
<b>Development of cost-efficient thermally sprayed wear resistant coatings</b> S. Schubert*	<b>16:55</b>
<b>Characterization of thermally sprayed near net shape oxide ceramic and cermet coatings by acoustic emission analysis</b> M. Erne*, F. Bach, K. Möhwald, T. Bause, C. Scheer	<b>17:00</b>
<b>Influencing parameters on the turning process of Fe-based thermal sprayed coatings</b> G. Fischer*, J. Wilden, S. Jahn, S. Wang	<b>17:05</b>
<b>Three-dimensional analysis of cold sprayed coatings using microtomography</b> G. Rolland*, F. Borit, V. Guipont, M. Jeandin, D. Jeulin, L. Bara, C. Bourda	<b>17:10</b>
<b>ITSC 2008 Awards Banquet, La Caverne de Geulhem</b>	<b>20:00</b>

## Wednesday, June 4, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Cold Spraying 1

Everything around this young thermal spraying technique, possible applications and latest developments for equipment of high pressure and low pressure cold spraying, models and simulations for a deeper process knowledge

Session Chair: W. Krömmer, S. Kuroda

08:20

**Cold spraying: recent developments and application potential**

T. Klassen\*, T. Schmidt, F. Gärtner, H. Kreye

08:40

**Investigation of composite: metal-ceramics and metal-metal coatings produced with cold spray process**

A. Papyrin\*, V. Kosarev, S. Klinkov, A. Sova, I. Smurov, P. Bertrand

09:00

**Preparation and mechanical properties of cold sprayed nanocrystalline aluminum**

A. Hall\*, L. Brewer, B. Boyce, T. Roemer

09:20

**Cold spray produced bulk forms**

J. Karthikeyan\*, C. Kay

09:40

**How cold is cold spray? An experimental study of the heat transfer to the substrate in cold gas dynamic spraying**

E. Irissou\*, J. Legoux, A. Ryabinin, C. Moreau

10:00

**Particle image velocimetry of cold spray CP titanium**

S. Zahiri\*, W. Yang, M. Jahedi

10:20

### HVOF and Flame Spraying

New very hard coatings and modern powder feeding for economic dense coatings against wear and corrosion

Session Chair: B. Wielage, G. Barbezat

**HVOF sprayed nylon-11 + nanodiamond composite coatings: production and characterization**

R. Knight\*, V. Mochalin, A. Stravato, S. Picardi

**Introduction to high velocity suspension flame spraying (HVSFS)**

A. Killinger\*, J. Rauch, R. Gadow

**Numerical modeling of warm spray (two-stage HVOF) process**

H. Katanoda\*, J. Kawakita, S. Kuroda

**Microstructural and tribological investigation of high velocity suspension flame sprayed (HVSFS) Al<sub>2</sub>O<sub>3</sub> coatings**

G. Bolelli\*, J. Rauch, V. Cannillo, A. Killinger, L. Lusvarghi, R. Gadow

**Designing of an integrated semi automated powder feed device to produce functionally graded materials (FGM) using the HVOF thermal spray process**

J. Stokes\*, K. Al Mamun, M. Hasan, L. Looney, S. Hashmi

**HVOF coatings by customized cermet materials for various applications**

J. Kitamura\*, H. Mizuno, S. Tawada, I. Aoki

**Coffee Break**

## Wednesday, June 4, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Characterization 1

Modern characterization offers a good possibility for proofing the reliability and the performance of thermal sprayed coatings

Session Chair: M. Boulos, G. Montavon

**Residual stress calculation in thick plasma sprayed coatings**

H. Samadi\*, T. Coyle

**Plasma spraying of tungsten carbide cobalt coatings by the water-stabilized system WSP®**

P. Ctibor, P. Ctibor\*, M. Kašparová, J. Bellin, E. Le Guen

**Evaluation of shear test results for determination of shear load resistance of thermally sprayed coatings**

S. Hartmann\*, F. Deuerler, R. Winkler

**Standardization of thermal spray coating quality evaluation**

T. Shmyreva\*

**Thermal expansion response of thermally sprayed coating**

M. Bejarano\*, A. Valarezo, A. Gouldstone, S. Sampath

**Microstructure and oxidation behavior of Cr<sub>3</sub>Ni<sub>7</sub>C cermet coatings deposited by diamond jet spray process**

F. Ye\*, S. Wu, A. Ohmori

### Pre- and Post-Treatment

Thermal sprayed coatings must be regarded as part of a production process, in order to produce superior quality and performance new possibilities in pre- and post-treatment have to be discussed

Session Chair: R. Eijkenboom, C. Li

**Effect of the blasting time on the amount of the residual grit on a blasted steel substrate**

T. Maruyama\*, T. Miyazaki, T. Kobayashi

**Effect of diffusion treatment on interface microstructure between thermally sprayed Co-based self-fluxing alloy coating and steel substrate**

K. Sakata\*, S. Fujita, H. Miyahara, K. Ogi

**Effects of surface chemistry on splat formation during plasma spraying**

A. Tran\*, M. Hyland, T. Qiu, B. Withy, B. James

**New LN<sub>2</sub> cryogenic process to strip parts thermal spray coated**

M. Ducos\*, F. Richard, O. Matile, R. Warnecke, H. Hume, T. Debionne

**Fast regime – fluidized bed machining (FR-FBM) of thermally sprayed coatings**

M. Barletta\*, G. Rubino, L. Lusvarghi, G. Bolelli, A. Bassani

**Improving wear and corrosion of magnesium alloys through a combination of thermal spraying and laser cladding**

T. Biermann\*, D. Weisheit, K. Bobzin, J. Zwick, F. Ernst, K. Richardt

**Coffee Break**

08:20

08:40

09:00

09:20

09:40

10:00

10:20

## Wednesday, June 4, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Cold Spraying 2

Everything around this young thermal spraying technique, possible applications and latest developments for equipment of high pressure and low pressure cold spraying, models and simulations for a deeper process knowledge

Session Chair: A. Kay, P. Heinrich

10:40

**Correlation of particle impact conditions and coating properties in cold spraying**  
T. Schmidt\*, F. Gärtner, H. Kreye, T. Klassen

11:00

**Copper particle impact onto aluminium by cold spray**  
P. King\*, S. Zahiri, M. Jahedi

11:20

**Influence of particle velocity on adhesion of cold sprayed splats**  
S. Guetta\*, F. Borit, V. Guipont, M. Jeandin, M. Boustie

11:40

**Influence of substrate hardness on deposition behavior of individual porous WC-12Co particles in cold spraying**  
C. Li\*, P. Gao, Y. Li, G. Yang, C. Li

12:00

**Fabrication of porous Al alloy coatings by cold gas dynamic spray process**  
H. Lee\*, K. Ko

12:20

**Improvement in deposition efficiency of copper particle onto metallic substrate in cold spray process**  
M. Fukumoto\*, H. Terada, K. Satoh, M. Mashiko, M. Yamada

12:40

**Lunch Break and Poster Session**

### Gasturbines 4

**Highlight**

Coatings for mobile and stationary turbines, protection against wear, high temperature corrosion and thermal stresses, clearance control coatings for a better efficiency

Session Chair: C.C. Berndt, K. Richardt

**Influence of post-spraying heat treatment on the oxidation behavior of a thermal barrier coating**

W. Chen\*, R. Archer, X. Huang, B. Marple

**Development and investigation on new composite and ceramic coatings as possible abradable seals**

C. Giolli\*, U. Bardi, A. Scrivani, G. Rizzi, A. Fossati, F. Borgioli

**PTA processing of ceramic coatings**

A. d'Oliveira\*, F. Drozda, E. Takano

**Development of HVOF sprayed nanostructured TiO<sub>2</sub> coatings for high temperature applications**

R. Lima\*, E. Garcia, P. Miranzo, M. Osendi, C. Moreau

**A comparison of sintering behavior and phase transformation characteristics between plasma sprayed commercial CSZ and conventional YSZ based TBCs**

E. Altuncu\*, F. Ustel

**Influence of thermal cycling on residual stresses in a thermal barrier coating with a kinetic metallization sprayed bond coating**

T. Niki\*, K. Ogawa, T. Shoji

## Wednesday, June 4, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Characterization 2

Modern characterization offers a good possibility for proofing the reliability and the performance of thermal sprayed coatings

Session Chair: P. Fauchais, M. Knepper

#### Residual stress in HVOF thermally sprayed IN718 coatings

C. Lyphout\*, P. Nýlen, A. Manescu

#### Characterization of nanostructured and conventional alumina-13wt.% titania coatings

A. Ibrahim\*, H. Salem, C. Berndt

#### Studies on bending strength of plasma sprayed ceramic coatings

S. Tao\*, Z. Yin, X. Zhou, C. Ding

#### The metallographic characterization of thermal spray coating microstructures

D. Puerta\*, F. Anderson, A. Geary

#### Numerical investigation on the heat insulation behavior of thermal spray coating by unit cell model

F. Liu\*, K. Zeng, X. Zhao, H. Wang, Y. Zhao, X. Ren, Y. Yu, K. Chan

#### Residual interfacial strength in an APSed TBC after the thermal cycle fatigue

Y. Yamazaki\*, T. Yoshida

### Diagnostics and Sensors 1

Modern process diagnostics offer a lot of possibilities for gaining data for both quality control and process knowledge. The recorded data is the base for process models and enhances the process knowledge

Session Chair: A. Vardelle, J. Schein

#### Innovative high speed camera system diagnostics of plasma torch fluctuations

J. Schein\*, G. Forster, J. Zierhut

#### Effect of spray torch nozzle design modifications on arc and plasma jet characteristics and coating properties

J. Heberlein\*, D. Outcalt, S. Suzuki, L. Vincenzi

#### In situ visualization of impacting phenomena of plasma sprayed zirconia: from single splat to coating formation

K. Shinoda\*, H. Murakami, S. Kuroda, S. Oki, K. Takehara

#### Study on the detection of melting temperatures and sources of errors using two-color pyrometry for in-flight measurements of plasma sprayed particles

G. Mauer\*, R. Vaßen, D. Stöver

#### Analysis of plasma spray particle state distribution for deposition rate control

M. Gevelber\*, D. Wroblewski, O. Ghosh, M. VanHout, A. Lum, S. Basu

#### Influence of parameters on volt-ampere characteristic of plasma arc in high velocity plasma spraying

H. Yang\*, L. Wang

**Lunch Break and Poster Session**

10:40

11:00

11:20

11:40

12:00

12:20

12:40

## Wednesday, June 4, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Cold Spraying 3

Everything around this young thermal spraying technique, possible applications and latest developments for equipment of high pressure and low pressure cold spraying, models and simulations for a deeper process knowledge

Session Chair: D. Grasmé, F. Ernst

13:40

#### Cavitation resistance of cold sprayed and thermally sprayed copper coatings

F. Gärtner\*, T. Schmidt, T. Klassen, H. Kreye

14:00

Evidence of the 2-stage build-up process in cold spray from the study of influence of powder characteristics on Ti-6Al-4V coating  
D. Christoulis\*, F. Borit, V. Guipont, M. Jeandin

14:20

Characterization of cold sprayed Ni, Ti and Cu coating properties for their optimizations  
A. Rezaeian\*, E. Irissou, J. Legoux, R. Chromik, S. Yue

14:40

Effect of Ni coating around diamond particle for size protection in kinetic spraying  
H. Na\*, S. Kumar, C. Bae, H. Kim, C. Lee

15:00

A combined numerical and experimental analysis of the cold spray process  
A. Dolatabadi\*, B. Samareh, V. Luethen, O. Stier

15:20

**Coffee Break**

### Gasturbines 5

**Highlight**

Coatings for mobile and stationary turbines, protection against wear, high temperature corrosion and thermal stresses, clearance control coatings for a better efficiency

Session Chair: M. Khor, U. Erning

#### New generation perovskite thermal barrier coating materials

W. Ma, M. Jarligo\*, D. Mack, R. Vaßen, D. Stöver

Comparison of a new high-purity HOSP™ PYSZ powder with standard HOSP: powder/coating characterization and thermal shock testing

K. Lawson, S. Gray\*, M. Dorfman

#### Creep behavior modeling of plasma sprayed yttria stabilized zirconia thermal barrier coatings

R. Soltani\*, T. Coyle, J. Mostaghimi

#### Role of high temperature creep stress in thermally grown oxide growth of thermal barrier coatings

D. Seo\*, K. Ogawa, Y. Nakao, D. Seo, H. Miura, T. Shoji

Microstructure and thermophysical properties of plasma sprayed YSZ coatings derived from La<sub>2</sub>O<sub>3</sub> modified YSZ feedstock particles

S. Tao\*, Y. Liu, X. Zhou, H. Luo, C. Ding





## Wednesday, June 4, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Biomedical Coatings

Coated implants offer a better life quality due to their superior osseointegration and longer life cycle

**Highlight**

**Session Chair: C. Wasserman, H. Gruner**

**Ti-coating by VPS for carbon fibre PEEK implants**

H. Gruner\*, G. Richards, R. Wieling

**Low pressure gas dynamic spray of hydroxyapatite composite coatings**

V. Leshchynsky\*, E. Maeva, H. Weinert, R. Maev

**Design of experiment of synthesis and plasma spraying of hydroxyapatite suspension**

L. Pawlowski\*, R. Jaworski, C. Pierlot, M. Bigan, C. Pierre

**In vitro studies of microplasma sprayed hydroxyapatite coatings in hanks balanced salt solution (HBSS)**

Q. Zhao\*, D. He, X. Li, Z. Li, J. Jiang

**Production of hydroxyapatite powders for thermal spraying from green lipped mussel shell**

S. Bliss\*, B. James, C. Doyle

### Diagnostics and Sensors 2

Modern process diagnostics offer a lot of possibilities for gaining data for both quality control and process knowledge. The recorded data is the base for process models and enhances the process knowledge

**Session Chair: J. Heberlein, K. Landes**

**Thermal spraying as a manufacturing technology for light metal MMC; experimental and numerical process analysis**

M. Silber\*, E. Dongmo, M. Wenzelburger, R. Gadow

**Sensor issues for real time control of coating thickness in plasma spray**

D. Wroblewski, B. Vattiat, O. Ghosh, M. VanHout, S. Basu, M. Gevelber\*

**Estimation of molten content of the spray stream from analysis of experimental particle diagnostics**

V. Srinivasan\*

**Spreading of plasma sprayed molybdenum on grit-blasted glass**

A. McDonald\*, C. Moreau, S. Chandra

**Particle temperature fluctuations in plasma spraying**

S. Goutier\*, E. Nogues, M. Vardelle, P. Fauchais

13:40

14:00

14:20

14:40

15:00

**Coffee Break**

15:20



Sulzer Metco AG

**Medical Implant Coatings**

## Wednesday, June 4, 2008

**Auditorium 2**  
(with simultaneous translation)

**Room 04**  
(Brussels)

### Cold Spraying 4

Everything around this young thermal spraying technique, possible applications and latest developments for equipment of high pressure and low pressure cold spraying, models and simulations for a deeper process knowledge

Session Chair: P. Richter, T. Klassen

15:40

**Substrate properties influence on the coating deposition by DYMET technology**  
A. Shkodkin\*, A. Kashirin, O. Klyuev

16:00

**Characterization of mesoporous nanocrystalline TiO<sub>2</sub> deposited by vacuum cold spraying using ceramic-polymer composite powder**  
G. Yang\*, S. Fan, J. Gao, Y. Xi, Y. Wang, C. Li, C. Li

16:20

**Low pressure cold gas dynamic spray and post-spray heat treatment of composite coatings**  
R. Maev\*, M. Beneteau, W. Birtch, V. Leshchynsky

16:40

**Microstructure and mechanical properties of low-pressure cold sprayed (LPCS) coatings**  
H. Koivuluoto\*, J. Lagerbom, M. Kymälähti, P. Vuoristo

17:00

**Influence of laser irradiation on formation of low-pressure cold sprayed coatings**  
M. Kulmala\*, H. Koivuluoto, P. Vuoristo

### Nanomaterials 2

Most coating materials gain superior coating performance when applied as nanostructured coating, new designed materials and optimized processes show promising results for this

Session Chair: M. Brühl, C. Verpoort

**Superfine structured and nanostructured hard material coatings produced by means of HVOF flame spraying**  
W. Tillmann\*, E. Vogli, I. Baumann, G. Matthäus, T. Ostrowski

**Axial injection plasma spraying using micro- and nanopowder slurries**  
Z. Tang\*, Z. Tang, A. Burgess

**Plasma spray processing of nanostructured partially stabilized zirconia for a strain accommodating inter layer – splat and coating characteristics**  
D. Guru, J. Heberlein\*

**Influence of mechanical pre-activation of powders and their modification with refractory nanoparticles on the cold spraying process**  
O. Solonenko, V. Kosarev\*, S. Klinkov, V. Poluboyarov, V. Poluboyarov, V. Neronov, M. Korchaging

**Research of properties of nanostructured Cr<sub>2</sub>O<sub>3</sub>5SiO<sub>2</sub>3TiO<sub>2</sub> coatings by plasma sprayed**  
Z. Li\*, Y. Yu, K. Zeng, C. Wu

## Wednesday, June 4, 2008

**Room 05**  
(Paris)

**Room 08**  
(Rome)

### Polymers, Environmental-Friendly Coatings, Non Destructive Testing

Testing coatings directly on coated parts without destroying any additionally coated samples, polymer-based coatings and environmental-friendly coatings

Session Chair: I. Petkovic, S. Oki

**New health and environmental-friendly iron based materials employed as binders for carbide powders used in thermal spraying**  
S. Zimmermann\*, B. Gries, J. Fischer

**The effect of surface chemistry and morphology on the properties of HVAF PEEK single splats**  
B. Withy, M. Hyland, B. James\*

**Plastics metallization by detonation spraying**  
I. Smurov\*, V. Ulianiysky, A. Shtertser, S. Zlobin

**Residual stress measurement in HVOF sprayed ceramic coatings**  
G. Bolelli\*, L. Lusvarghi, E. Turunen, T. Varis, C. Azanza-Ricardo, M. Leoni, P. Scardi

**Evaluation of residual stress for plasma sprayed member using inherent strain method**  
Y. Itoh\*, S. Suyama

### Ceramics

Coatings for wear resistance and high temperature applications

Session Chair: G. Schürholt, P. Vouristo

**Three-dimensional simulation of porosity in plasma sprayed alumina using microtomography and electrochemical impedance spectrometry for finite element modeling of properties**  
M. Jeandin\*, O. Amsellem, K. Madi, F. Borit, D. Jeulin, V. Guipont, E. Boller, F. Pouchet

**Ceramics as wear and corrosion protection on hydraulic piston rods**  
T. Kraak\*, G. Coolegem, W. Herlaar

**Mullite-zirconia ceramics production by plasma spray coating process**  
N. Toplan, G. Erdogan\*, H. Toplan, F. Ustel

**Thermal behavior of thermally sprayed CaZrO<sub>3</sub> coatings**  
E. Garcia\*, C. Cano, T. Coyle, M. Osendi, P. Miranzo

**New structure of APS sprayed Al<sub>2</sub>O<sub>3</sub> coatings investigated by Cu-electroplating**  
M. Adachi, T. Takabatake, A. Ohmori, M. Kremer\*

15:40

16:00

16:20

16:40

17:00

## Poster Session

During the conference a Poster Session will be held in the Trajectum of the MECC. The poster presenters will be available for discussion scheduled as follows:

Monday, June 2, 2008, 12:30 – 13:30  
Monday, June 2, 2008, 17:20 – 18:20  
Tuesday, June 3, 2008, 13:00 – 13:30  
Wednesday, June 4, 2008, 13:00 – 13:30

In addition further contacts with the authors can be arranged.

