

# INVITATION TO THE EUROPEAN POWDER TECHNOLOGY SYMPOSIUM 2014

at HOSOKAWA ALPINE Aktiengesellschaft, on 29<sup>th</sup> September 2014 in Augsburg, Germany.

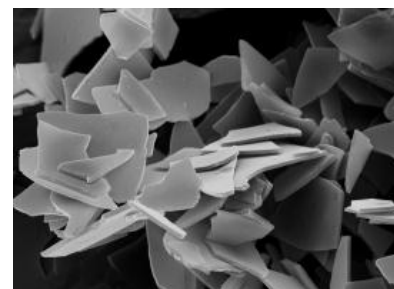
## TRENDS IN POWDER TECHNOLOGY FOR NEW FUNCTIONAL MATERIALS

New construction materials, applications and products result from new technologies for the production of ultrafine powders and nanoparticles. Process technology can influence the product properties in a targeted manner via the particle size, geometry and particle surface. To this end, the R&D, production and quality control departments make use of new instrumentation, machine concepts, sensors and state-of-the-art automation technology. The Hosokawa European Powder Technology Symposium deals with these new technologies and future trends, and offers:

- › 4 striking presentations from experienced scientists and engineers on future developments in powder processing applications and equipment,
- › The opportunity to meet and get acquainted with managers and experts from other powder processing companies,
- › Time for discussions with speakers and visitors,
- › and a coach transfer to the POWTECH exhibition at Nuremberg on Tuesday morning.

The symposium addresses scientists, engineers and decision-makers from companies and institutes specialised in the manufacture and processing of fine powders. All papers will be in English. Participation is free of charge but requires timely registration.

The symposium will take place on the premises of  
HOSOKAWA ALPINE Aktiengesellschaft:  
Peter-Doerfler-Str. 13-25, 86199 Augsburg, Germany



# HOSOKAWA POWDER TECHNOLOGY FOUNDATION



Shoudai-Tajika 1-9, Hirakata, Osaka, 573-1132 Japan

Tel: + 81-72-867-1686 Fax: + 81-72-867-1658 E-mail: [contact\\_zainq@hmc.hosokawa.com](mailto:contact_zainq@hmc.hosokawa.com) URL: [www.kona.or.jp](http://www.kona.or.jp)

## PROCESS TECHNOLOGIES FOR TOMORROW

### EUROPEAN POWDER TECHNOLOGY SYMPOSIUM 2014

MONDAY, 29<sup>TH</sup> SEPTEMBER 2014

- 13:30 Welcome address  
Y. Hosokawa, President of Hosokawa Powder Technology Foundation
- 13:45 Overview and Prospects of Powder Technology  
Prof. W. Peukert, Erlangen University
- 14:30 Advancements, Challenges and Trends in Size Reduction Technology for  
Pharmaceutical Applications,  
Dr. M. Juhnke, Novartis AG, Basel
- 15:15 Coffee Break
- 15:45 Design of Powder Processing Equipment by Computer Simulation  
Prof. J. Kano, Tohoku University
- 16:30 Computerization of Powder Processing Systems  
Dr. S. Sander, G. Kiederle, HOSOKAWA ALPINE AG
- 17:15 Closing remarks  
P. Krieg, President of HOSOKAWA ALPINE AG

### POWTECH + TechnoPharm 2014

TUESDAY, 30<sup>TH</sup> SEPTEMBER 2014

Visit of the World-Leading trade fair for processing, analysis and handling of powder and bulk solids and the booth of HOSOKAWA MICRON Group.



