APPLIED SMART MATERIALS FOR AUTOMOTIVE

FUNCTIONAL MATERIALS: DISRUPTIVE TECHNOLOGIES FOR CONNECTED CARS

FUNCTIONAL MATERIALS – TECHNOLOGY SEMINAR
8TH NOVEMBER 2017
Smart and functional materials are a driver for the networked world of tomorrow. In the automobile of the future, environment and car passengers are in a continuous dialog. Car condition and services are uninterruptedly adapted to the ambience. Hence, the communication between driver and car gets more and more into the focus of interest. Via new and smart materials versatile data can be gathered and processed in a fast and cost-efficient way.

Within the scope of this seminar disruptive technologies based on functional materials will be introduced and discussed by international speakers. The seminar will present latest results in synthesis, processing and application of functional materials for the usage in connected cars.

In a separately registerable follow-up seminar on the 2nd day we will go into details on actual scientific challenges. Furthermore, participants have a possibility in the “Hands-on-Workshop” to gather experience in material handling in the laboratories at the Fraunhofer IPA.

We warmly invite you to attend the seminar and are looking forward to hearing from you soon.

Dipl.-Wirt.-Ing. Markus Weskamp
TOPICS

- Material synthesis and functionalization of functional materials
- Dispersion and printing technologies of smart materials
- New energy storage systems
- Functional fibers for energy harvesting
- Smart and functional materials
- Graphene sensors
- Stretchable sensors for Human machine interfaces
- Smart skins
- IMSE (Inmolded Structure Electronic)

QUALIFICATION GOAL

Participants gain knowledge on materials, processes and application possibilities of functional materials. They get:

- A broad understanding on the actual state of technique in the field of smart materials as well as processing and applications
- A deeper understanding of synthesis and dispersion as well as characterization of smart materials

TARGET GROUP

Skilled workers and managers from the fields: automotive, coating technique, material production, system integration
09.30 a.m. **Welcome: registration and welcome coffee**

10.00 a.m. Ivica Kolaric

**The Future of cars – materials, technologies and markets**
- The impact of EV to the automotive entire supply chain
- New models for a new consumer behavior
- Shift of automotive production into new markets
- Human machine interface

**Session: Material & Production**

10.30 a.m. Prof. Ray Baughman

**Harvesting torsional and tensile mechanical as electrical energy using nanofiber yarns**
- Mechanical energy harvesting
- Artificial muscles

11.15 a.m. **Coffee Break**

11.30 a.m. Dr. Jürgen Smet

**Graphene for hall sensing**
- Graphene
- Hall sensing
12.10 p.m. Dr. Viera Skalalowa

**Advances in graphene production for applications**
- Different approaches to graphene
- Major difficulties and solutions
- Applications of various graphene products

12.40 p.m. Lunch Break

**Session: Printed Electronics**

01.40 p.m. Carsten Glanz

**Printed functional layers for the use in connected car applications**
- Applications of structured layers on car bodies
- Differences of interior and exterior applications
- Design of multi-layer based on properties of primer and varnish
- Evaluation of sensor signals and encapsulation
- Transfer to other applications

02.10 p.m. Ulf Köpke

**Smart dispersion - printing paste development with three roll mills for printed electronic in automotive applications**
- Functional materials and printing
- Screen printing
- IMSE (Inmolded Structure Electronic)
- Dispersion
- Three roll mill technology
- Real-time process analysis
03.10 p.m. Dr. Walter Schütz

**Automotive 2030: Innovative heating systems**
- Carbon nanomaterials
- Electric heating
- Electromobility

03.40 p.m. Break

03.50 p.m. Dr. Wim Christiaens

**Printed electronics : key enabler for smart, automotive surfaces**
- Printed electronics production on (thermo)plastics: challenges & opportunities
- Touch sensor integration for 3D shaped surfaces
- Capacitive sensor realisations in the spotlight

Session: Energy Storage
04.20 p.m. Laura Boonen, Peter Kitzler

**Printed Energy Storage**
- Basic principle of storage mechanisms and design of energy storage devices
- Field of applications and advantages of printed energy storage
- Material systems and manufacturing technologies
- Future developments in printed energy storage
04.50 p.m. Prof. Dave Carroll

**Fabrics that scavenge power:**

* Crossing the 1W/m² threshold
  * Energy harvester
  * Thermoelectrics
  * Powerfelts

05.20 p.m. Prof. Henning Zoz

**Make more with less - HKP nanomaterials/nanostructures in clean- green- and hightech for transportation, energy and economy**