### Applications – Biomedical Coatings

1. **Bioactivity of microplasma sprayed yttria stabilized zirconia coating**  
Y. Wu\*, Z. Li, D. He, Q. Zhao, H. Li
  2. **Development of a low energy plasma deposition device for biomedical applications**  
M. Parco\*, G. Barykin, I. Fagoaga, C. Vaquero
  3. **Nanomechanical assessment of commercially produced plasma sprayed hydroxyapatite coatings**  
K. Gross\*, S. Saber-Samandari, K. Heemann
  4. **Nanoindentation on solidified droplets provides a new tool for assessing the micromechanical properties**  
K. Gross\*, S. Saber-Samandari
- ### Applications – Case Studies, further Applications
5. **Over ten years of quality assurance, education and training in thermal spraying – state of the art and trends**  
A. Ohliger-Volmer\*, R. Huber
  6. **Slight change in direction**  
L. Grimenstein\*
  7. **Effects of silver addition on mechanical and electrical properties of plasma sprayed SOFC interconnect layer**  
S. Park\*, S. Kumar, S. Lee, C. Lee

8. **Thermal spraying of precipitation hardening copper alloys**  
T. Grund\*, B. Wielage, S. Ahrens, O. Brandt, G. Reisel
9. **Preparation of nano-structured SOFC electrolyte coating by radio frequency suspension plasma spraying**  
L. Jia\*

### Applications – Gasturbines (Energy and Aircraft)

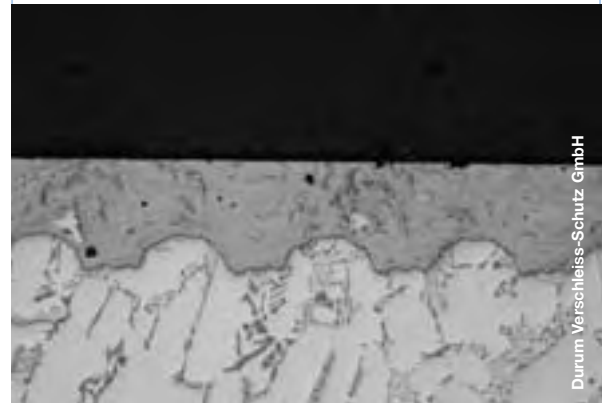
10. **A new definition and realization of abradable factor for estimation of high temperature abradable sealing coatings**  
J. Liu\*, F. Lin, Z. Yang, S. Yan, J. Zhang, L. Wang, J. Li
11. **Numerical simulation of the thermomechanical behavior of thermally sprayed abradable coatings**  
J. Seichepine\*, H. Faraoun, F. Peyraut, C. Coddet, P. Chandler, D. Sporer, M. Hertter, C. Sellars
12. **Mechanical modeling of two-phase thermally sprayed abradable coatings**  
J. Seichepine\*, D. Sporer, D. Lourtie, C. Coddet
13. **Processing and properties of hybrid YSZ coating deposited by thermal plasma directed vapor deposition**  
T. Lavaud\*, M. Vardelle, P. Fauchais, J. Menuet

14. **Thermal failure of plasma sprayed nano-structured YSZ with cold sprayed nano-structured NiCrAlY bond coat**  
C. Li\*, Q. Zhang, Y. Li, S. Zhang, G. Yang, C. Li
15. **Influence of heat treatment on thermal failure of plasma sprayed TBCs with cold sprayed NiCoCrAlYTa bond coat**  
C. Li\*, Q. Zhang, Y. Li, G. Yang, C. Li
16. **Effect of oxygen nonstoichiometry of flame sprayed  $\text{Sm}_{0.7}\text{Sr}_{0.3}\text{CoO}_{3-\delta}$  coating on its electrical conductivity**  
C. Li\*, M. Gao, C. Li, G. Yang, H. Wang, M. Wang
17. **Development of MCrAlY coatings by HFPD**  
M. Parco\*, I. Fagoaga, G. Barykin, C. Vaquero
18. **Microstructural and mechanical characterization of plasma sprayed YSZ/ $\text{Al}_2\text{O}_3$  thermal barrier coatings depending on  $\text{Al}_2\text{O}_3$  contamination**  
N. Toplan\*, U. Saral
19. **Tools for online monitoring of failure evolution of thermal barrier coatings in gas burner thermal cycling rig environment**  
D. Mack\*, R. Vaßen, D. Stöver
20. **Thermal conductivity of AlSi/polyester abrasible coatings**  
R. Bolot\*, J. Seichepine, F. Vucko, D. Sporer, P. Fiala, B. Bartlett, C. Coddet
21. **Single impact erosion studies of  $\text{Cr}_3\text{C}_2$ -NiCr coating: the role of microstructure variation**  
S. Matthews\*, M. Hyland, B. James

## Characterization – Non Destructive Testing

22. **Acoustic emission source analysis of thermal fatigued thermal barrier coatings**  
L. Koo Hyun\*, K. Lee, J. Park, J. Kim, Y. Song, D. Lee

## Characterization – Thermal, Chemical, Mechanical Characterization



23. **Valence band XPS and FT-IR evaluation of thermal degradation of HVOF thermally sprayed PEEK coatings**  
B. James\*, K. Patel, M. Hyland
24. **Modeling of plasma sprayed thermal barrier coatings for prediction of residual stress**  
M. Arai\*
25. **Evaluation of intermetallic coatings processed by PTA**  
A. d'Oliveira\*, D. Vaz, A. Christo
26. **Adhesion evaluation via residual stress development**  
A. Valarezo\*, A. Gouldstone, S. Sampath
27. **Spraying process, microstructure and relaxation stress behavior of cylindrical stand alone YSZ coatings with and without segmentation cracks**  
M. Karger\*, C. Petorak, R. Trice, R. Vaßen, D. Stöver
28. **Interfacial indentation to determine the adhesion of WC-Co-NiCr thermal spray coatings**  
M. Rodriguez\*, A. Pertuz, U. Bisi, P. Costa

## Materials – Ceramics

29. **Development of nanostructured lanthanum zirconate coating and its thermal stability properties**  
X. Zhao\*, Z. Ke-Li, Z. Xiao-Dong, X. Jian-Gang, R. Xian-Jing, Y. Yueguang
30. **Phase stability and structure of conductive perovskite ceramic coatings by thermal spraying**  
J. Lagerbom\*, U. Kanerva, A. Nikkilä, T. Varis, M. Kylmälahti, P. Vuoristo
31. **Solid oxide fuel cells produced with suspensions and conventional plasma spray processes**  
O. Marchand\*, R. Rampon, G. Bertrand
32. **The use of PVD intermediate layers for the improvement of thermal barrier coatings performance**  
S. Dosta\*, C. Lima, N. Cinca, J. Guilemany
33. **Microstructure and properties of coatings from the  $TiO_2$ - $Cr_2O_3$  system**  
L. Berger\*, C. Stahr, S. Thiele
34. **Analysis of the deposition mechanism in the solution precursor plasma spraying using numerically predicted particle conditions**  
Y. Shan\*
35. **Microstructural features and plasma induced damage of  $Al_2O_3$ - $Y_2O_3$  composite coatings**  
K. Baik\*, J. Moon

## Materials – Fe-based Materials

36. **Nanocrystalline segregations causing by hybrid twin wire arc thermal spray process**  
S. Kollinger\*, K. Holdik, U. Heiz, A. Fischer, M. Hahn

## Materials – Nanomaterials

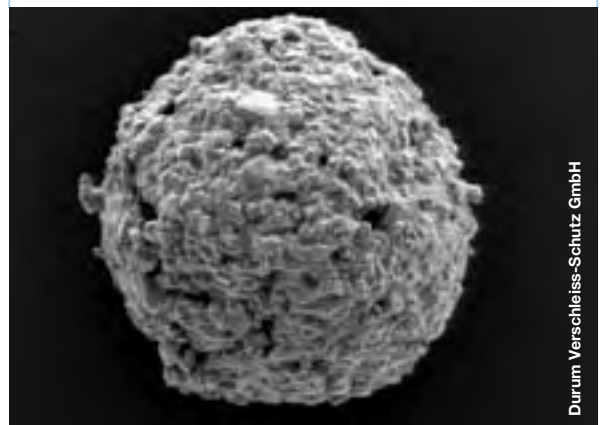
37. **Cold spraying technique to process nanomagnetic coatings**  
N. Fenineche\*, M. Cherigui, W. Li, V. Ji, C. Coddet

38. **Ceramic metastable bulks through plasma spraying**  
S. Dosta\*, I. Cano, J. Miguel, J. Guilemany
39. **Development of ceramic composite coatings with titania nano fibers**  
M. Watanabe\*, P. Chivavibul, M. Komatsu, S. Kuroda

## Materials – Polymers

40. **Impermeable and undeteriorated plastics coating fabricated by warm spray**  
J. Kawakita\*, M. Komatsu, H. Katanoda, S. Kuroda

## Materials – Powders, Wires, Rods and New Coating Materials



41. **Preparation and characterization of nickel clad h-BN composite powders for abrasible sealing coating**  
J. Liu\*, Z. Yang, L. Wang, J. Zhang, S. Yan, F. Lin, J. Li
42. **Mechanically activated synthesis of composite powders for thermal spraying**  
A. Beliayev\*, A. Ilyuschenko, T. Talaka, A. Letsko, T. Hasak
43. **Influence of plasma spraying parameters on the microstructure of TBCs deposited by a novel YSZ powder feedstock**  
F. Lin\*, Z. Yang, X. Li, S. Yan, J. Liu, J. Zhang, L. Wang, X. Jiang

44. **Structure and properties of powders of quasicrystalline alloys AlCuFe alloyed by Cr and Sc**  
Y. Borisov\*, A. Borisova, L. Adeeva, A. Tunik, M. Karpets, L. Doroshenko

45. **High temperature functionality of surfaces: drag reduction and self-cleaning**  
S. Jahn\*, J. Wilden, V. Drescher, M. Dolles

## Processes – Arc Spraying, Laser Spraying

46. **Strong wear resistant WC layers applied by cladding process using high power diode laser: new developments and industrial applications**  
D. Dezert\*

47. **Particle trajectories by arc spraying with cored wires**  
W. Tillmann\*, E. Vogli, M. Abdulgader, M. Gurriss, D. Kuzmin, S. Turek

48. **The preparation of zinc-aluminum composite wire and corrosion behavior of its arc spray coatings**  
Y. Tao\*, H. DingYong, J. JianMin

49. **Study on corrosion resistance behaviors of Zn, Al, Zn/Al 85/15 coatings that produced by twin wire arc spray technique on steel**  
A. Turk\*, O. Cevher, A. Gulec, F. Ustel, F. Yilmaz

50. **The effect of process parameters on the microstructure and mechanical properties of arc sprayed Zn, Al, Zn/Al 85/15 coatings**  
A. Turk\*, E. Yusek, F. Ustel, F. Yilmaz

51. **Cavitation resistance and mass loss mechanism in coatings deposited by thermal spraying**  
A. Pukasiewicz\*, A. Capra, R. Paredes

52. **Influence of air pressure and plasma remelting in the microstructure and cavitation resistance of the arc thermally sprayed cobalt stainless steel**  
A. Pukasiewicz\*, A. Capra, R. Paredes

53. **Influence of process parameters in the microstructure and cavitation resistance of the Fe-Mn-Cr-Si steel developed for arc thermal spraying**  
A. Pukasiewicz\*, A. Capra, R. Paredes

54. **Industrial technology of laser assisted direct metal deposition**  
I. Smurov\*, L. Thivillon, P. Bertrand

## Processes – Cold and Kinetics Spraying

55. **Sealing up the holes by gas dynamic spraying**  
A. Shkodkin\*, T. Buzdygar, A. Kashirin, O. Klyuev

56. **Substrate and powder preheat effects on the kinetic spray of hard metal and composite coatings on cast iron**  
N. Powell, N. Patel, A. Elmoursi\*, Z. Zhao, B. Gillispie, B. Fuller

57. **Effect of heat treatment on the coating characteristics of cold sprayed Al-Sn binary alloy**  
H. Kim\*, D. Jung, X. Ning, C. Lee

58. **Copper based composite coatings produced by cold spray deposition**  
S. Rech\*, S. Vezzù, V. Stoyanova

59. **Preparation of multimodal structured WC-12Co coatings by cold spraying**  
G. Yang\*, P. Gao, C. Li, C. Li

60. **Formation of NiAl intermetallic compound by cold spraying of ball-milled Ni-Al alloy powder through post annealing treatment**  
G. Yang\*, Q. Zhang, Z. Ren, C. Li, X. Wang, C. Li

61. **Fabrication of NiCrAl-cBN cermet coatings by cold spraying**  
G. Yang\*, X. Luo, C. Li, Y. Li

62. **Deposition characteristics of Fe/Al composite coating by cold spraying**  
G. Yang\*, H. Wang, C. Li, C. Li

63. **Fabrication of TiO<sub>2</sub> coating by cold spraying and evaluation of its property**  
M. Yamada\*, H. Wada, K. Sato, M. Fukumoto

64. **Low pressure gas dynamic spray of polymer doped nanoparticle contained feedstocks**  
R. Maev\*, M. Beneteau, E. Leshchinsky, E. Maeva
65. **Effect of the increase in the entrance convergent section length and geometry of the gun nozzle on properties of cold sprayed copper and titanium coatings**  
K. Sakaki\*, M. Takahata, K. Takeda, S. Shinkai, T. Hosono, Y. Shimizu
66. **Mechanical properties of WC/Co coatings prepared by cold spraying**  
J. Kitamura\*, K. Sato, I. Aoki, K. Sakaki, M. Takahata, Y. Shimizu
67. **Influence of powder porous structure on the deposition behavior of cold sprayed WC-12Co coatings**  
C. Li\*, Y. Li, P. Gao, G. Yang, C. Li
68. **Microstructure and microhardness of NiTi coating prepared by post heat treatment of cold sprayed Ni/Ti alloy deposits**  
C. Li\*, H. Wang, G. Yang, C. Li
69. **Microstructures and tribological performances of cold sprayed tin bronze based composite coatings**  
H. Liao\*, X. Guo, Y. Gao, C. Coddet
70. **Effect of substrate roughness on the deposition behavior of kinetic sprayed copper particles on copper substrate**  
S. Kumar\*, G. Bae, S. Yoon, C. Lee
71. **A modified impact energy model based on interface temperature and strain gradient in kinetic spraying process**  
Y. Ji\*, Y. Xiong, S. Yoon, K. Kang, F. Khan, C. Lee
72. **Interfacial microstructural evolution and bonding state of kinetic sprayed aluminum particle onto aluminum substrate**  
K. Kang\*, S. Yoon, Y. Ham, C. Lee
73. **Estimation of critical velocity through impact behavior of engineering metals in kinetic spraying**  
G. Bae\*, K. S, S. Yoon, K. Kang, C. Lee
74. **Cold spray of Al-12Si cold sprayed coatings with a controlled porosity**  
D. Christoulis\*, F. Borit, V. Guipont, M. Jeandin
75. **Microstructure observation on the interface between warm spray deposited titanium powder and steel substrate**  
K. Kim\*, M. Watanabe, J. Kawakita, K. Mitsuishi, T. Wu, S. Kuroda
76. **Characterization of low pressure type cold sprayed aluminum coatings**  
K. Ogawa\*, K. Ito, K. Ichimura, Y. Ichikawa, T. Shoji
77. **Comparison of Cu coating properties produced by three commercial cold spray systems**  
J. Legoux\*, E. Irissou, C. Moreau
78. **A combined process: cold spraying of heterogeneous coatings followed with their high energy treatment**  
O. Solonenko\*, V. Kosarev, A. Golovin, V. Neronov, M. Korchagin, V. Poluboyarov
79. **Microstructural features of cold sprayed WC-Co nanocomposite coatings**  
K. Baik\*, S. Kim, G. Lee, B. Seong
80. **Development of an economical system for the cold spray process with helium**  
C. Verdy\*, H. Liao, C. Coddet
- Processes –  
Diagnostics, Sensors  
and Control**
81. **A side-by-side comparison of particle temperature (Tp), particle velocity (Vp) data collected using the accura G3 and the DPV-2000**  
A. Hall\*, R. Williamson, D. Urrea, J. McCloskey, D. Hirschfeld
82. **Influence of oxy-fuel ratio on particle behavior of HVOF sprayed NiCrAlY coating using LPG as fuel**  
G. Rayudu\*, A. Khanna, S. Modi, K. Nune
83. **Asymmetric melting behavior in twin wire arc spraying with cored wires**  
W. Tillmann\*, E. Vogli, M. Abdulgader



84. **Gas flow drift velocity measurement on plasma spray torches**  
S. Lange\*, G. Forster, J. Schein

85. **PSI: An innovative method to determine and to classify particles during the thermal spray process**  
S. Zimmermann\*, G. Forster, K. Landes, J. Schein

## Processes – HVOF Spraying, Flame Spraying



86. **Flame spray parameter optimization to manufacture glaze coatings onto thermally sensitive substrates**  
G. Montavon\*, A. Arcondeguy, G. Gasgnier, B. Pateyron, A. Grimaud, A. Denoirjean, C. Huguet

87. **Wear behaviors of high velocity air fuel sprayed nanosized WC coatings against Al-Ni-bronze alloy**  
C. Deng\*, K. Zhou, M. Liu, R. Hong, C. Deng

88. **Flame sprayed Al-12Si coatings for the improvement of the adhesion of composite casting profiles**  
J. Voyer\*, C. Peterlechner, U. Noster

89. **High velocity oxy-fuel (HVOF) suspension spraying of mullite ( $3\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ ) coatings**  
J. Oberste Berghaus\*, B. Marple

90. **Role of HVOF spray NiCr coatings to control high temperature oxidation of boiler steels**  
H. Saheet\*, G. Kaushal, S. Prakash

91. **HVOF coating application in steel making process**  
Y. Korobov\*, M. Filippov

92. **Metastable phases in thermally flame and plasma sprayed mullite/ $\text{ZrO}_2$  coatings**  
S. Dosta\*, C. Cano, E. García, M. Osendi, P. Miranzo, I. Cano, J. Guilemany

93. **Modeling a HVOF coating process by using fluid structure interactions (FSI) approach**  
E. Dongmo\*

94. **Gas flow simulation of free fall atomizing nozzles**  
Z. Li\*, G. Zhang, Z. Li, Y. Zhang, W. Xu, H. Yuan, N. Liu

95. **Gas flow field simulation of confined nozzles used in powder metallurgy and spray forming technology**  
Z. Li\*, G. Zhang, Z. Li, Y. Zhang, W. Xu, H. Yuan, N. Liu

96. **The application of  $\text{Cr}_3\text{C}_2\text{NiCr}$  coatings to improve the corrosion and wear properties of an AA7050 alloy**  
S. Dosta\*, M. Magnani, P. Suegama, N. Espallargas, J. Guilemany, A. Benedetti

97. **Effect of thermal history on properties of WC-10Co4Cr HVOF coatings**  
T. Varis\*, T. Suhonen, K. Ruusuvoori, E. Turunen

98. **Thermal fluxes transferred during HVOF thermal spray**  
R. Bolot\*, O. Landemarre, C. Coddet

## Processes – New Equipment, Technologies

99. **Numerical simulations and characterization of a new oxy-fuel ionization process**  
A. Vardelle\*, B. Martinez, G. Mariaux, G. Barykin, M. Parco

100. **HVSFS deposition of functional glass coatings**  
G. Bolelli\*, J. Rauch, V. Cannillo, A. Killinger, L. Lusvarghi, R. Gadow, J. Colmenares-Angulo, S. Sampath

101. **Influence of particle velocity on splat formation during thermal spraying**  
Y. Kharlamov\*
- Processes – Plasma Spraying and PTWA**
102. **Investigation of a novel plasma sprayed YSZ ceramic coating deposited by amorphous YSZ ceramic powder feedstock**  
F. Lin\*, Z. Yang, J. Liu, S. Yan, X. Li, J. Zhang, L. Wang, J. Zhang
103. **Microstructure and wear resistance of plasma sprayed carbides and ceramic coatings deposited on an Invar® alloy surface**  
C. Giolli\*, M. Turbil, M. Rosso, G. Rizzi, A. Scrivani
104. **The jet characteristics of supersonic plasma jet spraying system**  
H. Yang\*, L. Wang
105. **Properties of long persistent SrAl<sub>2</sub>O<sub>4</sub> ceramics coating deposited by low power plasma spraying**  
F. Zhou\*, Y. Fu, Y. Gao
106. **Research of the clad composite powders for forming wear resistant plasma sprayed coatings**  
A. Ilyuschenko\*, A. Shevtsov, V. Okovity, V. Mikutsky, K. Buikus, A. Kozorez, T. Ilyuschenko
107. **Comparative study between Ar-H<sub>2</sub> and N<sub>2</sub>-H<sub>2</sub> plasma gas mixtures: application to ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> coatings**  
E. Nogues-Delbos\*, S. Goutier, M. Vardelle, P. Fauchais, P. Granger
108. **Fluctuations in one-cathode plasma torches: characterization and modeling**  
J. Marques\*, M. Fuchs, S. Lange, J. Schein
109. **Rapidly solidified thick stainless cast iron deposit**  
Y. Hoshiyama\*, K. Hirano, H. Matsumoto, H. Miyake
110. **Processing and properties of plasma sprayed W+Cu composites**  
J. Matijèek\*, R. Musalek
111. **Influence of microstructural variation on ionic conductivity of plasma sprayed yttria stabilized zirconia coatings**  
C. Li\*, Y. Xing, Y. Li, C. Li, G. Yang
112. **Experimental simulation study of inter-splat bonding formation by deposition of YSZ-splats on preheated YSZ substrate**  
C. Li\*, Y. Xing, Y. Li, G. Yang, C. Li
113. **Atmospheric plasma spray process control**  
A. Kanta\*, G. Montavon, M. Planche, C. Coddet
114. **To increase the service lives of the spare parts by the means of plasma spray in the textile industry**  
N. Toplan\*, Y. Sert
115. **Mechanical and thermo mechanical characterization of plasma sprayed YSZ/Al<sub>2</sub>O<sub>3</sub> thermal barrier coatings**  
G. Erdogan\*, U. Aral, F. Ustel, N. Toplan, E. Karaali
116. **Plasma spray synthesis of La<sub>10</sub>(SiO<sub>4</sub>)<sub>6</sub>O<sub>3</sub> as a new electrolyte for intermediate temperature solid oxide fuel cells**  
H. Liao\*, W. Gao, C. Coddet
117. **Modeling of the in-flight synthesis of TaC nanoparticles from liquid precursor in thermal plasma jet**  
A. Vorobev\*, O. Zikanov, P. Mohanty
118. **Mechanisms of residual stress generation in plasma sprayed hydroxyapatite coatings**  
Y. Yang\*
119. **Influence of plasma generation conditions in gas water torch on spraying process**  
T. Kavka\*, O. Chumak, M. Hrabovsky, A. Maslani
120. **Fundamental understanding of the liquid precursor plasma spray process through modeling and experiments**  
E. Jordan\*, B. Cetegen, M. Gell, D. Chen, S. Basu, M. Teicholz, X. Ma
121. **Development of a dynamic masking system for Improving the quality of plasma sprayed coatings**  
L. Jia\*, F. Gitzhofer