**POWTECH 2014**



**TechnoPharm 2014**

- 08:00 Coach departure from HOSOKAWA ALPINE to Nuremberg.
- 10:30 Approximate arrival time at the Nuremberg Exhibition Centre. Admission tickets provided by us.
- 10:30 - 11:30 Tour of the HOSOKAWA MICRON Group exhibition stand: explanation of the exhibited machines and their application areas. Afterwards, you will have the opportunity to look around the two trade fairs on your own.
- 17:00 - 19:30 Return coach trip to Augsburg

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PROCESS TECHNOLOGIES FOR TOMORROW

## HOSOKAWA EUROPEAN POWDER TECHNOLOGY SYMPOSIUM 2014 MESSAGE FROM THE ORGANISER



It is a great pleasure to announce that the Hosokawa European Powder Technology Symposium entitled "Trends in Powder Technology for New Functional Materials" will be held at HOSOKAWA ALPINE AG on Monday 29<sup>th</sup> of September, 2014, as a part of special events to celebrate the 20<sup>th</sup> anniversary of the Hosokawa Powder Technology Foundation. This foundation was established in Japan in 1991 for the purpose of promoting science and technology in the field of powder and particle processing and characterisation on the basis of the fund donated by the late Mr Masuo Hosokawa. It annually presents the "KONA Award" to a prominent researcher with an excellent contribution to the advancement in this field and supports active researchers by financial funding.

This symposium is the first one to be held outside Japan by our foundation, which aims to promote the exchange of technical information and knowledge among European and Japanese researchers and engineers engaged in the work of handling powder and particles.

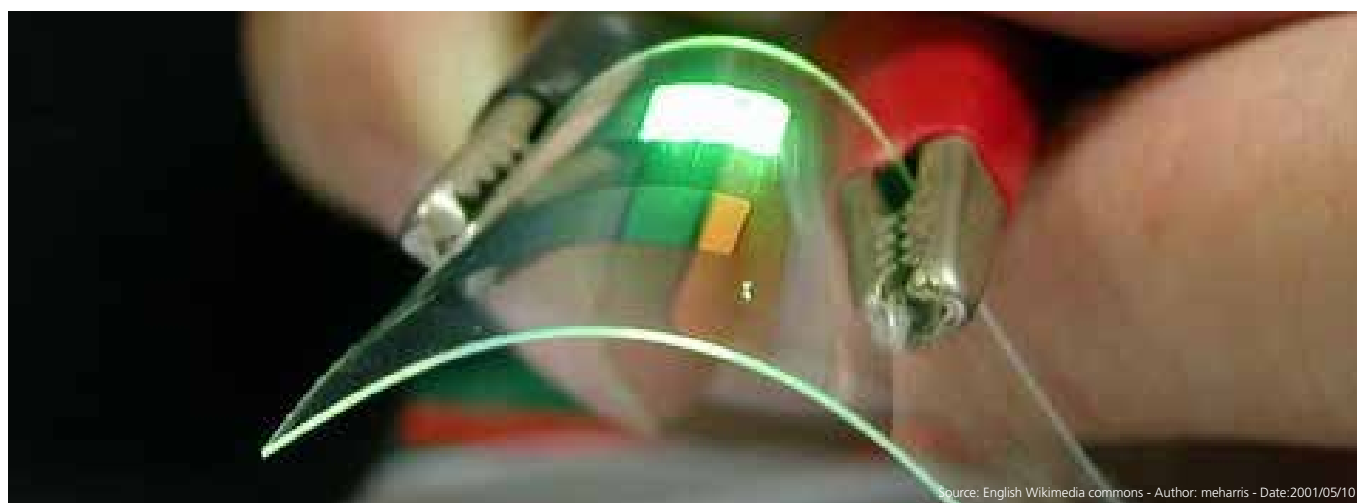
I hope that this symposium will bring the participants new tips and ideas which will lead to innovative and fruitful R&D and engineering work in academia and industry.

