

## Scope / Speakers

There is an increasing demand in nearly all advanced technical fields for extending lifetime and reducing failures of high performance components taking into account cost consciousness and high quality standards. Therefore technically reproducible and economically reasonable surface treatment processes are required.

Since all technical components fulfil a specific function, protective coatings are also called 'Functional Coatings'. These coatings consist of metallic or ceramic materials or a combination of both.

There is a broad application range of specific surface treating processes like Plasmanitriding and - carbonitriding, Physical and Chemical Vapour Deposition (PVD, CVD), Thermal Spraying and special surface treatment processes including DLC superhard coatings, sliding film technology and nano structured coatings, proving that functional coatings are well established and steady process improvements opens high future application potential.

This Seminar gives an overview of the state of the art on surface treatment processes to reduce wear, friction and corrosion. The main focus is on practical applications. Quality consistency and quality control also will be part of various presentations.

Many examples of coated standard, safety and high performance components used for different applications in Automotive, Machinery, Tool Manufacturing, Aero, Chemical, Power Generation and other industries clearly demonstrate the importance and necessity of surface protection for improving abrasion and corrosion properties.

The presentations, given by experts from industry and Research Institutes are especially relevant for engineers, technicians, and executives involved in product development, and engineering, production, product and quality management and technical purchasing.

Welcome to the world of surface engineering !

**Chairman of the seminar**

**Dr. Peter Wellner**  
Technical Consultant

Further speakers:

**Peter Ambühl**

**Dr. Alexander Barth**  
Sulzer Metco AG, Wohlen (CH)

**Dr. Jürgen Becker**  
Oerlikon Balzers Coating GmbH,  
Bingen (D)

**Michiel Eerden**  
Hauzer Techno Coating, Venlo (NL)

**Wolfgang Engelhart**  
Walter AG, Tübingen (CH)

**Dr. Georg Erkens**  
Sulzer Metaplas GmbH, Bergisch  
Gladbach (CH)

**Dr. Martin Fenker**  
Forschungsinstitut für Edelmetalle  
und Metallchemie, Schwäbisch  
Gmünd (CH)

**Dr. Heiko Frank**  
Gesellschaft für Fertigungstechnik  
und Entwicklung e.V.,  
Schmalkalden (D)

**Dr. Jochen Häring**  
Sulzer Markets and Technology,  
Winterthur (CH)

**Dipl. Ing. Sven Hartmann**  
OBZ Innovations GmbH,  
Bad Krotzingen (D)

**Dr. Heidrun Klostermann**  
Fraunhofer Institut für Elektronenstrahl – und Plasmatechnik,  
Dresden (D)

## Speakers / General Information

**Dipl. Ing. Werner Kroemmer**  
Linde AG, Unterschleissheim (D)

**Dr. Achim Schröer**  
Tribotech AG, Stans (CH)

**Dr. Sven Ulrich**  
Karlsruhe Institute of Technology,  
Karlsruhe (D)

**Dr. Volker Weihnacht**  
Fraunhofer Institut für Werkstoff –  
und Strahltechnik, Dresden (D)

**Seminar Location**

The seminar takes place at the Wolfsberg Executive Development Centre in Ermatingen Switzerland, beautifully situated above Lake Constance. As a centre for executive development, public relations and client events it plays an important role in integration and communication for the worldwide activities of Union Banks of Switzerland. Wolfsberg offers accommodation, conference rooms with modern equipment and an auditorium for large events.

Since attendance is limited, early booking is required.

Detailed information is available on the Wolfsberg-website:  
<http://www.wolfsberg.com>

**Organisation**

Deutsche Gesellschaft für  
Materialkunde e.V.  
Niels Parusel  
Senckenberganlage 10  
60325 Frankfurt  
Germany  
Phone: +49-(0)69-75306-757  
Fax: +49-(0)69-75306-733  
E-Mail: [np@dgm.de](mailto:np@dgm.de)  
<http://www.dgm.de>

**Participation fee:**  
2.150,- EURO

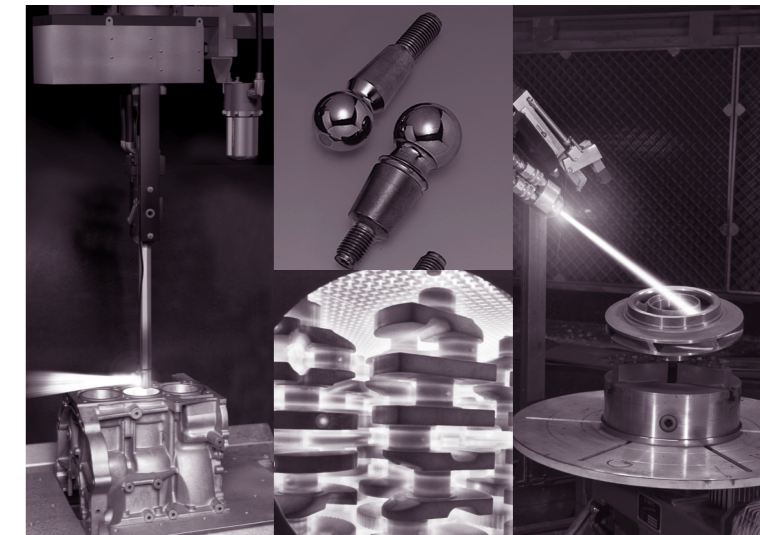
Members of the DGM:  
Personal members or one non-member from a member institute/  
member company: 2.050,- EURO

The registration fee includes:

- Participation
- Executive Seminar Proceedings
- Accommodation (2 nights)
- Breakfast
- Lunch
- Dinner on 6 and 7 May
- Refreshments during the coffee breaks

**Cancellation policy:**

Any cancellation is subject to a cancellation fee of 25% of the fees involved. After 15 March 2012 the entire fee is due. Substitution is possible at any time.