## Processes – Pre-/Post-Treatment

122. **Effects of heat treatment on properties of plasma spray NiAl coatings**  
M. Moshref Javadi\*, H. Edris, M. Salehi
123. **Mathematical model of plasma surface hardening process of steel parts**  
D. Markovnik\*, S. Kundas, D. Ivanov
124. **New developments in the PROTAL® process for the coating of cylinder bores**  
S. Costil\*, H. Liao, Y. Danlos, C. Coddet
125. **Synthesis and microstructural features of tungsten based preforms by plasma spray forming route**  
K. Baik\*, C. Lee

## Properties – Corrosion Protection

126. **An effect of low pressure gas dynamic spray on microcorrosion behavior of Al alloys**  
V. Leshchynsky\*, E. Maeva, M. Schlesinger, R. Maev
127. **Effect of zinc and aluminum thermal spray coatings on hydrogen embrittlement in marine industry**  
M. Moshref Javadi\*, J. Mazrooei Sebdani
128. **The effect of process conditions on the microstructure and corrosion resistance of cold sprayed Ti coatings**  
H. Wang\*, B. Hou, J. Wang
129. **Corrosion behavior of in-situ Al<sub>2</sub>O<sub>3</sub> formed composite coatings by DC plasma spraying**  
B. Dikici\*, C. Tekmen, M. Gavgali, Y. Tsunekawa, M. Okumiya
130. **Effect of the chemical composition and the post heat treatment on the corrosion resistance of cermet coatings deposited by HVOF**  
L. Gil\*, M. Prato, M. Staia, S. Liscano, R. Noriega

131. **Influence of plasma parameters on the corrosion resistance and microstructure of WC-10%Co coatings**  
L. Gil\*, M. Prato, M. Staia, L. Jimenez, R. Noriega, E. Puchi

132. **Studies on the corrosion resistance of plasma and HVOF sprayed NiCrBSi coatings**  
S. Kozerski\*, W. Żórawski

133. **Corrosion resistant ceramic coatings against high temperature LiCl-LiO<sub>2</sub> molten salts**  
K. Baik\*, H. Lee, J. Lee, E. Kim

## Properties – Wear Protection

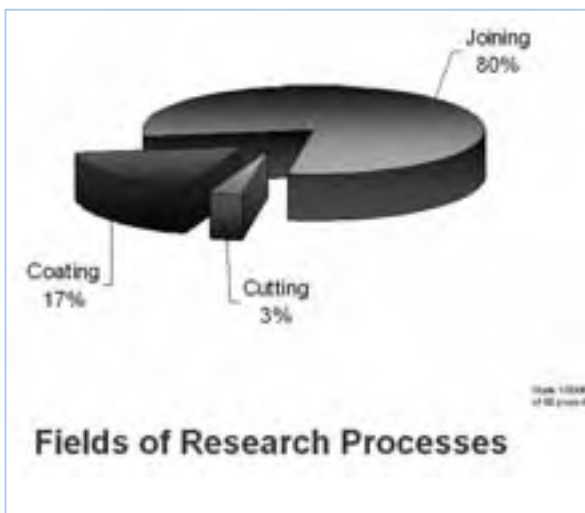
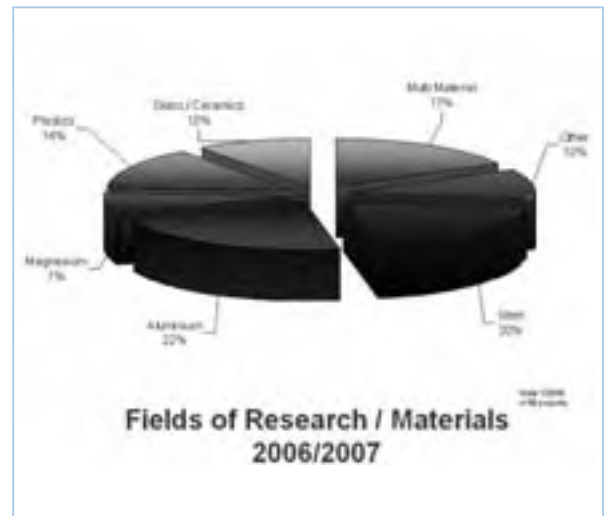
134. **Tribological behavior of HVOF cermet coatings at elevated temperatures**  
S. Houdkova\*, F. Zahálka, M. Kašparová, L. Berger
135. **Microstructure and tribological properties of HVOF sprayed carbide coatings**  
W. Żórawski\*
136. **Comparing study of high temperature erosion of HVOF sprayed Cr<sub>3</sub>C<sub>2</sub>-NiCr coating and mild steel for boiler tube**  
G. Yang\*, S. Zhang, C. Li, Y. Wang, C. Li
137. **Comparisons of microstructure and properties of three cobalt based cermets deposited by high velocity oxy-fuel spraying using clad powders**  
G. Yang\*, Y. Wang, C. Li, C. Li
138. **Wear characteristics of Fe-based amorphous alloys coatings fabricated by HVOF spray process**  
J. Ahn\*, B. Seong, S. Yi, S. Yi
139. **Abrasion wear stability of VPS sprayed Ti-coatings**  
H. Gruner\*, F. Deuerler, P. Gruner
140. **Wear resistance of heat treated HVOF cermet coatings deposited by HVOF**  
M. Rodriguez\*, L. Gil, M. Staia, C. Bilbao, I. Moreno

## Cooperative Applied Research in Joining, Cutting and Surfacing (JCS) Technology

### Results and Applications

The objective of the cooperative applied research in JCS technology conducted by the Research Association for Welding and Allied Processes of DVS is to elaborate directly usable research results for small and medium sized enterprises (SME). In this respect, cooperative applied research offers the participation of SMEs and research institutes from all fields of JCS technology. In this case, SMEs can define a common need for research and can determine research directions and main focal points. This approach taken by the cooperative applied research in JCS technology guarantees not only the greatest possible proximity to the application of the research subjects but also optimum and rapid utilisation of the research results.

The participation of industrial representatives in all the process steps allows the know-how to be transferred to the SMEs at an early stage. Research projects can be promoted via Arbeitsgemeinschaft industrieller Forschungsvereinigungen "Otto-von-Guericke e.V." (AiF - the "Study Group of Industrial Research Associations") from funds provided by BMWI (Federal Ministry of Economics and Technology).



## AiF Poster Session

### Cooperative Applied Research in the field of Thermal Spraying

Greater significance has recently been attached to cooperative applied research work relating to the manufacture and safeguarding of the characteristics of thermally sprayed coatings. There are a series of interesting usable research results on this subject. Within the framework of ITSC, selected research projects will be presented with their results and application possibilities within this AiF Poster Session.

The AiF Poster Session will be held during the conference. The poster presenters will be available for discussion scheduled as follows:

Monday, June 2, 2008, 12:30 – 13:30  
 Monday, June 2, 2008, 17:20 – 18:20  
 Tuesday, June 3, 2008, 13:00 – 13:30  
 Wednesday, June 4, 2008, 13:00 – 13:30

In addition, further contacts with the authors can be arranged.

- |    |   |     |  |
|----|---|-----|--|
| 1. | <b>Development of near net-shape coatings for wear and corrosion protection</b><br>F. Bach, K. Möhwald, T. Bause  | 8.  | <b>HVOF-sprayed TiC-strengthened Fe-coatings as alternative for conventional carbide materials</b><br>K. Bobzin, F. Ernst, K. Richardt, T. Warda                               |
| 2. | <b>Improvement of the corrosion resistance of magnesium alloys by means of coating and remelting</b><br>B. Wielage, T. Grund, H. Pokhmurska                 | 9.  | <b>Improving the reproducibility and the comparability of bond strength values</b><br>K. Bobzin, F. Ernst, K. Richardt, T. Schläfer  |
| 3. | <b>Corrosion of alumina-based coatings</b><br>C. Stahr, L. Berger, H. Herrmann, D. Deska  | 10. | <b>Influence of the spray angle on characteristics for atmospheric plasma sprayed hard material based coatings</b><br>W. Tillmann, E. Vogli, B. Krebs                          |
| 4. | <b>Cladding of aluminum substrates with nanocrystalline solidifying wear resistant iron-based materials</b><br>J. Wilden, S. Jahn                           | 11. | <b>Asymmetric melting behavior in twine wire arc spraying with cored wires</b><br>W. Tillmann, E. Vogli, M. Abdulgader   |
| 5. | <b>Production of high quality anti-corrosion and wear-resistant wire arc coatings</b><br>J. Wilden, S. Jahn   | 12. | <b>Superfine structured and nanostructured hard material coatings produced by means of HVOF flame spraying</b><br>W. Tillmann, E. Vogli, I. Baumann, G. Matthäus, T. Ostrowski |
| 6. | <b>FeNiW-coatings for casting molds in the aluminum industry</b><br>J. Wilden, S. Jahn  | 13. | <b>Tribological study of thermo sprayed specimens using wear resistance equipments</b><br>W. Tillmann, E. Vogli, A. da Cunha   |
| 7. | <b>Diffusion barrier coatings for CFC-components by plasma spraying – some research results of the project</b><br>K. Bobzin, F. Ernst, K. Richardt, L. Zhao | 14. | <b>Detonation flame sprayed diamond-bronze coatings for grinding</b><br>W. Tillmann, E. Vogli, J. Nebel  |

# Exposition

Concurrent with the conference, the ITSC 2008 exposition, organized by Messe Essen GmbH, will be held in the MECC, Expo Foyer.

Exposition hours are from:

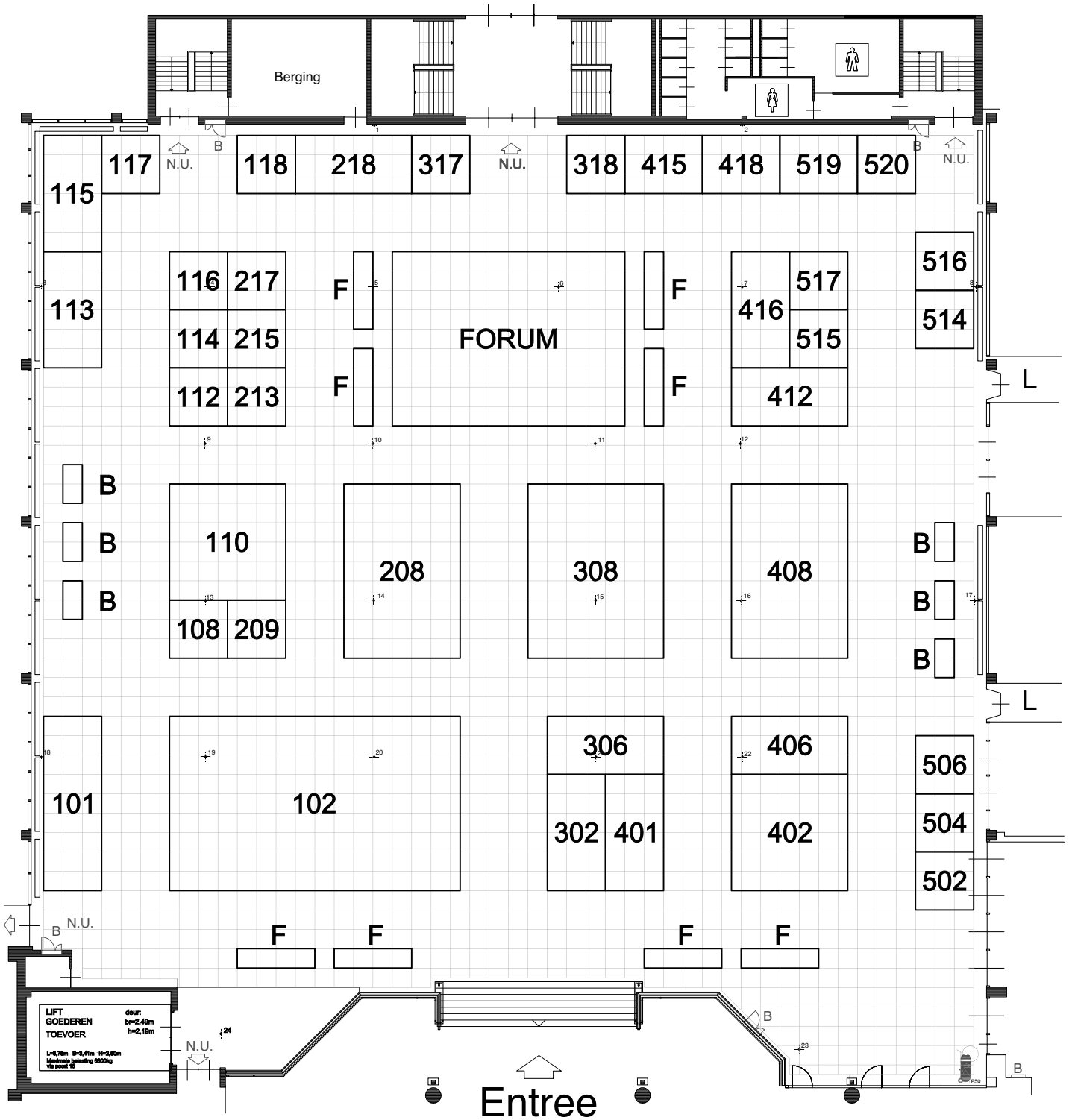
Monday,	June 2, 2008	12:30 – 17:30
Tuesday,	June 3, 2008	09:00 – 17:00
Wednesday,	June 4, 2008	09:00 – 17:00

**Exhibitor Reception, Monday, June 2, 2008, 17:20  
MECC, Expo Foyer**

All registrants are invited by the ITSC 2008 exhibitors for a snack and drinks.

## Exhibitor List (January 28, 2008)

Company	Booth no.
Advanced Coatings SA, Belgium	116
Air Products PLC, United Kingdom	514
Beijing Advanced Metal Materials Co. Ltd., P.R. China	516
Bodycote, France	115/117
Carpenter Powder Products GmbH, Germany	215
CGT Cold Gas Technology GmbH, Germany	412
Deloro Stellite GmbH, Germany	416
DeWal Industries, Inc., USA	112
Durum Verschleiss-Schutz GmbH, Germany	113
ECKA Granulate GmbH & Co. KG, Germany	418
Flame Spray Technologies bv, The Netherlands	208
Green Belting Industries Inc., USA	108
Grillo-Werke AG, Germany	515
GTV Verschleiss-Schutz GmbH, Germany	110
H.C. Starck GmbH & Co. KG, Germany	208
HÖGANÄS AB, Sweden	506
Ibeda Sicherheitsgeräte und Gastechnik GmbH & Co. KG, Germany	401
LESCAV, Belgium	118
LWK Plasma Ceramic GmbH, Germany	502
Medicoat AG, Switzerland	302
Metatherm Flamm-spritztechnik GmbH, Germany	318
MilliDyne Oy, Finland	415
Northwest Mettech Corporation, Canada	213
MOGUL Metallizing GmbH, Germany	504
Oseir Ltd., Finland	209
Polymet Corporation, USA	317
Praxair Surface Technologies, USA	402
Progressive Technologies, Inc., USA	406
Saint-Gobain Ceramic Materials, Germany	408
Sandvik Osprey Ltd., United Kingdom	217
Sulzer Metco AG, Switzerland	102
Tecnar Automation Ltd., Canada	306
TeroLab Surface Group SA, Switzerland	101
The Linde Group, Germany	308
THERMICO GmbH & Co. KG, Germany	218
Solid Spray LLC, USA	114



□ F= Food

□ B= Buffet



## June 2 – 4, 2008

The Industrial Forum will take part during ITSC 2008 exposition. Invited companies have the possibility of presenting industry related topics and their products during conference and exposition hours. The lectures are given in English or German language without simultaneous translation and are limited to 30 min. including discussion. Location is the so called "Industrial Forum" in the Expo Foyer.

The following table is showing the individual topics and presenting authors.



### Monday, June 2, 2008, 13:00 – 17:00

- |              |   |
|--------------|---|
| <b>13:00</b> | <b>Erfahrungen beim Öko-Audit ISO 14001 im Spritzbetrieb</b><br>J. Putzier, Putzier Oberflächentechnik, Leichlingen/Germany   |
| <b>13:30</b> | <b>Delta – a new multiple electrode plasma gun based on hydrogen</b><br>A. Schwenk, GTV Verschleiss-Schutz GmbH, Luckenbach/Germany                                       |
| <b>14:00</b> | <b>Praktische Erfahrungen mit dem neuen Schertest gem. DIN EN ISO 15340 unter Bezug zum Haftzugtest DIN ISO 582</b><br>S. Siegmann, Nova-Werke AG, Effretikon/Switzerland |
| <b>14:30</b> | <b>Normen in der Spritztechnik</b><br>H. Zernitz, DIN e.V., Berlin/Germany  |
| <b>15:00</b> | <b>Erfahrungen mit Ausbildung und Zertifizierung beim Thermischen Spritzen</b><br>R. Huber, A. Ohliger-Volmer, SLV München NL der GSI mbH, München/Germany                |
| <b>15:30</b> | <b>HP/HVOF qualification of a critical aerospace component</b><br>H. Ulrich, DutchAero bv, Eindhoven/The Netherlands  |
| <b>16:00</b> | <b>Laser-Beschichten</b><br>S. Kalawrytinios, Pallas GmbH, Würselen/Germany   |
| <b>16:30</b> | <b>Mechanische Bearbeitung von thermisch gespritzten Schichten</b><br>H. Ruff, Rybak + Höschele rhv-Technik GmbH + Co. KG, Waiblingen/Germany                             |



## Tuesday, June 3, 2008, 10:00 – 15:30

<b>Safety package – Liprotect</b> W. Unterstenwesten, The Linde Group / Linde Gas, Düsseldorf/Germany	10:00
<b>Alternative binder alloys / the end of cobalt in thermal spray applications</b> B. Gries, H.C. Starck GmbH, Goslar/Germany	10:30
<b>Gassicherheitsgeräte und Gasversorgung für Azetylen bis 2,5 bar</b> U. Bernhardt, Ibeda Sicherheitsgeräte und Gastechnik GmbH & Co. KG, Neustadt/Germany	11:00
<b>Measuring powders for thermal spraying</b> F. Campana, Advanced Coatings SA, Liège/Belgium	11:30
<b>Lunch Break</b>	
<b>Handling industrial gases</b> W. Strich, The Linde Group / Linde Gas, Hamburg/Germany	12:50 - 13:40
<b>Recycling von Overspray</b> J. Fischer, H.C. Starck GmbH, Goslar/Germany	14:00
<b>Streuung von Spritzzusatzigenschaften – Auswirkungen und abzuleitende Maßnahmen</b> M. Hochkeppel, TeroLab Surface GmbH, Langenfeld/Germany	14:30
	15:00

## Wednesday, June 4, 2008, 10:00 – 16:00

<b>Der Einsatz des True-Voltage-Sensors beim Plasmaspritzen</b> R. Kuhn, Medicoat AG, Mägenwil/Switzerland	10:00
<b>Projektierung moderner Spritzsysteme</b> W. Daniels, M. Zwetsloot, Flame Spray Technologies bv, Duiven/The Netherlands	10:30
<b>Erfahrungen mit dem 3-Kathoden-Plasmapbrenner</b> E. Schopp, OBZ Dresel & Grasme GmbH, Bad Krozingen/Germany	11:00
<b>Interessante Anwendungsbeispiele aus der Spritztechnik</b> K. Kreisel, Sulzer Metco Component GmbH, Salzgitter/Germany	11:30
<b>Lunch Break</b>	
<b>Hydraulik components and thermal spraying</b> T. G. Kraak, Aludra bv, Vlaardingen/The Netherlands	12:40 - 13:40
<b>Hardchrom and HVOF coatings in corrosive environment</b> R. Eijkenboom, Oak-Advanced Coating Solutions bv, Heerlen/The Netherlands	14:00
<b>HVOF sprayed applications</b> R. Didden, CZL Tilburg bv, Tilburg/The Netherlands	14:30
<b>Arc sprayed TSA application on a steel bridge, a "state of the art technology"</b> R. Eijkenboom, Oak-Advanced Coating Solutions bv, Heerlen/The Netherlands	15:00
	15:30

## Thermal Spray Technology

**May 29 – 31, 2008, 8:00 – 17:00**  
**Location MECC, Room 2.4, Thames**  
**Maastricht, The Netherlands**

### Instructors:

#### **Dr. C.C. Berndt, FASM**

Professor, Swinburne University of  
Technology  
Hawthorn, Victoria, Australia



#### **Dr. R. Knight, FASM**

Auxiliary Professor, Drexel University  
Philadelphia, Pennsylvania, USA



### Course Overview:

Thermal spray technology and coatings solve critical problems in demanding environments. They provide “solutions” to problems involving repair, wear, high temperature and aqueous corrosion, and thermal protection. Thermal spray can also be used to manufacture net-shapes, advanced sensors and materials for the biomedical and energy/environmental sectors. These and other emerging applications take advantage of the rapid and cost-effective capabilities of thermal spray technology in the OEM and repair industries.