Yoshio Hosokawa  
President  
Hosokawa Powder Technology Foundation

### ABSTRACT:

## OVERVIEW AND PROSPECTS OF POWDER TECHNOLOGY

*Wolfgang Peukert, Institute of Particle Technology, University Erlangen, Germany, [wolfgang.peukert@fau.de](mailto:wolfgang.peukert@fau.de)*



Advanced materials with properties tailored on the molecular and mesoscales are expected to stimulate evolutionary advances and revolutionary breakthroughs in emerging key-technology areas such as information and communication as well as catalysis, energy and transportation. The creation of tailor-made products made from nanoscale building blocks is one of the great challenges in the manufacture of new functional materials. Nanoparticles as building blocks are controlled by surface and interparticle forces. The microscopic control of the interfaces is therefore a key requirement for product design and formulation of nanoparticles. We present a multi-scale view from the molecular level towards macroscopic effects and applications, e.g. in additives manufacturing, printable electronics or the life sciences. A highly relevant question is how the product quality evolves throughout the process and how the process structure-functions influence the product quality, i.e. the related structure-property functions.

Fundamental studies open many applications. These include mechanochemical effects, the dispersion of semi-conducting nanoparticles for the production of functional conductive films, translucent ceramic tapes and bioglass from which apatite can be grown for bone replacement. A novel process to produce polymer particles below 5  $\mu\text{m}$  for additives manufacturing is introduced. Molecularly thin layers of graphene and boron-nitride sheets have been produced from commercial graphite powder under mild milling conditions. In all these applications, new challenges need to be solved. These include multi-dimensional particle characterisation beyond size, i.e. shape, surface, composition and characterisation really do matter. Today, powder technology is a key technology for the production of new functional materials.

### ABSTRACT:

## ADVANCEMENTS, CHALLENGES AND TRENDS IN SIZE REDUCTION TECHNOLOGY FOR PHARMACEUTICAL APPLICATIONS

*Michael Juhnke, Novartis Pharma AG, Basel, Switzerland*

Engineering and control of drug particle size is of paramount importance throughout drug development and manufacturing to ensure reliable performance during pharmaceutical manufacturing, as well as consistent product shelf-life, administration and in-vivo behavior.

Size reduction techniques are frequently applied to engineer drug particle size after chemical synthesis and isolation techniques. Standard platform milling technologies in dry and wet mode are preferred, targeting for particle sizes of few 100  $\mu\text{m}$  to about 100 nm, and processing multiple drug compounds per platform technology from several gram batch size at preclinical development stage up to about 500 kilogram batch size for commercial manufacturing.

The presentation will provide an overview on the requirements for engineered drug particle sizes and standard platform milling technologies, advancements for the processing of highly-active drug compounds, application of rotor-impact and wet-media milling technology during drug development, challenges regarding drug processing and drug product quality, as well as trends for size reduction techniques during drug development and commercial manufacturing.



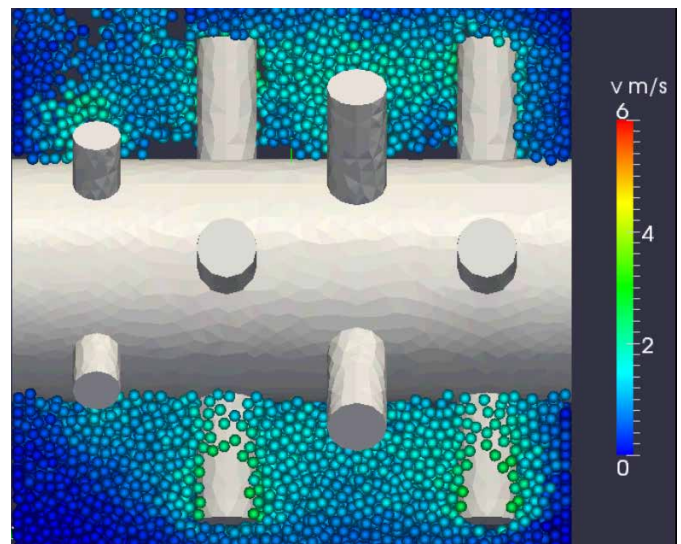
### ABSTRACT:

## DESIGN OF POWDER PROCESSING EQUIPMENT BY COMPUTER SIMULATION

*Junya Kano and Shingo Ishihara, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan, [kano@tagen.tohoku.ac.jp](mailto:kano@tagen.tohoku.ac.jp)*

Computer simulation in powder technology has recently developed in a remarkable way and is applied in different unit operations such as grinding, agglomeration, mixing and classification. First of all, we have focused on the grinding of solid particles. Grinding is one of the most important unit operations in powder processing, and it has been carried out in many fields of science and industry.