# 6-8 May 2012



Ermatingen, Switzerland

Deutsche Gesellschaft  
für Materialkunde e.V.

[www.dgm.de](http://www.dgm.de)

Chairman

Dr.  
Peter Wellner

European Executive Seminar

# Surface Technology and Functional Coatings

DGM

# Sunday

19:00 Reception and dinner at the Wolfsberg Executive Development Centre in Ermatingen (Meeting point: at the reception desk).

# Monday

9:00 P. Wellner  
**Welcome and Introduction**

9:15 H. Klostermann  
**Physical Vapour Deposition (PVD) Techniques for the Coating of 3D – Parts**  
High quality metallic and compound coatings deposited by pulsed reactive sputtering and plasma activated high rate evaporation

10:15 J. Häring  
**Tailored Surface Solutions based on System Analysis**  
Importance of understanding the mechanical, tribological and chemical system as basis of advanced surface solutions. Laboratory based testing for selecting commercially available functional coatings resulting in time and cost savings of application and repair services

11:00 Coffee Break

11:30 J. Becker  
**Selection and Evaluation of Carbon - based Coatings for Automotive Components**  
Criteria for the selection, evaluation of under laboratory conditions, relevance of lab tests for the 'real world', identifying the most important properties

12:15 H. Frank  
**PVD Coatings for Mould and Die Production**  
Specifications of Arc - PVD Process, hard coating for Moulds and Production, Diamond like Carbon (DLC) coatings, coating examples for cutting, forming and machine components

13:00 Lunch

# Monday

14:00 P. Ambühl  
**Principles of Thermal Spraying**  
Technology, equipment and key applications of high performance coatings

15:00 A. Barth  
**Atmospheric Plasma Spraying applying 3-Cathode Technology**  
Principles of technical function and resulting benefit, typical applications, practical use of 3-cathodes plasma, high velocity plasma spraying

15:45 Coffee Break

16:00 W. Kroemmer  
**Cold Spraying – State of the Art and future Development**  
Cold gas spraying process, expected potential and possibilities

16:45 S. Hartmann  
**Cold Spray Applications and Coating Characteristics**  
Practical applications specific coating properties, quality control methods

17:15 **Remarks and Conclusions of the first Day**

19:00 Dinner

# Tuesday

8:30 V. Weihnacht  
**Deposition, Properties, and Tribological Application of Superhard Amorphous Carbon Coatings**  
A new generation of low wear and low friction coatings for sliding components, forming and cutting tools; deposition technology for industrial coating production, dry running behaviour and super low friction potential

9:15 M. Eerden  
**Tool Lifetime Improvement by various PVD Technologies**  
Special PVD processes, DLC coatings, coatings for tool applications

# Tuesday

10:00 Coffee Break

10:30 G. Erkens  
**Enhanced Productivity through a novel approach to advanced high performance Coatings and Surface Treatment**  
Innovation PVD process and corresponding production technology, micro-alloyed and nano-structured high performance coatings for high precision tools and components, altered coating material properties, dedicated preparation, coating structure design, combined processes

11:15 W. Engelhart  
**PVD Alumina, the second Generation - Applications in the Tool Industry**  
Dual Magnetron sputtering technology, micro - and nano-structure, reasons for increased wear resistance in milling operations

12:00 S. Ulrich  
**Challenges in Up-Scaling of Coating Designs for multi-functional Cubic Boron Nitride (c-BN) Materials**  
Synthesis and characterization methods, plasma and surface processes, nucleation and growth of c-BN, stress reduction in c-BN thin films, thick c-BN based coatings

12:45 Lunch

13:45 M. Fenker  
**Corrosion Protection of Steel with thin Film Technology past and recent Developments**  
Thin films, corrosion tests, plasma nitriding, PVD wear resistant coatings / TiMgN, atomic layer deposition (ALD), duplex coatings: PVD + ALD, galvanic coating + ALD

14:30 A. Schröer  
**Anti Friction Coating for Wear Reduction of Machinery and Automotive Components**  
Dry lubricant system, low friction sliding active coatings, application technologies, examples  
**Coatings for Corrosion Protection – Zink Flake- and Nano Technology**  
Zink flake technology, corrosion and friction properties, nano coatings, sol-gel process, practical applications

15:45 **Closing Discussion**

Registration

Surface Technology and Functional Coatings

6-8 May 2012  
European Executive Seminar  
Ermatingen/Switzerland

DGM-Membership Number  DGM-member  Non-member

Birthday

Title, First Name(s), Name

Institute / Company

Phone

Fax

E-Mail

Date, Signature