Thermal spray processes - (twin wire-arc, combustion, high velocity oxy-fuel (HVOF), cold spray and plasma spray, and associated technologies) can deposit virtually any material as a surface coating onto a wide range of other materials. Coating reliability and effectiveness requires that these overlay coatings be selected, engineered and applied correctly.

This course provides (i) a thorough grounding and understanding of thermal spray processes, (ii) presents the complex scientific concepts in terms of simple physical models, and (iii) integrates this knowledge to practical applications and accepted thermal spray practices. NO mathematics is used to explain the processes or materials/mechanical engineering.

Participants are encouraged to contact the instructor(s) prior to the course so that any particular application or problem can be discussed as a case history.

### Learning Objectives:

Upon completion of this course, participants should be able to:

- Describe the historical basis for thermal spray technology and the development of equipment and materials as it relates to present-day technology.
- Recognize the terminology, principles and underlying theory of thermal spray technology.

- Compare and contrast thermal spray technologies with respect to competing coating technologies - PVD, CVD, hardfacing, electroplating, etc.
- Explain how feedstocks are designed and manufactured and how to select them for different spray processes.
- Identify applicable testing methods and currently accepted industrial practices used for quality control of coatings.

### Who Should Enroll:

- Technologists
- Engineers
- Technicians
- Technical marketing personnel
- Graduate students and other professionals entering the thermal spray field or who wish to update their knowledge

### Course Outline:

1. Surface Science
2. Equipment & Theory
3. Processing & Design
4. Materials
5. Applications
6. Testing & Characterization

**Instruction Language: All instruction from this course and all course materials will be in English.**

<b>Registration Fees:</b>	<b>Before May 14</b>	<b>After May 14</b>
Member Fee: (TSS/DVS/IIW)	995 US Dollars	1.055 US Dollars
ASM Member Fee:	1.055 US Dollars	1.105 US Dollars
Non-Member Fee:	1.195 US Dollars	1.245 US Dollars
Student Fee:	295 US Dollars	345 US Dollars

Multiple registrants from the same company will receive the following discount:

- 3<sup>rd</sup> registrant from the same company = 25% discount
- 4<sup>th</sup> registrant from the same company = 40% discount
- 5<sup>th</sup> registrant from the same company = 55% discount

Participants receive the *Handbook of Thermal Spray Technology* and hardcopy of the instructor's presentation materials.

**To register for the courses or for any questions, please contact customer service at [customerservice@asminternational.org](mailto:customerservice@asminternational.org) (Product code 253081508)**

## Understanding and Improving Your Thermal Spray Processes

May 30 – 31, 2008, 8:00 – 18:30  
 Location MECC, Room 2.5, Seine  
 Maastricht, The Netherlands

### Instructors:

#### Dr. M. Boulos, TS-HoF

Professor, University of Sherbrooke  
 Sherbrooke, Quebec, Canada



#### Dr. P. Fauchais, FASM, TS-HoF

Professor, Université de Limoges  
 Limoges, France



#### Dr. J. Heberlein, FASM, TS-HoF

University of Minnesota  
 Minneapolis, Minnesota, USA



### Course Overview:

Thermal spray coatings are receiving increased attention as solutions to corrosion, wear and materials compatibility problems. Thermal spray processes using electric arcs, combustion and plasma spray can apply almost any material to the surface of another. These coatings must be correctly engineered and applied to operate as an overlay surface. Education is vital to understanding coating systems and improving thermal spray coating reliability. This 2-day course will review the processing science of a wide range of thermal spray coating processes. The theory of operation and practice of the coatings will be presented, including thermal spray process control, coating application, characterization and testing. Practical coating systems for electric arc, combustion and plasma spray will be reviewed using case studies.

### Learning Objectives:

Upon completion of this course, participants should be able to:

- Summarize thermal spray processing science, applications and practice.
- Describe how thermal spray processing interacts with the materials it is designed to protect.
- Perform a techno-economic comparison of different technologies.

### Who Should Enroll:

This course is designed for process, application, development and design engineers, researchers and quality-control personnel. It will also be helpful for anyone involved in specifying materials, materials suppliers, sales representatives and technical management.

### Course Outline:

1. Introduction and Course Objectives
2. Overview of Thermal Spray Techniques
3. Flame Spraying Systems
4. Cold Spray
5. Characteristics of the Plasma State
6. Plasma Spraying I - D.C. Plasma Spraying
7. Plasma Spraying II - R.F. Induction Plasma Spraying
8. Wire-Arc Spraying
9. Plasma Transferred Arc
10. Plasma/Particle Interactions
11. Process Diagnostics
12. Powder Production for Thermal Spraying
13. Surface Preparation
14. Deposit Formation and Coating Properties
15. Thermal Spray Process Controls
16. Industrial Applications of Plasma Spray
17. Summary, Conclusions and Discussion

**Instruction Language:** All instruction from this course and all course materials will be in English.

Registration Fees:	Before May 14	After May 14
Member Fee:	795 US Dollars	845 US Dollars
(TSS/DVS/IIW)		
ASM Member Fee:	835 US Dollars	885 US Dollars
Non-Member Fee:	975 US Dollars	1.025 US Dollars
Student Fee:	255 US Dollars	305 US Dollars

Multiple registrants from the same company receive the following discount:

- 3<sup>rd</sup> registrant from the same company = 25% discount
- 4<sup>th</sup> registrant from the same company = 40% discount
- 5<sup>th</sup> registrant from the same company = 55% discount

**To register for the courses or for any questions, please contact customer service at [customerservice@asminternational.org](mailto:customerservice@asminternational.org) (Product code 259381508)**

## The Metallographic of Gas Turbine Coatings

May 31, 2008, 8:00 – 17:00  
Location MECC, Room 2.6, Danube  
Maastricht, The Netherlands

### Instructors:

#### D. G. Puerta

Director of Metallurgical Engineering  
IMR Test Labs  
Lansing, New York, USA



### Course Overview:

Sound metallographic practices are a prerequisite for the accurate evaluation of gas turbine coatings. Poor preparation can lead to false conclusions about coating integrity and spray booth parameters. This course covers a wide range of topics relating to the metallographic preparation and evaluation of gas turbine coatings. Emphasis is placed on equipment and consumables selection, and how these choices influence the observed structure of a given coating.

In addition to an overview of metallographic preparation, we also discuss common issues encountered with various coating families (e.g. hardcoats, ceramic (TBCs), etc.). Methods are covered which can help to ensure that the true coating microstructure has been revealed.

### Learning Objectives:

Upon completion of this course, participants should be able to:

- Describe the basic elements of metallographic preparation (sectioning, mounting, grinding, and polishing).
- Discuss the relationship between consumables, preparation recipes, and coating structure.
- Determine if features observed within a given coating are inherent or have been induced during metallographic preparation.

### Who Should Enroll:

This course is designed for anyone involved in either the processing or evaluation of thermal spray coatings

### Course Outline:

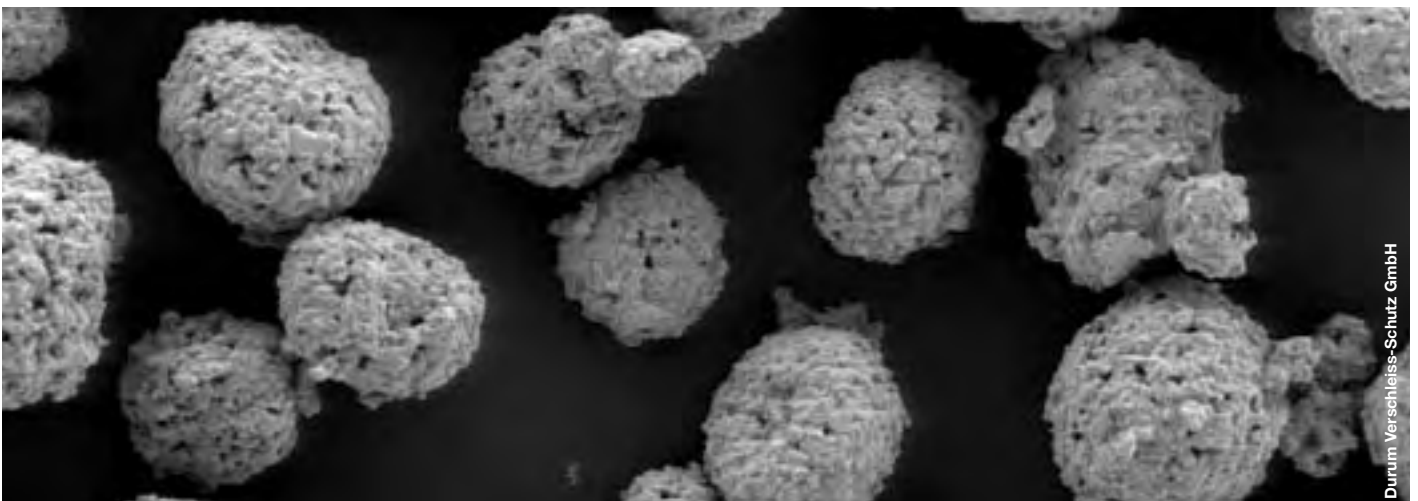
1. The Use of Coatings Within a Turbine
2. Metallography Overview
3. Sectioning
4. Hot and Cold Mounting
5. Grinding
6. Polishing I – Selection of fine grinding and polishing consumables
7. Polishing II – Recipes and coating families
8. Metallographic Standards
9. Evaluation of Coatings I – Image analysis
10. Evaluation of Coatings II – Electron microscopy
11. Evaluation of Coatings III – Issues specific to the different coating families

Registration Fees:	Before May 14	After May 14
Member Fee:	475 US Dollars	525 US Dollars
(TSS/DVS/IIW)		
ASM Member Fee:	525 US Dollars	575 US Dollars
Non-Member Fee:	645 US Dollars	695 US Dollars
Student Fee:	195 US Dollars	245 US Dollars

Multiple registrants from the same company will receive the following discount:

- 3<sup>rd</sup> registrant from the same company = 25% discount
- 4<sup>th</sup> registrant from the same company = 40% discount
- 5<sup>th</sup> registrant from the same company = 55% discount

To register for the courses or for any questions, please contact customer service at [customerservice@asminternational.org](mailto:customerservice@asminternational.org) (Product code: 251281508)



## Registration Information

### Conference Location

Maastricht Exhibition & Congress Centre (MECC), Forum 100, 6229 GV Maastricht, The Netherlands

### Advance Registration/Payment – Deadline May 14, 2008

Mail/fax your complete registration form with payment to DVS – German Welding Society, P.O. Box 10 19 65, 40010 Düsseldorf, Germany (phone: +49 (0) 211/1591-302/-303, fax: +49 (0) 211/1591-300). Registration received without payment will not be processed. If your registration form and payment have not been received by DVS by May 14, 2008 you have to pay a late registration fee of EUR 60. This applies also to on-site registration. There is no restriction on the number of attendees.

Payment by credit card:

- American Express – MasterCard – Visa (accepted)

Payment by credit transfer:

- Dresdner Bank AG, Düsseldorf,  
account no. 212 60 11 00,  
bank sorting code 300 800 00  
IBAN-code: DE82 3008 0000 0212 6011 00  
BIC-code: DRESDEFF300

**Any banking charges which may be incurred will be borne by the attendees.**

**Keyword for credit transfer** (please do not forget):

**ITSC 2008, name of registrant**

A confirmation will be faxed to you within 10 business days of receiving your registration and payment.

You can also find all information and details on the ITSC 2008 website: <http://www.dvs-ev.de/itsc2008>.

### On-Site Registration and Check In at the Conference Desk

If your registration form and payment have not been received by DVS by May 14, 2008 you will be required to fill out a registration form and pay on-site by credit card (American Express, Mastercard, Visa). An additional EUR 60 will be added to each registration category for on-site registrations (except: one-day-tickets).

Registered attendees should check in and pick up their conference tickets and (if ordered) the conference CD as soon as possible at the Conference Desk.

The Conference Desk is located in the Trajectum (Level 1), Maastricht Exhibition & Congress Centre (MECC), Forum 100, 6229 GV Maastricht, The Netherlands.

The Conference Desk is open from:

Sunday,	June 1, 2008	15:00 – 18:00
Monday,	June 2, 2008	08:00 – 17:00
Tuesday,	June 3, 2008	07:30 – 17:00
Wednesday,	June 4, 2008	07:30 – 17:00

### Registration Information – What's included:

Complete Registration includes:

Plenary Program  
3-Day Technical Conference  
3-Day Exposition and Exhibitor Reception  
Coffee Breaks  
One Conference CD  
One Awards Banquet Ticket

Minimum Registration includes:

Plenary Program  
3-Day Technical Conference  
3-Day Exposition and Exhibitor Reception  
Coffee Breaks

### Cancellation Fee

Cancellations must be in writing to the DVS. In case of cancellation after May 14, 2008 DVS will take a processing fee of EUR 60.

### Conference Information

The conference will take place as a discussion event. The names of the lecturers are followed by an asterisk. The language of the conference is English. Simultaneous translation will be offered in the Auditorium 2. Headphones will be distributed at the conference desk upon presentation of the conference ticket (business card).

### Conference CD

The conference CD will be produced in advance with all illustrations and tables. A conference CD is included with the complete registration. You will receive it at your check in. Additional CDs can be bought at the DVS-Publishing House booth. Sales of the CD in the name and to the account of the DVS-Publishing House.

### Coffee Breaks, Expo Foyer

During the coffee breaks (not during lunch break) coffee and tea will be served free of charge.

### Restaurant Facilities

Mecc@Table (Restaurant next to the Expo Foyer).

# General Information

## Parking

The MECC has a car park with room for 915 automobiles. ITSC registrants can use P4, P5 or P6. (Price per day: EUR 9)

## Transportation

### By Plane

Maastricht-Aachen Airport is located 10 kilometers from MECC Maastricht and only 15 minutes away by car, taxi or bus. DVS is pleased to announce that KLM Royal Dutch Airlines has been designated as the Official Carrier for the International Thermal Spray Conference 2008 (see: <http://www.dvs-ev.de/itsc2008>)

### By Car

You will begin to see signs for MECC Maastricht as soon as you reach the outskirts of Maastricht. Follow these signs until you reach the MECC car park. If you are

traveling south on the A2/E25 motorway (from Amsterdam-Eindhoven), take exit 55 signed for "Randwyck-MECC". If you are travelling north on the A2/E25 motorway (from Paris-Liège) take exit 56 signed for "Gronsveld-MECC".

### By Train

Maastricht-Randwyck station is located 250 meters from MECC Maastricht and is part of the national and international railway network. There are frequent trains to Maastricht Central Station, which is also linked to the national and international railway network.

### By Bus

Maastricht's metropolitan bus company runs a regular service between the city centre, Maastricht Central Station and MECC Maastricht. There is a bus about every five minutes (Forum bus stop).

## Hotel Information

### Hotel Reservation

The following hotels are reserved for the registrants of ITSC 2008:

- NH Maastricht (situated next door to MECC)
- Hotel de l'Empereur
- Novotel Maastricht
- Bastion Hotel Maastricht
- Hotel Randwyck

Hotel reservations can be made by filling in the enclosed hotel registration form and faxing it directly to Maastricht Booking Service or by online-registration. There are several bus connections from the various hotels to MECC (see <http://www.dvs-ev.de/itsc2008>). Registrants are allowed to use the city-buses free of charge by showing their conference badge during ITSC 2008. For the first drive they can show their confirmation-/registration-letter.

## Tips for The Netherlands

### Passports and Visas

All foreign visitors entering The Netherlands must have a valid passport. For detailed information about visas, please contact your nearest Dutch Embassy or Consulate. Foreigners with a visa requirement for Germany must have a "Multiple Entry Schengen Visa".

### Currency

EURO (EUR) is the currency of The Netherlands. Foreign currencies can be exchanged at the banks and in the major hotels.

### Electricity

The voltage in The Netherlands is 230 volts. Hotels may have a 110-volt or 120-volt outlet for shavers, but travelers

are advised to bring a power converter and an adapter for two-prong, round-prong plugs with side grounding contacts.

### Time

CET (Central European Time)

### Maastricht Information

If you want more information about Maastricht you can contact:

<http://www.vvvmaastricht.nl>

## Social Events / Excursions / Industrial Tour / Linde Golf Challenge ITSC 2008



### Exhibitor Reception, Monday, June 2, 2008, 17:20 MECC, Expo Foyer

All registrants are invited by the ITSC 2008 exhibitors for a snack and drinks.

### ITSC 2008 Awards Banquet, Tuesday, June 3, 2008, 20:00 La Caverne de Geulhem, Wolfsdriesweg 8a, 6325 PM Berg en Terblijt, The Netherlands

Join us Tuesday at the ITSC 2008 Awards Banquet to recognize the recipients of the ITSC 2008 awards. The banquet is included with a Complete Registration. Additional tickets can be ordered with the registration form. Bus transfer is included.

Departure: 19:00 MECC  
Return: 22:30 to the main hotels of Maastricht

### Excursions, Thursday, June 5, 2008

Limited number of registrants (first come-basis). Please indicate on the registration form. Registrants should be

presented 10 minutes before at the meeting point. Do not forget the voucher for the tour! The tours include transportation, English-speaking guide, coffee break (with cake) and lunch (lunch only for the Full-Day Tour). **Closing date for booking of both tours is May 14, 2008.** If a minimum number of registrants for the tours is not reached, the tours can be cancelled.

#### • Visit A – South Limburg, The Netherlands / Aachen, Germany (Full-Day Tour)

Limburg is the most southerly of the Dutch provinces. In South Limburg (Zuid-Limburg), at Vaals, is the Drielandenpunt (“Three Countries Point”) where the frontiers of the Netherlands, Belgium and Germany meet. Registrants will see nice villages with timbered framed houses as well as numerous castles.

Aachen's historical old town invites visitors to a stroll. Let yourself be guided through narrow alleys and over historical places through a nearly 2000 years old Aachen history. Get to know all of Aachen's facets: as modern town with lovely old town houses, many old and new fountains and many stories around the cathedral and town hall.

**Please remember that this tour will be also in Germany. Foreigners with a visa requirement for Germany must have a “Multiple Entry Schengen Visa”.**

Departure: 10:00 MECC  
Arrival: 18:00 MECC

#### • Visit B – City Tour Maastricht (Half-Day Tour)

Maastricht's vibrant history and its situation at a crossroads of European cultures, languages and trade routes lend it a unique charm and international flavor. Dutch visitors to this most ancient, most European and most southerly city of the Netherlands find Maastricht so “un-Dutch” that they feel as if they are abroad, while foreign visitors tend to feel perfectly at home in its international atmosphere.

- Historical City Walk Maastricht
- Visit of the Basilica of St. Servaas and Treasury Room, the restored Stokstraat quarter, the old ramparts, the famous Vrijthof square.

The tour ends in the city centre of Maastricht.

Departure: 10:00 MECC (by bus)

### Industrial Tour, Thursday, June 5, 2008

Limited number of registrants (first come-basis). Participation is only valid with a registration for the conference. Please indicate on the registration form. Registrants should be presented 10 minutes before

## Social Events

departure of the buses. Do not forget the voucher for the tour. The tour includes transportation, English-speaking guide at the institute. **Closing date for booking of the industrial tour is May 14, 2008.** If a minimum number of registrants for the tour is not reached, the tour can be cancelled.

**Please remember that the tour will be in Germany. Foreigners with a visa requirement for Germany must have a "Multiple Entry Schengen Visa".**

### Visit – Research Centre Jülich, Germany

At the Research Centre Jülich, one of the 15 Helmholtz Research Centres in the Federal Republic of Germany, 4,400 members of staff dedicate themselves to exploring topics that are of current relevance to society in one of the largest research institutions in Europe. During the first part of the visit an overview on the activities in the different fields will be given. In the second part, a lab tour in the Institute of Energy Research – Materials Synthesis and Processing (IEF-1) will be made. The activities in the major research topics solid oxide fuel cells and coating systems for power plants (especially TBCs) will be presented. The tour will include the demonstration of different kinds of powder technological processing methods like shaping and coating technology including thermal spray processes.

Lunch.

Departure: 09:00 MECC

Arrival: approx. 14:00 MECC

### "Linde Golf Challenge ITSC 2008"

**Maastricht, The Netherlands**

**Thursday, June 5, 2008**



In conjunction with the ITSC 2008, the golf tournament "Linde Golf Challenge ITSC 2008" will be taking place on Thursday, June 5, 2008.

The venue is the Golf Club "Het Rijk van Margraten" [www.golfenophetrijk.nl/margraten](http://www.golfenophetrijk.nl/margraten).

The organizer is Will Herlaar of VTS, the Dutch Thermal Spray Society.



B. Felixberger

The registration deadline is May 1, 2008 by post, fax or (preferably) E-Mail to:

Will Herlaar, President VTS  
w.herlaar@fst.nl  
fax: +31 26 3190141  
c/o FlameSpray Technologies bv  
Dijkgraaf 40  
6921 RL Duiven  
The Netherlands

Greenfee of EUR 115 includes coffee or tea at arrival, luncheon box, refreshments as well as diner during which the price-giving event will be held.

Registration is limited to 30 persons and will be on a first come-basis. Hire of a golfcart is limited and should be indicated in your registration. Prices will be donated by The Linde Group, but other sponsors are welcome.



# Conference Committees and Endorsing Sponsors



## General Chairmen

**P. Heinrich**, The Linde Group (D)  
**P. Hanneforth**, SpaCom LCC (USA)

## Technical Chairmen

**E. Lugscheider**, RWTH Aachen University (D)  
**M. Dorfman**, Sulzer Metco (US) Inc. (USA)

## DVS Representatives

**F.-W. Bach**, Leibniz University (D)  
**J. Beczkowiak**, H.C. Starck GmbH (D)  
**K. Bobzin**, RWTH Aachen University (D)  
**D. Böhme**, SLV München, NL der GSI mbH (D)  
**E. Brenner**, Sulzer Metco AG (Switzerland) (CH)  
**B. Brommer**, DVS - German Welding Society (D)  
**M. Dorfman**, Sulzer Metco (US) Inc. (USA)  
**F. Ernst**, RWTH Aachen University (D)  
**D. Grasme**, OBZ Dresel & Grasmе GmbH (D)  
**H. Gruner**, Medicoat AG (CH)  
**P. Hanneforth**, SpaCom LCC (USA)  
**S. Hartmann**, Rybak + Höschele  
rhv-Technik GmbH + Co. KG (D)  
**P. Heinrich**, The Linde Group (D)  
**W. Herlaar**, Flame Spray Technologies bv (NL)  
**X. Huang**, TSCC Thermal Spray Committee of  
Chinese Surface Engineering Association (PRC)  
**J. Jerzembeck**, DVS - German Welding Society (D)  
**T. Klassen**, Helmut Schmidt University (D)  
**E. Lugscheider**, RWTH Aachen University (D)  
**S. Mahlstedt**, DVS - German Welding Society (D)  
**K. Nassenstein**, GTV Verschleiss-Schutz GmbH (D)  
**F. Schreiber**, Durum Verschleiss-Schutz GmbH  
**D. Stöver**, Forschungszentrum Jülich GmbH (D)  
**W. Tillmann**, Dortmund University (D)  
**C. Wasserman**, TeroLab Surface Group SA (CH)  
**B. Wielage**, Chemnitz University (D)  
**J. Wilden**, Ilmenau University (D)

## ASM-TSS Representatives

**C.C. Berndt**, Swinburne University of Technology (AUS)  
**T.W. Clyne**, University of Cambridge (GB)  
**T. Coyle**, University of Toronto (CDN)  
**M. Dorfman**, Sulzer Metco (US) Inc. (USA)  
**M. Fukumoto**, Toyohashi University of Technology (J)  
**M. Gevelber**, Boston University (USA)  
**P. Hanneforth**, SpaCom LLC (USA)  
**J. Heberlein**, University of Minnesota (USA)  
**P. Heinrich**, The Linde Group (D)  
**K. Hollis**, Los Alamos National Laboratory (USA)  
**X. Huang**, TSCC Thermal Spray Committee of  
Chinese Surface Engineering Association (PRC)  
**J. Jerzembeck**, DVS - German Welding Society (D)  
**J. Karthikeyan**, ASB Industries, Inc. (USA)  
**A. Kay**, ASB Industries, Inc. (USA)  
**C. Kay**, ASB Industries, Inc. (USA)  
**K. Khor**, Nanyang Technological University (SGP)  
**R. Knight**, Drexel University (USA)  
**S. Kuroda**, National Institute for Materials Science (J)  
**C. Lee**, Hanyang University (ROC)  
**C. Li**, Xi'an Jiaotong University (PRC)  
**B. Marple**, National Research Council Canada (CDN)  
**C. Moureau**, National Research Council Canada (CDN)  
**K. Tani**, Tocalo Co. Ltd. (J)  
**Y. Tsunekawa**, Toyota Tech Institute (J)  
**R. C. Tucker**, The Tucker Group, LCC (USA)  
**P. Vuoristo**, Tampere University of Technology (FI)  
**G. Wuest**, Sulzer Metco (US) Inc. (USA)  
**T. Yoshida**, The University of Tokyo (J)

## Endorsing Sponsors

• Asian Surface Technologies, PTE. Ltd (SGP) • BIL Belgisch Instituut voor Lastechniek (B) • CEREM/CEA (F)  
• Commission of the European Community (B) • DGO - Deutsche Gesellschaft für Galvano- und Oberflächentechnik e. V. (D) • DGM - Deutsche Gesellschaft für Materialkunde e. V. (D) • DKG - Deutsche Keramische Gesellschaft e. V. (D) • DVS - Research Association (D) • GTS - Gemeinschaft Thermisches Spritzen e.V. (D) • HTS - High Temperature Society of Japan (J) • International Thermal Spray Association (USA) • Japan Thermal Sprayers Association (J) • JTSS - Japanese Thermal Spray Society (J) • TSCC Thermal Spray Committee of Chinese Surface Engineering Association (PRC) • TSSEA -Thermal Spraying & Surface Engineering Association (GB) • TWI The Welding Institute (GB) • VDI Verein Deutscher Ingenieure (D) • Werkstoff-Forum RWTH Aachen (D)

# Authors, Session Chairs, Co-Authors

## A

Abdulgader, M.	University of Dortmund, Dortmund/Germany
Achellis, L.	University of Bremen, Bremen/Germany
Ackermann, D.	University of Applied Sciences Gelsenkirchen, Gelsenkirchen/Germany
Adachi, M.	Tocalo Co. Ltd., Akashi/Japan
Adeeva, L.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Ageorges, H.	University of Limoges, Limoges/France
Ahn, J.	Research Institute of Industrial Science and Technology, Pohang/South Korea
Ahrens, S.	Chemnitz University of Technology, Chemnitz/Germany
Aixala, L.	Volvo Powetrain, St. Priest/France
Al Mamun, K.	School of Mechanical & Manufacturing Engineering, Dublin/Ireland
Alani, H.	University of Southampton, Southampton/United Kingdom
Allen, D.	Utah State University, Logan/USA
Altuncu, E.	Kocaeli University, Kocaeli/Turkey
Amsellem, O.	Ecole des Mines de Paris, Evry/France
Anderson, F.	IMR Test Labs, Lansing/USA
Ansar, A.	German Aerospace Center, Stuttgart/Germany
Aoki, I.	Fujimi Incorporated, Gifu/Japan
Arai, M.	Central Research Institute of Electric Power Ind., Tokyo/Japan
Aral, U.	Sakarya University, Sakarya/Turkey
Archer, R.	Carleton University, Ottawa/Canada
Arcondeguy, A.	University of Limoges, Limoges/France
Arnold, J.	German Aerospace Center, Stuttgart/Germany
Asghari, S.	Isfahan University of Technology, Isfahan/Iran
Azanza-Ricardo, C.	Università di Trento, Trento/Italy

## B

Bach, F.	Leibniz University, Garbsen/Germany
Bae, C.	Welding Research Center, Pohang/South Korea
Bae, G.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Bagcivan, N.	RWTH Aachen University, Aachen/Germany
Baik, K.	Chungnam National University, Daejeon/South Korea
Bandyopadhyay, P.	IIT Kharagpu, West Bengal/India
Barbezat, G.	Barbezat-Consulting, Winterthur/Switzerland
Bara, L.	Centre de Ressources Techniques, Morlaix/France
Bardi, U.	University of Firenze, Sesto Fiorentino/Italy
Barletta, M.	Università di Roma Tor Vergata, Roma/Italy
Bartlett, B.	Sulzer Metco (Canada) Inc., Fort Saskatchewan/Canada
Barykin, G.	Inasmet Tecnalia, San Sebastian/Spain
Bassani, A.	Università di Modena e Reggio Emilia, Modena/Italy
Basu, S.	Boston University, Boston/USA
Basu, S.	University of Connecticut, Storrs/USA
Baumann, I.	University of Dortmund, Dortmund/Germany
Bause, T.	Leibniz University, Garbsen/Germany
Beardsley, B.	Caterpillar Inc., Peoria/USA
Bejarano, M.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Beliayev, A.	SSI Powder Metallurgy Institute, Minsk/Belarus
Bellin, J.	Engineering National School of Limousin, Limoges/France
Benedetti, A.	São Paulo State University, Araraquara/Brazil
Beneteau, M.	Centerline Windsor Ltd., Windsor/Canada
Berger, L.	Fraunhofer Institute for Material and Beam Technology, Dresden/Germany
Berndt, C.	Swinburne University of Technology, Hawthorn/Australia
Bernhardt, H.	Ibeda Sicherheitsgeräte und Gastechnik GmbH & Co. KG, Neustadt/Germany
Bertrand, G.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France

# Authors, Session Chairs, Co-Authors

Bertrand, P.	Ecole Nationale d'Ingénieurs de Saint-Etienne, Saint-Etienne/France
Bianchi, L.	Commissariat à l'Energie Atomique, Monts/France
Biermann, T.	RWTH Aachen University, Aachen/Germany
Bigan, M.	University Lille 1, Villeneuve d'Ascq/France
Bilbao, C.	Central University of Venezuela, Caracas/Venezuela
Birtch, W.	Centerline Windsor Ltd., Windsor/Canada
Bisi, U.	Central University of Venezuela, Caracas/Venezuela
Bliss, S.	University of Auckland, Auckland/New Zealand
Bobzin, K.	RWTH Aachen University, Aachen/Germany
Bolelli, G.	Università di Modena e Reggio Emilia, Modena/Italy
Boller, E.	European Synchrotron Facility, Grenoble/France
Bolot, R.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Bonte, M. de	Sirris-MTM Kuleuven, Leuven/Belgium
Borgioli, F.	University of Firenze, Sesto Fiorentino/Italy
Borisov, Y.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Borisova, A.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Borit, F.	Ecole des Mines de Paris, Evry/France
Boronenkov, V.	Ural State Technical University, Ekaterinburg/Russia
Boulos, M.	University of Sherbrooke, Sherbrooke/Canada
Bourda, C.	Metalor, Courville sur Eure/France
Boustie, M.	Ecole Nationale Sup�rieure de M�canique et d'A�rot, Poitiers/France
Boyce, B.	Sandia National Laboratories, Albuquerque/USA
Brandl, W.	University of Applied Sciences Gelsenkirchen, Gelsenkirchen/Germany
Brandt, O.	Becon Technologies GmbH, Thun/Switzerland
Brenner, E.	Sulzer Metco AG (Switzerland), Wohlen/Switzerland
Brewer, L.	Sandia National Laboratories, Albuquerque/USA
Brodin, H.	Siemens Industrial Turbomachinery, Finsp�ng/Sweden
Brousse, E.	University of Limoges, Limoges/France
Br�hl, M.	RWTH Aachen University, Aachen/Germany
Brune, E.	PanGas, Dagmersellen/Switzerland
Bru�ies, E.	Technische Universit�t Dresden, Dresden/Germany
Buikus, K.	Institute of Powder Metallurgy, Minsk/Belarus
Burgess, A.	Northwest Mettech Corp., North Vancouver/Canada
Burkard, H.	Metallpulververtrieb GmbH, D�sseldorf
Bussmann, M.	University of Toronto, Toronto/Canada
Buzdygar, T.	Obninsk Center for Powder Spraying, Obninsk/Russia

## C

Campana, F.	Advanced Coatings SA, Li�ge/Belgium
Cangue, F.	UFPR - Federal University of Paran�, Curitiba/Brazil
Cannillo, V.	Universit� di Modena e Reggio Emilia, Modena/Italy
Cano, C.	Instituto de Ceramica y Vidrio (CSIC), Madrid/Spain
Cano, I.	Thermal Spray Centre (CPT), Barcelona/Spain
Capra, A.	UFPR - Federal University of Paran�, Curitiba/Brazil
Carius, R.	Forschungszentrum J�lich GmbH, J�lich/Germany
Caron, N.	CEA Le Ripault, Monts/France
Cetegen, B.	University of Connecticut, Storrs/USA
Cevher, O.	Sakarya University, Sakarya/Turkey
Chagnon, P.	Rhodia Recherches & Technologies, Saint Fons/France
Chan, K.	The Hongkong Polytechnic University, Hong Kong/Hong Kong
Chandler, P.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Chandler, P.	CA Technology Ltd., West Wellow/United Kingdom
Chandra, S.	University of Toronto, Toronto/Canada
Chartier, T.	University of Limoges, Limoges/France
Chazelas, C.	University of Limoges, Limoges/France

# Authors, Session Chairs, Co-Authors

Chen, D.	University of Connecticut, Storrs/USA
Chen, L.	University of Toronto, Toronto/Canada
Chen, W.	National Research Council of Canada, Ottawa/Canada
Cherigui, M.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Chivavibul, P.	National Institute for Materials Science, Ibaraki/Japan
Chraska, T.	Institute of Plasma Physics, Praha/Czech Republic
Christo, A.	UFPR - Federal University of Paran�a, Curitiba/Brazil
Christoulis, D.	Ecole des Mines de Paris, Evry/France
Chromik, R.	McGill University, Montreal/Canada
Chumak, O.	Institute of Plasma Physics, Praha/Czech Republic
Cinca, N.	Thermal Spray Centre (CPT), Barcelona/Spain
Cipitria, A.	University of Cambridge, Cambridge/United Kingdom
Clyne, T.	University of Cambridge, Cambridge/United Kingdom
Coddet, C.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Colmen, J.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Colmenares-Angulo, J.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Coolegem, G.	C-Cube Corrosion & Coating Control, Delft/The Netherlands
Costa, P.	Central University of Venezuela, Caracas/Venezuela
Costil, S.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Coudert, J.	University of Limoges, Limoges/France
Coyle, T.	University of Toronto, Toronto/Canada
Ctibor, P.	Institute of Plasma Physics, Praha/Czech Republic
Cunha, A. da	University of Dortmund, Dortmund/Germany

## D

Damani, R.	Sulzer Innotec, Winterthur/Switzerland
Daniels, W.	Flame Spray Technologies bv, Duiven/The Netherlands
Danlos, Y.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Darut, J.	University of Limoges, Limoges/France
Debionne, T.	Nitrocision Europe SA, Luxembourg/Luxembourg
Deng, C.	Guangzhou Research Institute of Non-Ferrous Metals, Guangzhou/P.R. China
Deng, C.	Guangzhou Research Institute of Non-Ferrous Metals, Guangzhou/P.R. China
Denoirjean, A.	University of Limoges, Limoges/France
Deska, D.	Fraunhofer Institute for Ceramic Technologies and Systems, Dresden/Germany
Deuerler, F.	University of Wuppertal, Wuppertal/Germany
Dezert, D.	Technogenia SA, Saint-Jorioz/France
Diden, R.	CZL Tilburg bv, Tilburg/The Netherlands
Dikici, B.	Yuzuncu Yil University, Ercis-Van/Turkey
Ding, C.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Dingyong, H.	College of Materials Science and Engineering, Beijing/P.R. China
Dolatabadi, A.	Concordia University, Montreal/Canada
Dolles, M.	Technical University of Ilmenau, Ilmenau/Germany
Dongmo, E.	University of Stuttgart, Stuttgart/Germany
Dorfman, M.	Sulzer Metco (US) Inc., Westbury/USA
D�oring, J.	TeroLab Surface GmbH, Langenfeld/D
Doroshenko, L.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Dosta, S.	Thermal Spray Center (CPT), Barcelona /Spain
Doyle, C.	University of Auckland, Auckland/New Zealand
Drescher, V.	Technical University of Ilmenau, Ilmenau/Germany
Dr�obler, B.	Leibniz University, Garbsen/Germany
Drozda, F.	Multibras, Joinville/Brazil
Dschung, F.	Universit�at der Bundeswehr, Neubiberg/Germany
Dubsky, J.	Institute of Plasma Physics, Praha/Czech Republic
Ducos, M.	Consultant, Mornas/France
Duda, T.	ALSTOM (Switzerland) Ltd., Baden/Switzerland
Dzur, B.	Technical University of Ilmenau, Ilmenau/Germany

# Authors, Session Chairs, Co-Authors

## E

Edris, H. Isfahan University of Technology, Isfahan/Iran  
Eijckenboom, R. Oak-Advanced Coating Solutions bv, Heerlen/The Netherlands  
Elmoursi, A. Delphi Research Labs, Midland/USA  
Erdogan, G. Sakarya University, Sakarya/Turkey  
Erne, M. Leibniz University, Garbsen/Germany  
Erning, U. Sulzer Metco Europe GmbH, Hattersheim/Germany  
Ernst, F. RWTH Aachen University, Aachen/Germany  
Espallargas, N. Thermal Spray Center (CPT), Barcelona /Spain  
Etchart-Salas, R. University of Limoges, Limoges/France

## F

Fagoaga, I. Inasmet Tecnalia, San Sebastian/Spain  
Fan, S. Xi'an Jiaotong University, Xi'an/P.R. China  
Faraoun, H. LERMPS, University of Technology of Belfort-Montb e, Belfort/France  
Fauchais, P. University of Limoges, Limoges/France  
Fenineche, N. LERMPS, University of Technology of Belfort-Montb e, Belfort/France  
Fiala, P. Sulzer Metco (Canada) Inc., Fort Saskatchewan/Canada  
Filippov, M. Ural State Technical University, Ekaterinburg/Russia  
Fischer, A. University Duisburg-Essen, Duisburg/Germany  
Fischer, G. Technical University of Berlin, Berlin/Germany  
Flegel, H. Daimler AG, Stuttgart/Germany  
Forster, G. Universit at der Bundeswehr, Neubiberg/Germany  
Fischer, J. H.C. Starck GmbH, Goslar/Germany  
Fossati, A. University of Firenze, Sesto Fiorentino/Italy  
Frederick, F. Electric Power Research Institute, Charlotte/USA  
Fu, B. College of Materials Science and Engineering, Beijing/P.R. China  
Fu, Y. Dalian Maritime University, Dalian/P.R. China  
Fuchs, M. Universit at der Bundeswehr, Neubiberg/Germany  
Fujita, S. Kyushu University, Fukuoka/Japan  
Fukumoto, M. Toyohashi University of Technology, Toyohashi/Japan  
Fuller, B. Delphi Research Labs, Midland/USA

## G

Gadow, R. University of Stuttgart, Stuttgart/Germany  
Gandy, D. Electric Power Research Institute, Charlotte/USA  
Gao, J. Xi'an Jiaotong University, Xi'an/P.R. China  
Gao, M. Xi'an Jiaotong University, Xi'an/P.R. China  
Gao, P. Xi'an Jiaotong University, Xi'an/P.R. China  
Gao, W. LERMPS, University of Technology of Belfort-Montb e, Belfort/France  
Gao, Y. Dalian Maritime University, Dalian/P.R.China  
Garc a, E. Instituto de Ceramica y Vidrio (CSIC), Madrid/Spain  
Garc a-Alonso, D. School of Mechanical & Manufacturing Engineering, Dublin/Ireland  
G rtner, F. Helmut Schmidt University, Hamburg/Germany  
Gasgnier, G. IMERYS Tableware France, Aix-sur-Vienne/France  
Gavgali, M. Ataturk University, Erzurum/Turkey  
Geary, A. Metallography Consulting Services, Meriden/USA  
Gell, M. University of Connecticut, Storrs/USA  
Gewelber, M. Boston University, Boston/USA  
Ghosh, O. Boston University, Boston/USA  
Ghosh, R. Air Products & Chemicals, Inc., Allentown/USA  
Gil, L. Universidad Nacional Experimental Politecnica, Puerto Ordaz/Venezuela  
Gillispie, B. Delphi Research Labs, Midland/USA