* Clean-, green- and hightech
* HKP nanomaterials

05.50 p.m. Summary, final discussion, feedback

06.15 p.m. Anticipated end
SPEAKERS

SEMINAR MANAGER
Dipl.-Ing.(FH) Ivica Kolaric, MBA
Head of department
Functional Materials
Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Stuttgart, Germany
Phone +49-172 728-5360
ivica.kolaric@ipa.fraunhofer.de

SPEAKERS

Prof. Ray Baughman
Professor of chemistry and director of the Alan G. MacDiarmid NanoTech Institute
University of Texas Dallas, Dallas USA

Ms. Laura Boonen
Researcher
Dept. Functional Materials
Fraunhofer IPA, Stuttgart, Germany

Prof. Dave Carroll
Professor Carroll Research Group
Wake Forst University, Wake Forest USA

Dr. Wim Christiaens
R&D Director - Quad Industries
Mr. Carsten Glanz
Fraunhofer IPA, Stuttgart, Germany

Mr. Peter Kitzler
Project Manager
Dept. Functional Materials
Fraunhofer IPA, Stuttgart, Germany

Mr. Ulf Köpke
Manager
Dept. Research and Development
Exakt Advanced Technologies GmbH,
Norderstedt Germany

Dr. Walter Schütz
President
FutureCarbon GmbH, Bayreuth Germany

Dr. Viera Skalalova
Scientific Director
Danubia NanoTech s.r.o, Bratislava Slovakia

Dr. Jürgen Smet
Max Planck Institute for Solid State Research

Prof. Henning Zoz
President & CEO
ZOZ GmbH, Wenden Germany
INFORMATION
Stuttgarter Produktionsakademie
c/o Fraunhofer IPA
Nobelstraße 12 | 70569 Stuttgart
Phone +49 711 970-1208 | Fax +49 711 970-1854
anmeldung@stuttgarter-produktionsakademie.de

REGISTRATION
Registration for participation must be issued in writing and must be addressed to anmeldung@stuttgarter-produktionsakademie.de or via the attached application form or on our website.

Please provide the following booking number for your registration: **TS_ASM_171108**

as well as the participants names and addresses and if relevant the different billing address. After the registration you will receive an invoice and further information.

PARTICIPATION FEE
The participation fee is € 450,- per person. This fee includes attendance of all lectures, conference documents, lunch, drinks and snacks.
CHANGE OF REGISTRATION AND CANCELLATION

The registration can be changed and transmitted to another participant free of charge. Please inform us about any change in writing. Please understand that cancellation up to 10 days before the start of the event will be charged with € 100, after this date the full price fee will be due.

ACCOMMODATION

If you need a hotel room during your stay in Stuttgart please contact the following institution:
Tourist Information i-Punkt | Königstr. 1a | 70173 Stuttgart
Telefon +49 711 22 28-100 | Fax -251
www.stuttgart-tourist.de/en/hotels-stuttgart

VENUE

Fraunhofer-Gesellschaft | Institutszentrum Stuttgart (IZS)
Nobelstraße 12 | 70569 Stuttgart (Vaihingen)

DIRECTIONS

www.stuttgarter-produktionsakademie.de/anfahrt.html

LEGAL NOTICE

Published by SPA Stuttgarter Produktionsakademie gGmbH,
Amtsgericht Stuttgart, Handelsregisternr.: HRB 744737
Managing Director: Markus Weskamp
Picture: Fraunhofer IPA
Registration:
Herewith I sign up definitely for the seminar of the Stuttgarter Produktionsakademie.

APPLIED SMART MATERIALS FOR AUTOMATIVE

Participation fee: € 450,–
☐ Booking number TS_ASM_171108 on 8th November 2017

Please transfer the participation fee on receipt of the registration confirmation and invoice.

Note: In accordance with § 26.1 of the Federal Data Protection Law, we inform you about the storage of your address and the handling with an automated method.

I took note of the conditions which have been announced in the program concerning change of registration or cancellation.
Registration
Please return in an envelope or by fax +49 711 970-717-1854
Or to anmeldung@stuttgarter-produktionsakademie.de

Tagungsbüro der
Stuttgarter Produktionsakademie

functional mateRials
tecHnologY seminaR
8th November 2017

Applied smArt mAteriAls for
Automotive
mateRials, pRocesses and applica-
tions of functional mateRials in
connected caRs

Nobelstraße 12
c/o Fraunhofer IPA
70569 Stuttgart

connected cars
TIONS OF FUNCTIONAL MATERIALS IN
MATERIA`, PROCESSES AND APPLICATIONS OF FUNCTIONAL MATERIALS