Fine grinding operations can be done using several types of media mills such as tumbling, vibration, planetary and stirred mills. We have numerically simulated the ball motion in media milling by the Distinct Element Method (DEM), and also developed a method to predict the particle size during the batch grinding process. We recently developed a new direct simulation method of the breakage phenomena of a solid particle. The new simulation method has been named Advanced Distinct Element Method (ADEM), and ADEM is able to simulate the behavior of the non-spherical particles. ADEM has been applied to sieving and powder mixing as well, and the modelling of the processes and design of the systems have been performed by computer simulation.



### ABSTRACT:

## COMPUTERIZATION OF POWDER PROCESSING SYSTEMS

*Steffen Sander, Gerhard Kiederle:  
HOSOKAWA ALPINE AG, Augsburg, Germany*

Computers have become ubiquitous in all aspects of our lives. We are able to access our e-mail account wherever we are. Household appliances and even complex industrial systems can be controlled by smart phones. The next steps will be the self-organization of manufacturing processes by means of machine-to-machine communication and the “web of things” – in Germany known as “Industry 4.0”. But how can one turn this tremendous development in computing applications to account in powder processing?

The presentation introduces HOSOKAWA ALPINE’s recent developments in control systems and related issues. It will focus on the online measurement of particle size distributions and how this tool can be used for an adaptive control of process or machine parameters. We will also highlight the potential of tele-service applications and a newly developed tool which enables condition-based maintenance for reducing downtime. There are many ways in which the computerization of powder processing systems can help to obtain products within the optimum quality range and with increased overall process efficiency.



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## PROCESS TECHNOLOGIES FOR TOMORROW

### POWTECH + TechnoPharm 2014

We invite you to pay the POWTECH and TechnoPharm trade fairs (30.09. – 02.10.2014) a visit. In combination with the Hosokawa European Powder Technology Symposium 2014, we will organise a coach trip on Tuesday, the 30<sup>th</sup> September, between Augsburg and Nuremberg to enable you to visit the trade fairs.

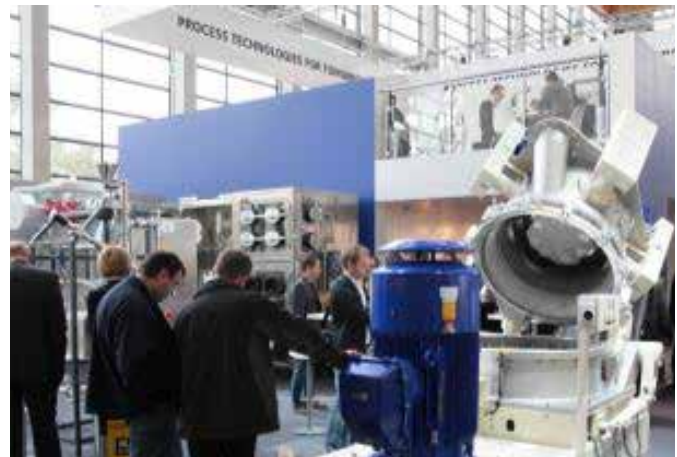
The POWTECH is the world-leading trade fair for processing, analysis and handling of powders and bulk solids. Some 700 companies from more than 20 countries show their product spectrum. The Hosokawa Micron Group is the exhibitor with the largest stand (450 m<sup>2</sup> floor space) at the POWTECH.

TechnoPharm 2014 - international trade fair for life science process technologies. Some 300 companies from more than 20 countries show their product spectrum in pharma, food and cosmetics.