# Authors, Session Chairs, Co-Authors

Gindrat, M.	Sulzer Metco AG (Switzerland), Wohlen/Switzerland
Giolli, C.	Turbocoating SpA, Rubbiano di Solignano/Italy
Gitzhofer, F.	University of Sherbrooke, Sherbrooke/Canada
Golosnoy, I.	University of Cambridge, Cambridge/United Kingdom
Golovin, A.	Khrstianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Gorlach, I.	Nelson Mandela Metropolitan University, Port Elizabeth /South Africa
Gouldstone, A.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Goutier, S.	University of Limoges, Limoges/France
Granger, P.	Edwards, Corbeil-Essonnes/France
Grasme, D.	OBZ Dresel & Grasme GmbH, Bad Krozingen/Germany
Gray, S.	Cranfield University, Cranfield/United Kingdom
Gregoire, J.	German Aerospace Center, Stuttgart/Germany
Gries, B.	H.C. Starck GmbH, Goslar/Germany
Grimaud, A.	University of Limoges, Limoges/France
Grimenstein, L.	Nation Coating Systems, Inc., Franklin/USA
Gross, K.	University of Melbourne, Melbourne/Australia
Grund, T.	Chemnitz University of Technology, Chemnitz/Germany
Grundmann, R.	Technische Universität Dresden, Dresden/Germany
Gruner, H.	Medicoat AG, Mägenwil/Switzerland
Gruner, P.	Medicoat AG, Mägenwil/Switzerland
Guetta, S.	Ecole des Mines de Paris, Evry/France
Guilemany, J.	Thermal Spray Center (CPT), Barcelona /Spain
Guipont, V.	Ecole des Mines de Paris, Evry/France
Gulec, A.	Sakarya University, Sakarya/Turkey
Gulizia, S.	CSIRO Materials Science & Engineering, Melbourne/Australia
Gulyaev, I.	Khrstianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Guo, X.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Gurris, M.	Institute of Applied Mathematics, Dortmund/Germany
Guru, D.	University of Minnesota, Minneapolis/USA

## H

Haanappel, V.	Forschungszentrum J�lich GmbH, J�lich/Germany
Hadad, M.	EMPA - Materials Science and Technology, Thun/CH
Hahn, M.	University Duisburg-Essen, Duisburg/Germany
Hall, A.	Sandia National Laboratories, Albuquerque/USA
Hall, W.	University of Southampton, Southampton/United Kingdom
Ham, Y.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Hamashima, K.	Asahi Glass Co. Ltd., Research Center, Yokohama/Japan
Hanneforth, P.	SpaCom LCC, Huntington/USA
Hartmann, S.	Rybak + H�schele rhv-Technik GmbH + Co. KG, Waiblingen/Germany
Hartz, K.	Leibniz University, Garbsen/Germany
Hasak, T.	SSI Powder Metallurgy Institute, Minsk/Belarus
Hasan, M.	School of Mechanical & Manufacturing Engineering, Dublin/Ireland
Hashmi, S.	School of Mechanical & Manufacturing Engineering, Dublin/Ireland
Hathiramani, D.	MPI f�r Plasmaphysik, Greifswald/Germany
He, D.	Beijing University of Technology, Beijing/P. R. China
Heberlein, J.	University of Minnesota, Minneapolis/USA
Heemann, K.	Department of Mechanical and Manufacturing Engineering, Melbourne/Australia
Heinrich, P.	The Linde Group, Unterschleissheim/Germany
Heiz, U.	Technical University Munich, Munich/Germany
Henne, R.	B�blingen/Germany
Herlaar, W.	Flame Spray Technologies bv, Duiven/The Netherlands
Herrmann, M.	Fraunhofer Institute for Ceramic Technologies and Systems, Dresden/Germany
Hertter, M.	MTU Aero Engines, M�nchen/Germany
Hirano, K.	Asahi-Seiren Co. Ltd, Yao, Osaka/Japan

# Authors, Session Chairs, Co-Authors

Hirose, S.	AIST, Tsukuba/Japan
Hirschfeld, D.	New Mexico Institute of Mining and Technology, Socorro/USA
Hochkeppel, M.	TeroLab Surface GmbH, Langenfeld/D
Hofmann, C.	Rybak + Höschele rhv-Technik GmbH + Co. KG, Waiblingen/Germany
Höll, H.	Cold Gas Technology GmbH, Ampfing/Germany
Holdik, K.	Daimler AG, Ulm/Germany
Hong, R.	Guangzhou Research Institute of Non-Ferrous Metals, Guangzhou/P.R. China
Hoshiyama, Y.	Materials and Bioengineering, Osaka/Japan
Hosono, T.	Shinshu University, Nagano/Japan
Hospach, A.	Forschungszentrum Jülich GmbH, Jülich/Germany
Hou, B.	Chinese Academy of Science, Qingdao/P.R. China
Hou, P.	College of Materials Science and Engineering, Beijing/P.R. China
Houdkova, S.	Skoda Research, Plzen/Czech Republic
Hrabovsky, M.	Institute of Plasma Physics, Praha/Czech Republic
Huang, T.	China Steel Corporation, Kaohsiung/Taiwan
Huang, X.	TSCC Thermal Spray Committee of Chinese Surface Engineering Association, Beijing/P.R. China
Huang, X.	Carleton University, Ottawa/Canada
Huber, R.	SLV München, NL der GSI mbH, München/Germany
Huguet, C.	IMERYS Tableware France, Aix-sur-Vienne/France
Hui, R.	Institute for Fuel Cell Innovation, Vancouver/Canada
Hume, H.	Nitrocision LLC, Idaho Falls/USA
Hyland, M.	University of Auckland, Auckland/New Zealand

Ibe, H.	Fujimi Incorporated, Gifu/Japan
Ibrahim, A.	Farmingdale State University, Farmingdale/USA
Ichikawa, Y.	Fracture and Reliability Research Institute, Tohok, Sendai/Japan
Ichimura, K.	Fracture and Reliability Research Institute, Tohok, Sendai/Japan
Ilhan, Z.	German Aerospace Center, Stuttgart/Germany
Ilyuschenko, A.	Institute of Powder Metallurgy, Minsk/Belarus
Ilyuschenko, T.	Institute of Powder Metallurgy, Minsk/Belarus
Inoue, T.	AIST, Tsukuba/Japan
Irissou, E.	National Research Council of Canada, Boucherville/Canada
Ishikawa, Y.	Asahi Glass Co. Ltd., Research Center, Yokohama/Japan
Ito, K.	Fracture and Reliability Research Institute, Tohok, Sendai/Japan
Itoh, Y.	Toshiba Corporation, Yokoahama/Japan
Ivanov, D.	Belarusian State University of Informatics and Rad, Minsk/Belarus
Iwata, K.	Toyota Technological Institute, Nagoya/Japan

Jaeggi, C.	EMPA - Materials Science and Technology, Thun/CH
Jahedi, M.	CSIRO Materials Science and Engineering, Melbourne/Australia
Jahn, S.	Technical University of Berlin, Berlin/Germany
James, B.	University of Auckland, Auckland/New Zealand
Jarligo, M.	Forschungszentrum Jülich GmbH, Jülich/Germany
Jaworski, R.	ENSCL, Villeneuve d'Ascq/France
Jayaganthan, R.	Indian Institute of Technology Bombay, Mumbai/India
Jeandin, M.	Ecole des Mines de Paris, Evry/France
Jimenez, L.	Universidad Nacional Experimental Politecnica, Puerto Ordaz/Venezuela
Jeulin, D.	Ecole des Mines de Paris, Evry/France
Ji, V.	ICMMO, Paris/France
Ji, Y.	Kinetic Spray Coating Laboratory, Seoul/South Korea

# Authors, Session Chairs, Co-Authors

Jia, L. University of Sherbrooke, Sherbrooke/Canada  
Jian-Gang, X. Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China  
Jiang, J. Beijing University of Technology, Beijing/P.R. China  
Jiang, X. Central South University, Changsha/P.R. China  
Jianmin, J. College of Materials Science and Engineering, Beijing/P.R. China  
Johansson, S. Linköping University, Linköping/Sweden  
Jordan, C. Fraunhofer Institute for Material and Beam Technology, Dresden/Germany  
Jordan, E. University of Connecticut, Storrs/USA  
Jung, D. Research Institute of Industrial Science and Technology, Pohang/South Korea  
Jungklaus, H. Voith Paper Rolls, Laakirchen/Austria

## K

Kalawrytinios, S. Pallas GmbH, Würselen/Germany  
Kamal, S. Indian Institute of Technology Roorkee, Roorkee/India  
Kanerva, U. VTT Technical Research Centre of Finland, Espoo/Finland  
Kang, K. Kinetic Spray Coating Laboratory, Seoul/South Korea  
Kanta, A. LERMPS, University of Technology of Belfort-Montb e, Belfort/France  
Karaali, E. Sakarya University, Sakarya/Turkey  
Karger, M. Forschungszentrum J lich GmbH, J lich/Germany  
Karpets, M. E.O. Paton Electric Welding Institute, Kiev/Ukraine  
Karthikeyan, J. ASB Industries, Barberton/USA  
Kashirin, A. Obninsk Center for Powder Spraying, Obninsk/Russia  
Ka parov , M. Skoda Research, Plzen/Czech Republic  
Kassner, H. Forschungszentrum J lich GmbH, J lich/Germany  
Katanoda, H. Kagoshima University, Kagoshima/Japan  
Kaur, M. BBSB Engineering College, Fatehgarh Sahib/India  
Kaushal, G. RIMT-Institute of Engineering and Technology, Mandi Gobind Garh/India  
Kavka, T. Institute of Plasma Physics, Praha/Czech Republic  
Kawakita, J. National Institute for Materials Science, Ibaraki/Japan  
Kay, A. ASB Industries, Barberton/USA  
Kay, C. ASB Industries, Barberton/USA  
Ke-Li, Z. Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China  
Kesler, O. University of Toronto, Toronto/Canada  
Khan, F. Kinetic Spray Coating Laboratory, Seoul/South Korea  
Khanna, A. Indian Institute of Technology, Bombay, Mumbai/India  
Kharlamov, Y. Ghulam Ishag Khan Institute of Engineering Science, Topi/Pakistan  
Khor, M. Nanyang Technical University, Singapore/Singapore  
Killinger, A. University of Stuttgart, Stuttgart/Germany  
Kim, E. Korea Atomic Energy Research Institute, Daejeon/South Korea  
Kim, H. Research Institute of Industrial Science and Technology, Pohang/South Korea  
Kim, J. Pusan University, Pusan/South Korea  
Kim, K. National Institute for Materials Science, Ibaraki/Japan  
Kim, S. Chungnam National University, Daejeon/South Korea  
King, P. CSIRO Materials Science & Engineering, Melbourne/Australia  
Kirsten, A. Carbide and Metal, C+M Warken GmbH, Immelborn/Germany  
Kislitsa, A. E.O. Paton Electric Welding Institute, Kiev/Ukraine  
Kitahara, S. AIST, Tsukuba/Japan  
Kitamura, J. Fujimi Incorporated, Gifu/Japan  
Kjellman, B. Volvo Aero Corporation, Trollh ttan/Sweden  
Klassen, T. Helmut Schmidt University, Hamburg/Germany  
Klein, D. LERMPS, University of Technology of Belfort-Montb e, Belfort/France  
Klementova, M. Institute of Inorganic Chemistry, ASCR, Rez/Czech Republic  
Klinkov, S. Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia  
Klyuev, O. Obninsk Center for Powder Spraying, Obninsk/Russia  
Knapp, S. Sulzer Metco OSU GmbH, Duisburg/Germany



# Authors, Session Chairs, Co-Authors

Knepper, M.	Rheinzink GmbH & Co. KG, Datteln/Germany
Knight, R.	Drexel University, Philadelphia/USA
Knuuttila, J.	Millidyne Oy, Tampere/Finland
Ko, K.	Ajou University, Suwon/South Korea
Kobayashi, T.	Kansai University, Osaka/Japan
Kochubey, V.	Delft University of Technology, Delft/The Netherlands
Koivuluoto, H.	Tampere University of Technology, Tampere/Finland
Kollinger, S.	Daimler AG, Ulm/Germany
Komatsu, M.	National Institute for Materials Science, Ibaraki/Japan
Koo Hyun, L.	Korea Institute of Materials Science, Gyeongnam/South Korea
Korchaging, M.	Institute of Solid State Chemistry and Mechanochem, Novosibirsk/Russia
Korobov, Y.	Ural State Technical University, Ekaterinburg/Russia
Kosarev, V.	Khrstianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Kozaki, T.	Toyota Technological Institute, Nagoya/Japan
Kozerski, S.	Wroclaw University of Technology, Wroclaw/Poland
Kozorez, A.	Institute of Powder Metallurgy, Minsk/Belarus
Kraak, T.	Aludra bv, Vlaardingen/The Netherlands
Krebs, B.	University of Dortmund, Dortmund/Germany
Kreisel, K.	Sulzer Metco Component GmbH, Salzgitter/Germany
Kremer, M.	Helmut Schmidt University, Hamburg/Germany
Kremsner, F.	TeroLab Surface GmbH, Wien/Austria
Kreye, H.	Helmut Schmidt University, Hamburg/Germany
Krishnan, N.	Columbia University, New York/USA
Krömmel, W.	The Linde Group, Unterschleissheim/Germany
Kuhn, R.	Medicoat AG, Mägenwil/Switzerland
Kulmala, M.	Tampere University of Technology, Tampere/Finland
Kumar, G.	Sharvan Coating Services, Hyderabad/India
Kumar, S.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Kundas, S.	International Sakharov Environmental University, Minsk/Belarus
Kupke, T.	German Aerospace Center, Stuttgart/Germany
Kuroda, S.	National Institute for Materials Science, Ibaraki/Japan
Kuzmin, D.	Institute of Applied Mathematics, Dortmund/Germany
Kylmälahti, M.	Tampere University of Technology, Tampere/Finland

## L

Ladru, F.	Siemens AG, Berlin/Germany
Lagerbom, J.	Tampere University of Technology, Tampere/Finland
Landemarre, O.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Landes, K.	Universit�t der Bundeswehr, Neubiberg/Germany
Lange, S.	Universit�t der Bundeswehr, Neubiberg/Germany
Langer, G.	TeroLab Surface GmbH, Langenfeld/D
Langner, S.	Fraunhofer Institute for Material and Beam Technology, Dresden/Germany
Lavaud, T.	University of Limoges, Limoges/France
Lawson, K.	Cranfield University, Cranfield/United Kingdom
Le Guen, E.	Engineering National School of Limousin, Limoges/France
Lee, C.	Chungnam National University, Daejeon/South Korea
Lee, C.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Lee, D.	Daelim College of Technology, Anyang/South Korea
Lee, G.	Chungnam National University, Daejeon/South Korea
Lee, H.	Ajou University, Suwon/South Korea
Lee, H.	Chungnam National University, Daejeon/South Korea
Lee, J.	Korea Atomic Energy Research Institute, Daejeon/South Korea
Lee, K.	Korea Institute of Machinery and Materials, Changwon/South Korea
Lee, S.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Legoux, J.	Industrial Materials Institute, CNRC, Boucherville/Canada

## Authors, Session Chairs, Co-Authors

Leivo, J.	Millidyne Oy, Tampere/Finland
Lekatou, A.	University of Ioannina, Ioannina/Greece
Leoni, M.	Università di Trento, Trento/Italy
Leshchinsky, E.	University of Windsor, Windsor/Canada
Leshchinsky, V.	University of Windsor, Windsor/Canada
Letsko, A.	SSI Powder Metallurgy Institute, Minsk/Belarus
Li, C.	Xi'an Jiaotong University, Xi'an/P.R. China
Li, C.	Xi'an Jiaotong University, Xi'an/P.R. China
Li, H.	Beijing University of Technology, Beijing/P. R. China
Li, J.	Shaanxi Key Laboratory of Friction Welding Technology, Xi'an/P.R. China
Li, J.	Guizhou Liyang Aero-Engine Corporation, Guiyang/P.R. China
Li, Q.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Li, S.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Li, W.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Li, W.	Shaanxi Key Laboratory of Friction Welding Technology, Xi'an/P.R. China
Li, X.	Beijing University of Technology, Beijing/P. R. China
Li, X.	GRIPM Advanced Materials Co., Ltd., General Research, Beijing/P.R. China
Li, Y.	Xi'an Jiaotong University, Xi'an/P.R. China
Li, Y.	Xi'an Jiaotong University, Xi'an/P.R. China
Li, Z.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Li, Z.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Li, Z.	Beijing University of Technology, Beijing/P. R. China
Liao, H.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Lima, C.	UNIMEP - Methodist University of Piracicaba, St. B�rbara d'Oeste/Brazil
Lima, R.	National Research Council of Canada, Boucherville/Canada
Lin, F.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Liscano, S.	Universidad Nacional Experimental Politecnica, Puerto Ordaz/Venezuela
Liu, F.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Liu, H.	University of Toronto, Toronto/Canada
Liu, J.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Liu, M.	Guangzhou Research Institute of Non-Ferrous Metals, Guangzhou/P.R. China
Liu, N.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Liu, Y.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Looney, L.	School of Mechanical & Manufacturing Engineering, Dublin/Ireland
Lourtie, D.	Techspace Aero, Milmort/Belgium
Luding, R.	Praxair-Tafa, Concord/USA
Luethen, V.	Siemens AG, Berlin/Germany
Lum, A.	Boston University, Boston/USA
Luo, H.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Luo, X.	Xi'an Jiaotong University, Xi'an/P.R. China
Lusvarghi, L.	Università di Modena e Reggio Emilia, Modena/Italy
Lyphout, C.	University West, Trollh�ttan/Sweden

## M

Ma, W.	Forschungszentrum J�lich GmbH, J�lich/Germany
Ma, X.	Inframat Corporation, Farmington/USA
Mack, D.	Forschungszentrum J�lich GmbH, J�lich/Germany
Macmillan, I.	Praxair-Tafa, Diest/Belgium
Madi, K.	Ecole des Mines de Paris, Evry/France
Maev, R.	University of Windsor, Windsor/Canada
Maeva, E.	University of Windsor, Windsor/Canada
Magnani, M.	S�o Paulo State University, Araraquara/Brazil
Mahesh, R.	Indian Institute of Technology Roorkee, Roorkee/India
Maier, U.	Elring Klinger AG, Dettingen/Germany
Manescu, A.	Polytechnic University of Marche, Ancona/Italy
Marchand, C.	University of Limoges, Limoges/France

# Authors, Session Chairs, Co-Authors

Marchand, O.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Marginean, G.	University of Applied Sciences Gelsenkirchen, Gelsenkirchen/Germany
Mari, E.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Mariaux, G.	University of Limoges, Limoges/France
Maric, R.	Institute for Fuel Cell Innovation, Vancouver/Canada
Markovnik, D.	Belarusian State University of Informatics and Rad, Minsk/Belarus
Marple, B.	National Research Council of Canada, Boucherville/Canada
Marques, J.	Universit�t der Bundeswehr, Neubiberg/Germany
Martinez, B.	University of Limoges, Limoges/France
Maruyama, T.	Kansai University, Osaka/Japan
Mashiko, M.	Toyohashi University of Technology, Toyohashi/Japan
Maslani, A.	Institute of Plasma Physics, Praha/Czech Republic
Matij�ek, J.	Institute of Plasma Physics, Praha/Czech Republic
Matile, O.	Air Liquide CEPIA, Saint Ouen l'Aumone/France
Matsumoto, H.	Sankyo Iron & Copper Alloy Foundry Co., Ltd., Osaka/Japan
Matth�us, G.	Thermico GmbH & Co. KG, Dortmund/Germany
Matthews, S.	Massey University, Auckland/New Zealand
Mauer, G.	Forschungszentrum J�lich GmbH, J�lich/Germany
Mazrooei, S.	Isfahan University of Technology, Isfahan/Iran
McCloskey, J.	Sandia National Laboratories, Albuquerque/USA
McDonald, A.	University of Edmonton, Edmonton/Canada
McKechnie, T.	Plasma Processes, Inc., Huntsville/USA
Mebrahtu, T.	Air Products & Chemicals, Inc., Allentown/USA
Medraj, M.	Concordia University, Montreal/Canada
Melzer, A.	Grillo-Werke AG, Goslar/Germany
Menuey, J.	SNECMA Services, Ch�tellerault/France
Menzen, R.	Ibeda Sicherheitsger�te und Gastechnik GmbH & Co. KG, Neustadt/Germany
Mertens, J.	Forschungszentrum J�lich GmbH, J�lich/Germany
M�thout, S.	Commissariat � l'Energie Atomique, Monts/France
Meyer, D.	Chemnitz University of Technology, Chemnitz/Germany
Michlik, P.	Caterpillar Inc., Peoria/USA
Miguel, J.	Thermal Spray Center (CPT), Barcelona /Spain
Mikutsky, V.	Institute of Powder Metallurgy, Minsk/Belarus
Miranzo, P.	Instituto de Ceramica y Vidrio (CSIC), Madrid/Spain
Mitsubishi, K.	National Institute for Materials Science, Ibaraki/Japan
Miura, H.	Tohoku University, Sendai/Japan
Miyahara, H.	Kyushu University, Fukuoka/Japan
Miyake, H.	Kansai University, Osaka/Japan
Miyazaki, T.	Kansai University, Osaka/Japan
Miyazaki, T.	Tohoku University, Sendai/Japan
Mizuno, H.	Fujimi Incorporated, Gifu/Japan
Mochalin, V.	Drexel University, Philadelphia/USA
Modi, A.	Metallizing Equipment Co. Pvt. Ltd., Jodhpur/India
Modi, S.	Metallizing Equipment Co. Pvt. Ltd., Jodhpur/India
Moens, J.	Medicoat AG, M�genwil/Switzerland
Mohanty, P.	University of Michigan, Dearborn/USA
M�hwald, K.	Leibniz University, Garbsen/Germany
Molz, R.	Sulzer Metco (US) Inc., Westbury/USA
Montavon, G.	University of Limoges, Limoges/France
Moon, J.	Chungnam National University, Daejeon/South Korea
Moreau, C.	National Research Council of Canada, Boucherville/Canada
Moreno, I.	Central University of Venezuela, Caracas/Venezuela
Mori, K.	AIST, Tsukuba/Japan
Moshref Javadi, M.	Isfahan University of Technology, Isfahan/Iran
Mostaghimi, J.	University of Toronto, Toronto/Canada
Murakami, H.	National Institute for Materials Science, Ibaraki/Japan
Musalek, R.	Institute of Plasma Physics, Praha/Czech Republic

# Authors, Session Chairs, Co-Authors

## N

Na, H.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Nakao, Y.	Tohoku University, Sendai/Japan
Nassenstein, K.	GTV Verschleiss-Schutz GmbH, Luckenbach/Germany
Naumann, T.	Fraunhofer Institute for Material and Beam Technology, Dresden/Germany
Nebel, J.	University of Dortmund, Dortmund/Germany
Nebelung, M.	Fraunhofer Institute for Ceramic Technologies and Systems, Dresden/Germany
Neronov, V.	Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Nestler, M.	Sulzer Metco (US) Inc., Westbury/USA
Neufuss, K.	Institute of Plasma Physics, Praha/Czech Republic
Niki, T.	Tohoku University, Sendai/Japan
Nikkilä, A.	Tampere University of Technology, Tampere/Finland
Ning, X.	Research Institute of Industrial Science and Technology, Pohang/South Korea
Nogues-Delbos, E.	University of Limoges, Limoges/France
Noriega, R.	Universidad Nacional Experimental Politecnica, Puerto Ordaz/Venezuela
Noster, U.	ARC-Leichtmetallkompetenzzentrum Ranshofen GmbH, Ranshofen/Austria
Nune, K.	Sharvan Coating Services, Hyderabad/India
Nýlen, P.	University West, Trollhättan/Sweden

## O

Obara, H.	AIST, Tsukuba/Japan
Oberste Berghaus, J.	National Research Council of Canada, Boucherville/Canada
O'dell, S.	Plasma Processes, Inc., Huntsville/USA
Ogawa, K.	Tohoku University, Sendai/Japan
Ogi, K.	Oita National College of Technology, Oita/Japan
Ohliger-Volmer, A.	SLV München, NL der GSI mbH, München/Germany
Ohmori, A.	Tocalo Co. Ltd., Akashi/Japan
Oki, S.	Kinki University, Osaka/Japan
Oliveira, A. d'	UFPR - Federal University of Paraná, Curitiba/Brazil
Okovity, V.	Institute of Powder Metallurgy, Minsk/Belarus
Okumiya, M.	Toyota Technological Institute, Nagoya/Japan
Osendi, M.	Instituto de Ceramica y Vidrio (CSIC), Madrid/Spain
Ostrowski, T.	Thermico GmbH & Co. KG, Dortmund/Germany
Outcalt, D.	University of Minnesota, Minneapolis/USA

## P

Paczkowski, G.	Chemnitz University of Technology, Chemnitz/Germany
Panagiotopoulos, I.	University of Ioannina, Ioannina/Greece
Pantelis, D.	National Technical University of Athens, Athens/Greece
Papyrin, A.	Cold Spray Technology, Albuquerque/USA
Parco, M.	Inasmet Tecnalia, San Sebastian/Spain
Paredes, R.	UFPR - Federal University of Paraná, Curitiba/Brazil
Park, J.	Pusan University, Pusan/South Korea
Park, S.	Hanyang University, Seoul/South Korea
Parkot, D.	RWTH Aachen University, Aachen/Germany
Patel, K.	University of Auckland, Auckland/New Zealand
Patel, N.	Delphi Research Labs, Midland/USA
Pateyron, B.	University of Limoges, Limoges/France
Patz, O.	German Aerospace Center, Stuttgart/Germany
Pauchet, F.	Schlumberger, Riboud Product Center, Clamart/France
Pawlowski, L.	ENSCL, Villeneuve d'Ascq/France
Penttilä, K.	VTT Technical Research Centre of Finland, Espoo/Finland

# Authors, Session Chairs, Co-Authors

Pereira, J.	CEA Le Ripault, Monts/France
Pershin, L.	University of Toronto, Toronto/Canada
Pertuz, A.	Central University of Venezuela, Caracas/Venezuela
Peterlechner, C.	ARC-Leichtmetallkompetenzzentrum Ranshofen GmbH, Ranshofen/Austria
Petkovic, I.	RWTH Aachen University, Aachen/Germany
Petorak, C.	Purdue University, West Lafayette/USA
Peyraut, F.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Picardi, S.	NanoBlox, Inc., Montgomeryville/USA
Pierlot, C.	ENSCL, Villeneuve d'Ascq/France
Pitzer, D.	Forschungszentrum J�lich GmbH, J�lich/Germany
Planche, M.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Pokhmurska, H.	Chemnitz University of Technology, Chemnitz/Germany
Polak, R.	TBRP, Wien/Austria
Poluboyarov, V.	Institute of Solid State Chemistry and Mechanochem, Novosibirsk/Russia
Powell, N.	Delphi Research Labs, Midland/USA
Prakash, S.	Indian Institute of Technology Roorkee, Roorkee/India
Prato, M.	Central University of Venezuela, Caracas/Venezuela
Puchi, E.	Central University of Venezuela, Caracas/Venezuela
Puerta, D.	IMR Test Labs, Lansing/USA
Pukasiewicz, A.	UFPR - Federal University of Paran�, Curitiba/Brazil
Putzier, J.	Putzier Oberfl�chentechnik GmbH, Leichlingen/Germany

## Q

Qiu, T.	University of Auckland, Auckland/New Zealand
---------	--

## R

Racek, O.	Caterpillar, Inc., Peoria/USA
Rampon, R.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Rat, V.	University of Limoges, Limoges/France
Rauch, J.	University of Stuttgart, Stuttgart/Germany
Rayudu, G.	Sharvan Coating Services, Hyderabad/India
Rayudu, G.	Indian Institute of Technology Bombay, Mumbai/India
Rech, S.	Civen, Marghera Venice/Italy
Refke, A.	Sulzer Metco AG (Switzerland), Wohlen/Switzerland
Reich, S.	Technical University of Berlin, Berlin/Germany
Reiners, G.	Bundesanstalt f�r Materialforschung und -pr�fung (BAM), Berlin/Germany
Reisel, G.	Sulzer Metco Woka GmbH, Barchfeld/Germany
Ren, X.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Ren, Z.	Xi'an Jiaotong University, Xi'an/P.R. China
Rezaeian, A.	McGill University, Montreal/Canada
Richard, F.	Air Liquide CTAS, Saint Ouen l'Aumone/France
Richards, G.	AO Research Institute, Davos/Switzerland
Richardt, K.	RWTH Aachen University, Aachen/Germany
Richter, P.	Cold Gas Technology GmbH, Ampfing/Germany
Rizzi, G.	Turbocoating SpA, Rubbiano di Solignano/Italy
Rodijnen, F. van	Sulzer Metco OSU GmbH, Duisburg/Germany
Rodriguez, M.	Central University of Venezuela, Caracas/Venezuela
Roemer, T.	Ktech Corporation, Albuquerque/USA
Rolland, G.	Ecole des Mines de Paris, Evry/France
Rosso, M.	Politecnico di Torino, Torino/Italy
Roth, G.	German Aerospace Center, Stuttgart/Germany
Roth, J.	Inframat Corporation, Farmington/USA
Rubino, G.	Universit� di Roma Tor Vergata, Roma/Italy

# Authors, Session Chairs, Co-Authors

Ruff, H. Rybak + Hörschele rhv-Technik GmbH + Co. KG, Waiblingen/Germany  
Runkel, M. Ibeda Sicherheitsgeräte und Gastechnik GmbH & Co. KG, Neustadt/Germany  
Rupprecht, C. Chemnitz University of Technology, Chemnitz/Germany  
Russo, D. Turbocoating SpA, Rubbiano di Solignano/Italy  
Ruusuvuori, K. VTT Technical Research Centre of Finland, Espoo/Finland  
Ryabinin, A. Institute of Mathematics and Mechanics, St. Petersburg/Russia

**S**  
Saaro, S. Fraunhofer Institute for Material and Beam Technology, Dresden/Germany  
Saber-Samandari, S. Department of Mechanical and Manufacturing Engineering, Melbourne/Australia  
Saheet, H. BBSB Engineering College, Fatehgarh Sahib/India  
Sakaki, K. Shinshu University, Nagano/Japan  
Sakata, K. Fujikikosan Corporation, Kitakyushu/Japan  
Sakoda, N. Kurashiki Boring Kiko Co. Ltd., Asakuchi-City/Japan  
Salehi, M. Isfahan University of Technology, Isfahan/Iran  
Salem, H. American University in Cairo, Cairo/Egypt  
Salimi, M. Isfahan University of Technology, Isfahan/Iran  
Salimijazi, H. Centre for Advanced Coating Technologies (CACT), Toronto/Canada  
Samadi, H. Centre for Advanced Coating Technologies (CACT), Toronto/Canada  
Samareh, B. Concordia University, Montreal/Canada  
Sampath, S. Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA  
Sarafoglou, C. National Technical University of Athens, Athens/Greece  
Sara, U. Sakarya University, Sakarya/Turkey  
Sato, K. Fujimi Incorporated, Gifu/Japan  
Satoh, K. Toyohashi University of Technology, Toyohashi/Japan  
Scardi, P. Università di Trento, Trento/Italy  
Scheer, C. Leibniz University, Garbsen/Germany  
Schein, J. Universität der Bundeswehr, Neubiberg/Germany  
Schiller, G. German Aerospace Center, Stuttgart/Germany  
Schläfer, T. RWTH Aachen University, Aachen/Germany  
Schlesinger, M. University of Windsor, Windsor/Canada  
Schmid, R. Sulzer Metco (US) Inc., Westbury/USA  
Schmidt, T. Helmut Schmidt University, Hamburg/Germany  
Schneider, G. German Aerospace Center, Stuttgart/Germany  
Schopp, E. OBZ Dresel & Grasme GmbH, Bad Krozingen/Germany  
Schreiber, F. Durum Verschleiss-Schutz GmbH, Willich/Germany  
Schreiber, M. Funktionswerkstoffe Forschung & Entwicklung GmbH, Eisenstadt/Austria  
Schuberth, S. Chemnitz University of Technology, Chemnitz/Germany  
Schürholt, G. Saint-Gobain Ceramic Materials GmbH, Weilerswist/Germany  
Schulz, P. ARC-Leichtmetallkompetenzzentrum Ranshofen GmbH, Ranshofen/Austria  
Schwenk, A. GTV Verschleiss-Schutz GmbH, Luckenbach/Germany  
Scrivani, A. Turbocoating SpA, Rubbiano di Solignano/Italy  
Seichepine, J. LERMPS, University of Technology of Belfort-Montb , Belfort/France  
Sellars, C. Rolls-Royce plc, Derby/United Kingdom  
Seo, D. Tohoku University, Sendai/Japan  
Seong, B. Research Institute of Industrial Science and Technology, Pohang/South Korea  
Sert, Y. Sakarya University, Sakarya/Turkey  
Shadbolt, N. University of Southampton, Southampton/United Kingdom  
Shan, Y. School of Power Engineering, University of Shanghai, Shanghai/P.R. China  
Sharma, A. Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA  
Sheedy, P. Sulzer Metco (US) Inc., Westbury/USA  
Shevtsov, A. Institute of Powder Metallurgy, Minsk/Belarus  
Shimizu, Y. Shinshu University, Nagano/Japan  
Shinkai, S. DENSO Corporation, Nishio City/Japan  
Shinoda, K. National Institute for Materials Science, Ibaraki/Japan

# Authors, Session Chairs, Co-Authors

Shkodkin, A.	Obninsk Center for Powder Spraying, Obninsk/Russia
Shmyreva, T.	Praxair Surface Technologies, Inc., Indianapolis/USA
Shoji, T.	Tohoku University, Sendai/Japan
Shtertser, A.	Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk/Russia
Shu, Y.	University of Michigan, Dearborn/USA
Siegmann, S.	Nova-Werke AG, Effretikon/Switzerland
Silber, M.	University of Stuttgart, Stuttgart/Germany
Silvonen, J.	Millidyne Oy, Tampere/Finland
Sirak, Y.	G.V. Karpenko Physico-Mechanical Institute, Lviv/Ukraine
Sloof, W.	Delft University of Technology, Delft/The Netherlands
Smirnov, A.	Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Smith, B.	Utah State University, Logan/USA
Smurov, I.	Ecole Nationale d'Ingénieurs de Saint-Etienne, Saint-Etienne/France
Sodeoka, S.	National Institute for Materials Science, Ibaraki/Japan
Sokolov, D.	LERMPS, University of Technology of Belfort-Montb�, Belfort/France
Solonenko, O.	Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Soltani, R.	Datec Coating Corporation, Mississauga/Canada
Song, Y.	Hankuk Aviation University, Koyang/South Korea
Sonoya, K.	AIST, Tsukuba/Japan
Sova, A.	Khristianovich Institute of Theoretical and Applied Mechanics, Novosibirsk/Russia
Spaulding, M.	Sulzer Metco (US) Inc., Westbury/USA
Spinhirne, N.	New Mexico Institute of Mining and Technology, Socorro/USA
Sporer, D.	Sulzer Metco (Canada) Inc., Fort Saskatchewan/Canada
Srinivasan, V.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
Stahr, C.	Fraunhofer Institute for Material and Beam Technology, Dresden/Germany
Staia, M.	Central University of Venezuela, Caracas/Venezuela
Stanisic, J.	University of Michigan, Dearborn/USA
Stier, O.	Siemens AG, Berlin/Germany
Stiller, J.	Technische Universit�t Dresden, Dresden/Germany
Stokes, J.	School of Mechanical & Manufacturing Engineering, Dublin/Ireland
St�ver, D.	Forschungszentrum J�lich GmbH, J�lich/Germany
Stoyanova, V.	Civen, Marghera Venice/Italy
Stravato, A.	Universit� degli Studi Roma Tre, Roma/Italy
Strich, W.	The Linde Group / Linde Gas, Hamburg/Germany
Stringer, S.	Air Products & Chemicals, Inc., Allentown/USA
Student, M.	G.V. Karpenko Physico-Mechanical Institute, Lviv/Ukraine
Stuke, A.	Forschungszentrum J�lich GmbH, J�lich/Germany
Suegama, P.	S�o Paulo State University, Araraquara/Brazil
Suhonen, T.	VTT Technical Research Centre of Finland, Espoo/Finland
Suyama, S.	Toshiba Corporation, Yokoahama/Japan
Suzuki, M.	AIST, Tsukuba/Japan
Suzuki, S.	Tokyo Institute of Technology, Tokyo/Japan
Syed, A.	German Aerospace Center, Stuttgart/Germany
Szomszor, M.	University of Southampton, Southampton/United Kingdom

## T

Tajiri, T.	Kurashiki Boring Kiko Co. Ltd., Asakuchi-City/Japan
Takabatake, T.	Tocalo Co. Ltd., Akashi/Japan
Takahata, M.	Shinshu University, Nagano City/Japan
Takano, E.	UFPR - Federal University of Paran�, Curitiba/Brazil
Takeda, K.	Shinshu University, Nagano City/Japan
Takehara, K.	Kinki University, Osaka/Japan
Takeuchi, J.	Tocalo Co. Ltd., Akashi/Japan
Talaka, T.	SSI Powder Metallurgy Institute, Minsk/Belarus

# Authors, Session Chairs, Co-Authors

Tang, Z.	Northwest Mettech Corp., North Vancouver/Canada
Tani, K.	Tocalo Co. Ltd., Akashi/Japan
Tao, S.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Tao, Y.	School of Materials Science and Engineering, Beijing/P.R. China
Tarasi, F.	Concordia University, Montreal/Canada
Tawada, S.	Fujimi Incorporated, Gifu/Japan
Teicholz, M.	University of Connecticut, Storrs/USA
Tekmen, C.	Toyota Technological Institute, Nagoya/Japan
Terada, H.	Toyohashi University of Technology, Toyohashi/Japan
Terzi, T.	Sakarya University, Sakarya/Turkey
Thayer, M.	Air Products & Chemicals Inc., Allentown/USA
Theophile, E.	Universität der Bundeswehr, Neubiberg/Germany
Thiele, S.	Fraunhofer Institute for Ceramic Technologies and Systems, Dresden/Germany
Thivillon, L.	Ecole Nationale d'Ingénieurs de Saint-Etienne, Saint-Etienne/France
Tillmann, W.	University of Dortmund, Dortmund/Germany
Tingaud, O.	University of Limoges, Limoges/France
Toma, F.	Fraunhofer Institute for Material and Beam Technology, Dresden/Germany
Toplan, H.	Sakarya University, Sakarya/Turkey
Toplan, N.	Sakarya University, Sakarya/Turkey
Torrell, M.	Thermal Spray Centre (CPT), Barcelona/Spain
Tran, A.	University of Auckland, Auckland/New Zealand
Triantou, K.	National Technical University of Athens, Athens/Greece
Trice, R.	Purdue University, West Lafayette/USA
Tricoire, A.	Volvo Aero Corporation, Trollhättan/Sweden
Tsunekawa, Y.	Toyota Technological Institute, Nagoya/Japan
Tunik, A.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Turbil, M.	Politecnico di Torino, Torino/Italy
Turek, S.	Institute of Applied Mathematics, Dortmund/Germany
Turk, A.	Sakarya University, Sakarya/Turkey
Turunen, E.	VTT Technical Research Centre of Finland, Espoo/Finland
Tuurna, S.	VTT Technical Research Centre of Finland, Espoo/Finland

## U

Uhlenwinkel, V.	Institut für Werkstofftechnik, Bremen/Germany
Ulianitsky, V.	Lavrentyev Institute of Hydrodynamics, Novosibirsk/Russia
Ulrich, H.	DutchAero bv, Eindhoven/The Netherlands
Unger, R.	Polymet Corporation, Cincinnati/USA
Unterstenwesten, W.	The Linde Group / Linde Gas, Düsseldorf/Germany
Urrea, D.	Sandia National Laboratories, Albuquerque/USA
Ustel, F.	Sakarya University, Sakarya/Turkey

## V

Valarezo, A.	Center for Thermal Spray Research / SUNY Stony Brook, Stony Brook/USA
VanHout, M.	Boston University, Boston/USA
Vanvolsem, M.	Volvo Powetrain, St. Priest/France
Vaquero, C.	Inasmet Tecnalia, San Sebastian/Spain
Vardavoulis, M.	Pyrogenesis SA, Lavrion/Greece
Vardelle, A.	University of Limoges, Limoges/France
Vardelle, M.	University of Limoges, Limoges/France
Varis, T.	VTT Technical Research Centre of Finland, Espoo/Finland
Vaßen, R.	Forschungszentrum Jülich GmbH, Jülich/Germany
Vattiat, B.	Cyber Materials, Boston/USA
Vaz, D.	UFPR - Federal University of Paraná, Curitiba/Brazil



## Authors, Session Chairs, Co-Authors

Vazdirvanidis, A.	Hellenic Centre for Metal Research, Athens/Greece
Verdy, C.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Verpoort, C.	Ford Research Center Aachen GmbH, Aachen/Germany
Vezz�, S.	Civen, Marghera Venice/Italy
Vincenzi, L.	Universit� di Bologna, Bologna/Italy
Vinke, I.	Forschungszentrum J�lich GmbH, J�lich/Germany
Vogli, E.	University of Dortmund, Dortmund/Germany
Vojnarovitch, S.	E.O. Paton Electric Welding Institute, Kiev/Ukraine
Vorobev, A.	University of Michigan, Dearborn/USA
Voyer, J.	ARC-Leichtmetallkompetenzzentrum Ranshofen GmbH, Ranshofen/Austria
Vucko, F.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Vuoristo, P.	Tampere University of Technology, Tampere/Finland

## W

Wada, H.	Toyohashi University of Technology, Toyohashi/Japan
Waldbillig, D.	University of British Columbia, Vancouver/Canada
Wang, H.	Xi'an Jiaotong University, Xi'an/P.R. China
Wang, H.	Xi'an Jiaotong University, Xi'an/P.R. China
Wang, H.	Chinese Academy of Science, Qingdao/P.R. China
Wang, H.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Wang, J.	State Key Laboratory for Marine Corrosion and Protection, Qingdao/P.R. China
Wang, L.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Wang, L.	Xi'an Hi-Tech Research Institute, Xi'an/P.R. China
Wang, M.	Xi'an Jiaotong University, Xi'an/P.R. China
Wang, S.	Technical University of Ilmenau, Ilmenau/Germany
Wang, X.	Xi'an Jiaotong University, Xi'an/P.R. China
Wang, Y.	University of Toronto, Toronto/Canada
Wang, Y.	Xi'an Jiaotong University, Xi'an/P.R. China
Wank, A.	GTV Verschleiss-Schutz GmbH, Luckenbach/Germany
Warda, T.	RWTH Aachen University, Aachen/Germany
Warnecke, R.	Nitrocision LLC, Idaho Falls/USA
Wasserman, C.	TeroLab Surface Group SA, Lausanne/Switzerland
Watanabe, M.	National Institute for Materials Science, Ibaraki/Japan
Weinert, H.	Metal Forming Institute, Poznan/Poland
Weisheit, A.	Fraunhofer Institute for Laser Technology, Aachen/Germany
Weissenfels, G.	Ibeda Sicherheitsger�te und Gastechnik GmbH & Co. KG, Neustadt/Germany
Wenzelburger, M.	University of Stuttgart, Stuttgart/Germany
Wesemann, J.	Ford Research Center Aachen GmbH, Aachen/Germany
Wielage, B.	Chemnitz University of Technology, Chemnitz/Germany
Wieling, R.	Icotec AG, Alts�tten/Switzerland
Wigren, J.	Volvo Aero Corporation, Trollh�ttan/Sweden
Wilden, J.	Technical University of Berlin, Berlin/Germany
Williamson, R.	Sandia National Laboratories, Albuquerque/USA
Wilson, S.	Sulzer Innotec AG, Winterthur/Switzerland
Winkler, R.	SLV Duisburg, NL der GSI mbH, Duisburg/Germany
Withy, B.	University of Auckland, Auckland/New Zealand
Wittmann-T�n�ze, K.	CEA Le Ripault, Monts/France
Wonderen, M. van	KLM Royal Dutch Airlines, Schiphol/The Netherlands
Wroblewski, D.	Boston University, Boston/USA
Wu, C.	China Academy of Launch Vehicle Technology Research, Beijing/P.R. China
Wu, S.	Suzhou Nuclear Power Research Institute, Suzhou/P.R. China
Wu, T.	University of Toronto, Toronto/Canada
Wu, Y.	Beijing University of Technology, Beijing/P. R. China

# Authors, Session Chairs, Co-Authors

## X

Xi, Y.	Xi'an Jiaotong University, Xi'an/P.R. China
Xian-Jing, R.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Xing, Y.	Xi'an Jiaotong University, Xi'an/P.R. China
Xiong, Y.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Xu, W.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China

## Y

Yamada, M.	Toyohashi University of Technology, Toyohashi/Japan
Yamazaki, Y.	Niigata Institute of Technology, Kashiwazaki/Japan
Yan, S.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Yang, G.	Xi'an Jiaotong University, Xi'an/P.R. China
Yang, H.	Xi'an Hi-Tech Research Institute, Xi'an/P.R. China
Yang, W.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Yang, W.	Commonwealth Scientific and Industrial Research Or, Melbourne/Australia
Yang, Y.	Institute of Materials Science and Engineering, Taipei/Taiwan
Yang, Z.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Ye, F.	School of Materials Science & Engineering, Tianjin/P.R. China
Yi, S.	Kyungpook National University, Taegu/South Korea
Yi, S.	POSCO, Pohang/South Korea
Yilmaz, F.	Sakarya University, Sakarya/Turkey
Yin, Z.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Yoon, S.	Kinetic Spray Coating Laboratory, Seoul/South Korea
Yoshida, T.	Niigata Institute of Technology, Kashiwazaki/Japan
Yu, Y.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Yuan, H.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Yue, S.	McGill University, Montreal/Canada
Yueguang, Y.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Yusek, E.	Sakarya University, Sakarya/Turkey

## Z

Zahálka, F.	Skoda Research, Plzen/Czech Republic
Zahiri, S.	CSIRO Materials Science and Engineering, Melbourne/Australia
Zaroulias, A.	Pyrogenesis SA, Lavrion/Greece
Zeng, K.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Zeng, K.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Zeng, Z.	Kurashiki Boring Kiko Co. Ltd., Asakuchi-City/Japan
Zernitz, H.	DIN e.V., Berlin/Germany
Zhang, C.	LERMPS, University of Technology of Belfort-Montb�e, Belfort/France
Zhang, G.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Zhang, J.	GRIPM Advanced Materials Co. Ltd., General Research, Beijing/P.R. China
Zhang, J.	Shenyang Liming Aero-Engine Group Corporation, Shenyang/P.R. China
Zhang, Q.	Xi'an Jiaotong University, Xi'an/P.R. China
Zhang, S.	Xi'an Jiaotong University, Xi'an/P.R. China
Zhang, S.	Xi'an Jiaotong University, Xi'an/P.R. China
Zhang, Y.	Beijing Institute of Aeronautical Materials, Beijing/P.R. China
Zhao, L.	RWTH Aachen University, Aachen/Germany
Zhao, Q.	Beijing University of Technology, Beijing/P.R. China
Zhao, X.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Zhao, Y.	Beijing General Research Institute of Mining & Metallurgy, Beijing/P.R. China
Zhao, Z.	Delphi Research Labs, Midland/USA

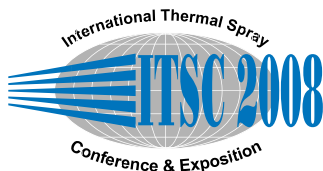
## Authors, Session Chairs, Co-Authors

Zhou, F.	Dalian Maritime University, Dalian/P.R. China
Zhou, K.	Guangzhou Research Institute of Non-Ferrous Metals, Guangzhou/P.R. China
Zhou, X.	Shanghai Institute of Ceramics, Chinese Academy of Science, Shanghai/P.R. China
Zierhut, J.	Universität der Bundeswehr, Neubiberg/Germany
Zikanov, O.	University of Michigan, Dearborn/USA
Zimmermann, S.	H.C. Starck GmbH, Goslar/Germany
Zimmermann, S.	Universität der Bundeswehr, Neubiberg/Germany
Zlobin, S.	Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk/Russia
Zois, D.	University of Ioannina, Ioannina/Greece
Zórawski, W.	Kielce University of Technology, Kielce/Poland
Zurecki, Z.	Air Products & Chemicals, Inc., Allentown/USA
Zwetsloot, M.	Flame Spray Technologies bv, Duiven/The Netherlands
Zwick, J.	RWTH Aachen University, Aachen/Germany

Organized by:

DVS  
Conference Department  
P.O. Box 10 19 65  
40010 Düsseldorf  
Germany  
Phone +49 (0) 211/1591-302/-303  
Fax +49 (0) 211/1591-300  
E-Mail [tagungen@dvs-hg.de](mailto:tagungen@dvs-hg.de)  
[www.dvs-ev.de/itsc2008](http://www.dvs-ev.de/itsc2008)





**HOTEL RESERVATION FORM**  
**INTERNATIONAL THERMAL SPRAY CONFERENCE 2008**  
**2 – 4 JUNE 2008**  
**MAASTRICHT EXHIBITION & CONGRESS CENTRE**

Please fill in this form (one room per reservation form) and return it to:

Maastricht Booking Service  
P.O. Box 1630  
6201 BP MAASTRICHT

Telephone: + 31-(0)43-3838361  
Telefax: + 31-(0)43-3838309  
E-mail: mbs@mecc.nl

**Personal details**

Mrs.  Mr.

Surname : \_\_\_\_\_ Initials: \_\_\_\_\_

Company : \_\_\_\_\_

Mailing address : \_\_\_\_\_

Postal Code : \_\_\_\_\_ City: \_\_\_\_\_

Country : \_\_\_\_\_

Telephone : \_\_\_\_\_ Telefax: \_\_\_\_\_

E-mail : \_\_\_\_\_

**Hotel rooms**

Date of arrival : \_\_\_\_\_ day \_\_\_\_\_ June 2008

Date of departure : \_\_\_\_\_ day \_\_\_\_\_ June 2008

double room, single occupancy       double room, double occupancy

Hotel	Price ( € ) Single room	Price ( € ) Double room	Breakfast ( € ) per person	Location
NH Maastricht (standard rooms)	157,00	175,00	Including	MECC
NH Maastricht (superior rooms)	177,00	195,00	Including	MECC
NH Maastricht (deluxe rooms)	197,00	215,00	Including	MECC
Hotel de l'Empereur (comfort rooms)	146,50	174,00	Including	City Centre
Hotel de l'Empereur (deluxe rooms)	165,50	193,00	Including	City Centre
Novotel Maastricht	142,50	170,00	Including	Free shuttle bus
Bastion Hotel Maastricht	122,00	155,00	Including	City Centre
Hotel Randwyck	86,75	110,00	Including	MECC

All rooms are equipped with shower or bath and toilet.

Prices are including breakfast and excluding city tax. Price level 2008. Prices for city tax will increase for 2008!

Hotel 1st choice: \_\_\_\_\_ Hotel 2nd choice: \_\_\_\_\_

Remarks: \_\_\_\_\_

**Hotel deposit**

One of the following guarantees is required:

- **Swift transfer:** Payment of the amount of the first night to bank account 57.55.85.692 of the ABN-AMRO Bank Maastricht, the Netherlands, in the name of Maastricht Booking Service ref. MECC Maastricht BV. Please mention above account number clearly. Please included name of participant, address and attendance ID.
- **Credit card guarantee.** Please include the following information. The credit card will only be charged in case of cancellation or no-show.

American Express     MasterCard                       Diners Club                       Visa Card  
 Company Card             Private Card

In the name of : \_\_\_\_\_  
Company name: \_\_\_\_\_  
Card number : \_\_\_\_\_  
Expiry date : \_\_\_\_\_  
CVC Code\* : \_\_\_\_\_

\* Only necessary by MasterCard and Visa card (Last 3 digits at the back of the credit card)

Signature Cardholder: \_\_\_\_\_

Payment may only be made in Euro's, free of bankcharges.

**In the event of bank charges, € 9,50 will be deducted from your hotel deposit.**

After receipt of your payment/credit card guarantee, the required accommodation will be booked and a voucher will be sent to you. Any deposit will be deducted from your hotel bill when you trade in the voucher at the hotel reception desk.

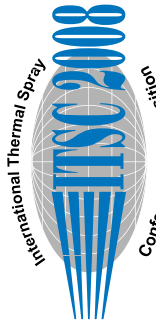
---

**General terms and conditions:**

- Cancellations/changes will only be accepted by Maastricht Booking Service in writing.
- The cancellation policy is in conformity with the Uniform Hotel Conditions (UVH) and applicable on all reservations.
- Cancelled rooms, for which no cancellation costs are invoiced by the hotel(s), will be charged with € 35,00 administration costs.
- If you do not check-in on the above mentioned arrival date, without written notification, your room will automatically be cancelled for the rest of the period. The room will become subject to cancellation charges.
- When checking out before the confirmed departure date, the hotel is entitled to charge an early departure fee.
- Maastricht Booking Service reserves the right to book you into a similar hotel, in case the requested hotel is fully booked.

Refunds will be dealt with after the conference.

Date: \_\_\_\_\_ Signature: \_\_\_\_\_



*Advance Registration  
Deadline: May 14, 2008*

## Registration Form

**ITSC 2008**

**International Thermal Spray Conference and Exposition**

Thermal Spray Crossing Borders!

**Maastricht Exhibition & Congress Centre, Maastricht, The Netherlands**

Please complete and return the Registration Form with payment to:

**DVS – German Welding Society  
Conference Department  
Postfach 10 19 65  
40010 Düsseldorf, Germany  
Phone: + 49 (0) 211/1591-302/-303, Fax: + 49 (0) 211/1591-300  
tagungen@dvs-hg.de**

Please use one registration form for each registrant!

• **Registrant** (please complete in block capitals)

**Family Name** \_\_\_\_\_

**First Name** \_\_\_\_\_

**Title** \_\_\_\_\_

**Membership (ASM-TSS/DVS/IIW/NIL/VTS)** \_\_\_\_\_

**Company** \_\_\_\_\_

**Address (for confirmation)** \_\_\_\_\_

**Phone** \_\_\_\_\_

**Fax** \_\_\_\_\_

**E-Mail** \_\_\_\_\_

**Name for Companion (guest)** \_\_\_\_\_

Date: \_\_\_\_\_

Signature : \_\_\_\_\_

	Registration Options – All Payments must be in EUR; Any banking charges which may be incurred will be borne by the individual!			
	Registration Prior and on May 14, 2008		Registration After May 14, 2008	
	ASM-TSS/DVS/IIW/ NIL/VTS-Members	Non-Members	ASM-TSS/DVS/IIW/ NIL/VTS-Members	Non-Members
<b>Complete Registration</b> (Plenary Program, 3-Day Technical Conference, 3-Day Exposition and Exhibitor Reception, Coffee Breaks, one Conference CD, one Awards Banquet Ticket)	<input type="checkbox"/> € 950	<input type="checkbox"/> € 1.100	<input type="checkbox"/> € 1.010	<input type="checkbox"/> € 1.160
Attendee				
Participant (Presenting Author, Poster Presenter, Session Chair)	<input type="checkbox"/> € 750	<input type="checkbox"/> € 805	<input type="checkbox"/> € 810	<input type="checkbox"/> € 865
<b>Minimum Registration</b> (Plenary Program, 3-Day Technical Conference, 3-Day Exposition and Exhibitor Reception, Coffee Breaks)	<input type="checkbox"/> € 745	<input type="checkbox"/> € 940	<input type="checkbox"/> € 850	<input type="checkbox"/> € 1.000
Attendee				
Participant (Presenting Author, Poster Presenter, Session Chair)	<input type="checkbox"/> € 590	<input type="checkbox"/> € 645	<input type="checkbox"/> € 650	<input type="checkbox"/> € 705
Young Scientists (Junior Session)	<input type="checkbox"/> € 360	<input type="checkbox"/> € 360	<input type="checkbox"/> € 420	<input type="checkbox"/> € 420
Student	<input type="checkbox"/> € 205	<input type="checkbox"/> € 265	<input type="checkbox"/> € 205	<input type="checkbox"/> € 265
<b>One-Day-Ticket</b> <input type="checkbox"/> June 2, 2008 <input type="checkbox"/> June 3, 2008 <input type="checkbox"/> June 4, 2008	<input type="checkbox"/> € 320	<input type="checkbox"/> € 370	<input type="checkbox"/> € 320	<input type="checkbox"/> € 370
<b>Industrial Tour</b> Thursday, June 5, 2008 <b>Visit – Research Centre Jülich</b> (all visits incl. 19% VAT)	– at € 45 each	– at € 45 each	– at € 45 each	– at € 45 each (all visits incl. 19% VAT)
<b>Social Events</b> Tuesday, June 3, 2008 <b>Awards Banquet</b> Additional Tickets	– at € 110 each (incl. 19% VAT)	– at € 110 each (incl. 19% VAT)	– at € 110 each (incl. 19% VAT)	– at € 110 each (incl. 19% VAT)
<b>Excursions</b> Thursday, June 5, 2008 <b>Visit A – South Limburg</b> (Full-Day Tour, English guided)	– at € 95	– at € 95	– at € 95	– at € 95
<b>Visit B – City Tour Maastricht</b> (Half-Day Tour, English guided)	– at € 40 (all tours incl. 19% VAT)	– at € 40 (all tours incl. 19% VAT)	– at € 40 (all tours incl. 19% VAT)	– at € 40 (all tours incl. 19% VAT)
<b>Conference CD*</b> Additional CD (Sales of the CD in the name and to the account of the DVS-Publishing House)	– at € 112 each (incl. 19% VAT) Students only one CD possible!	– at € 112 each (incl. 19% VAT) Students only one CD possible!	– at € 112 each (incl. 19% VAT) Students only one CD possible!	– at € 112 each (incl. 19% VAT) Students only one CD possible!
<b>Expo only (for 3 days)**</b> (Sales of the tickets in the name and to the account of Messe Essen GmbH) ** For On-Registrants 22€ (incl. 19% VAT) ** One Day-Ticket: € 20 (incl. 19% VAT; available only on-site) Payment must be included with the registration form. Registration without payment will not be processed.	– at € 45 each (incl. 19% VAT)	– at € 45 each (incl. 19% VAT)	– at € 45 each (incl. 19% VAT)	– at € 45 each (incl. 19% VAT)
<b>Grand total: €</b>				

Dresdner Bank AG, Düsseldorf, account no. **212 60 11 00**, bank sorting code **300 800 00**

IBAN-code: DE82 3008 0000 0212 6011 00 BIC-code: DRESDEFF300

Keyword for credit transfer (please do not forget): ITSC-2005, name of registrant

Credit Card:  American Express  MasterCard  Visa

Card no.: \_\_\_\_\_

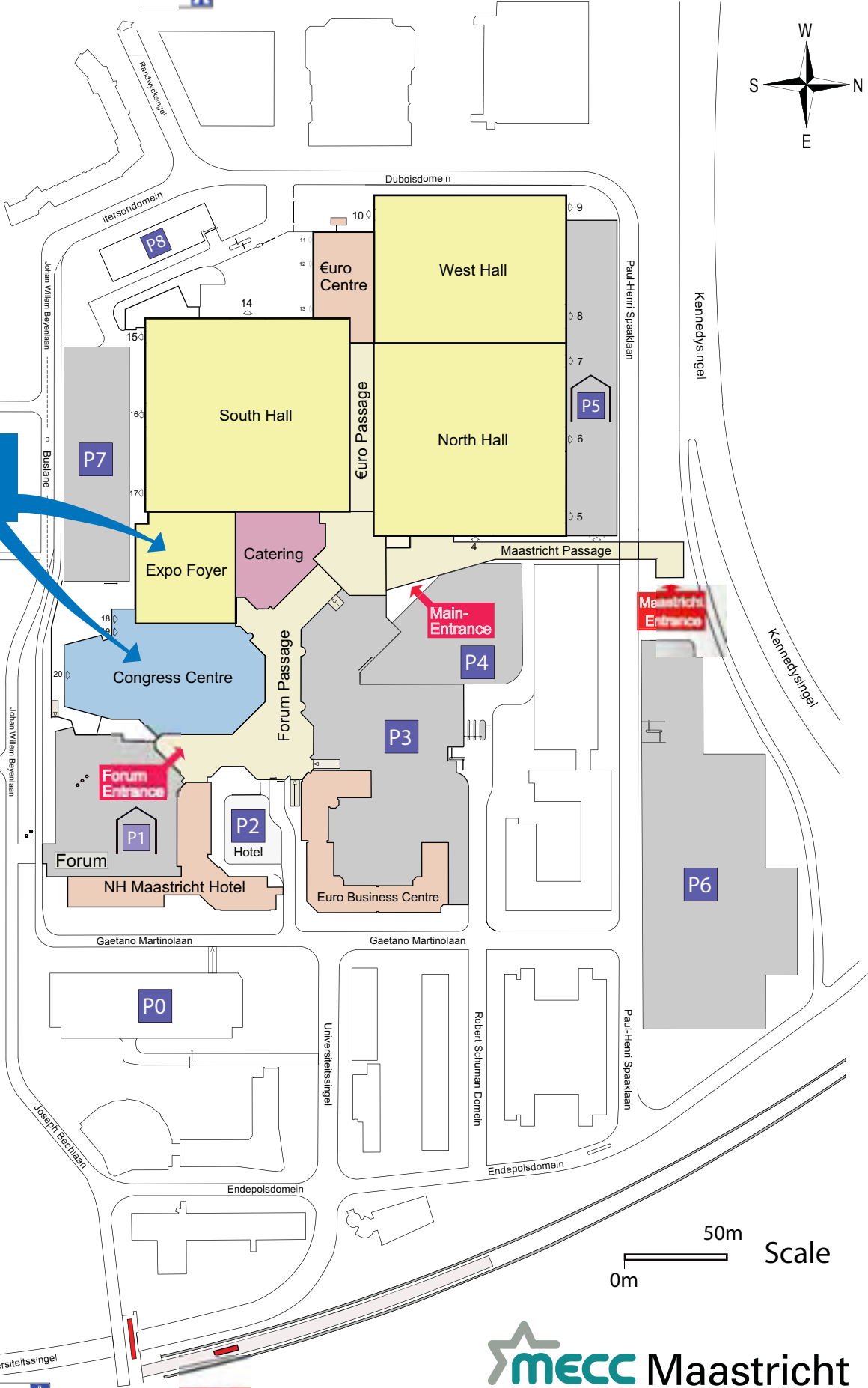
Exp. date: \_\_\_\_\_ / \_\_\_\_\_ Card verification code: \_\_\_\_\_

Card holder: \_\_\_\_\_

Centre  
A2 A79



**ITSC 2008  
Location**



P  
Hospital  
AZM

P1

P2

P3

P4

P7

P6

P8

P5

P0

9 July, 2004 R.Schole MEC

0m 50m Scale

**MECC Maastricht**  
Exhibitions | Conferences | Events

A2 A79

NS-Station  
Maastricht-Randwyck