The POWTECH and TechnoPharm trade fairs both take place at the same time and the same location at the Exhibition Centre Nuremberg.

Kindly make use of the appended registration form to register for the symposium and the trip to POWTECH + TechnoPharm. Please send the form back to us by the 15<sup>th</sup> August 2014.

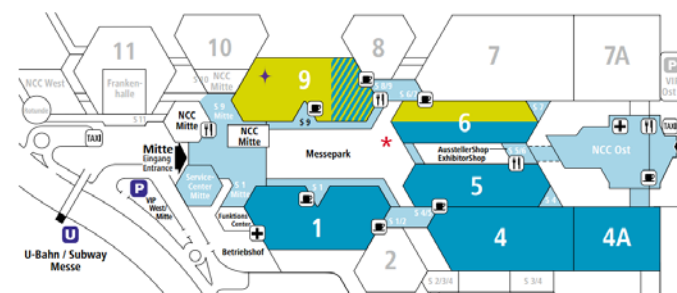
We will be pleased to answer any questions you may have on the symposium and the POWTECH 2014:  
HOSOKAWA ALPINE Aktiengesellschaft,  
Marketing Department (ZVF)  
E-mail: [marketing@alpine.hosokawa.com](mailto:marketing@alpine.hosokawa.com),  
Tel: +49 (0) 821 5906 - 358



HOSOKAWA MICRON Group booth at the POWTECH 2013



Nuremberg, exhibition centre



Plan POWTECH + TechnoPharm



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## PROCESS TECHNOLOGIES FOR TOMORROW

### EUROPEAN POWDER TECHNOLOGY SYMPOSIUM 2014 GETTING TO US

HOSOKAWA ALPINE Aktiengesellschaft  
Peter-Dörfler-Str. 13-25  
86199 Augsburg  
[www.hosokawa-alpine.com](http://www.hosokawa-alpine.com)  
Tel: + 49 821 5906-0  
Fax: + 49 821 5906-101  
E-mail: [mail@alpine.hosokawa.com](mailto:mail@alpine.hosokawa.com)



Journey by car: from the north, east and west on the A8 motorway  
(Munich – Stuttgart):

- › leave the A8 at the exit Augsburg-West and follow the B17 towards Augsburg,
- › after 10 km leave the B17 at the exit Göggingen Ost (alte Universität, Kongresshalle, Zoll / TÜV, Eichleitnerstraße) and turn left towards the town centre,
- › after 500 m, at the first set of traffic lights, turn left into Peter-Dörfler-Strasse,  
drive for another 300 m and you will reach the main entrance of Hosokawa Alpine on the right.



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PROCESS TECHNOLOGY FOR TOMORROW

## REGISTRATION FORM

**HOSOKAWA EUROPEAN POWDER TECHNOLOGY SYMPOSIUM 2014**

**29. SEPTEMBER 2014, HOSOKAWA ALPINE AKTIENGESELLSCHAFT, AUGSBURG, GERMANY**

Please fill out the fields of this registration form on the PC or by hand. Please print and sign it afterwards and return it by e-mail or fax by August 15<sup>th</sup>, 2014 at the very latest:

by e-mail: [marketing@alpine.hosokawa.com](mailto:marketing@alpine.hosokawa.com)

or by fax: + 49 821 5906-261

### YOUR CONTACT DETAILS:

Company:

Name:

E-mail:

Phone:

### YOUR PARTICIPATION AT THE SYMPOSIUM:

Number of persons you want to register:

If you attend together with colleagues, please enter their names below:

Visit to the POWTECH and TechnoPharm trade fairs in Nuremberg on 30.09.2014:

Coach ride to the exhibitions (30.09.2014, departure from Augsburg at 8:00 in the morning),  
with            persons.

Coach ride back to Augsburg (30.09.2014, departure from Messe Nuremberg at 17:00,  
with            persons.

### SPECIAL REQUIREMENTS, OTHER REMARKS:

Place, date:

Signature: