

The 40th Symposium on Powder Technology

The 40th Symposium on Powder Technology was held on August 29, 2006 at Hotel Laforet Tokyo in Tokyo under the sponsorship of the Hosokawa Powder Technology Foundation and with the support of Hosokawa Micron Corporation. The symposium was

very successful as usual with the attendance of 151 including 26 academic people. The main subject was "Processing and Applications of Nanoparticles as a Key to Practical Use of Nanotechnology".

The 40th Symposium on Powder Technology

Subject: Processing and Applications of Nanoparticles as a Key to Practical Use of Nanotechnology

**Session 1** Chairperson: Prof. Ko Higashitani (Kyoto Univ.)

- Manufacturing Process of Pharmaceutical Microparticles Assisted with Nano-structure Construction (KONA Award Lecture) Prof. Yoshinobu Fukumori (Kobe Gakuin Univ.)
- Organic-Inorganic Nano-Hybrid Materials Prof. Yoshiki Chujo (Kyoto Univ.)

**Session 2** Chairperson: Prof. Makio Naito (Osaka Univ.)

- Preparation of Electronic Ceramic Dick Layer of Fine Particle Crystalline by Dry Process and Its Application Prof. Mitsuteru Inoue (Toyohashi Univ. of Technology)
- Application of Porous Materials to Electrochemical Functional Interface Prepared by Using Nanoparticles Prof. Kiyoshi Kanemura (Tokyo Metropolitan Univ.)

**Session 3** Chairperson: Prof. Kiyoshi Nogi (Osaka Univ.)

- Nanoparticles Fine Pitch Wiring for Printed Electronics Prof. Katsuaki Suganuma (Osaka Univ.)
- Development and Application of Nanoparticle Dispersion and Composite Process Dr. Takehisa Fukui (Hosokawa Powder Technology Research Institute)



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## The 14th KONA Award

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KONA Award sponsored by Hosokawa Powder Technology Foundation is given to the scientists or groups who have achieved excellence in the researches related to the basic powder technology. The 14th award has been presented to Professor Yoshinobu Fukumori of Kobe Gakuin University.

Prof. Fukumori received his M.S and Ph.D from Kyoto University in 1971 and 1977. In 1976 he joined the Faculty of Pharmaceutical Science of Kobe Gakuin University. In 1995 he became a full professor of Kobe Gakuin University. His research activity is concerned with spouted bed processing of micro particles and development of micro and nano-particulate systems for drug delivery. The fluidized/spouted bed coating processes are favorably applied to pharmaceutical particles. He has been producing many types of functional pharmaceutical particulate system for the purpose of efficient drug delivery, including the enteric-coated particles and the sustained-, prolonged- and delayed-release systems. However, the current coating technology has a limit in the size of the particles that can be processed. He has been established and well experienced only for particles larger than 200 $\mu$ m. The extension of the coating technology to a smaller size range has been challenged by him and his group. The research that he has made so far are as follows:

- Analysis of agglomeration phenomena of fine particles ;
- Optimization of coating operations and processor construction ;

- Development of large-scale processor ;
- Additives and formulation for coating fine particles;
- Release modifiers for microcapsules ;
- Novel aqueous polymeric suspensions for coating fine particles ;
- Micro-agglomeration technology ;

The results of these researches have been applied for developing various controlled-release systems such as

- Thermo-sensitively drug-releasing microcapsules with nano-structured membranes and with multi-layered structure ;
- Biodegradable, biocompatible microcapsules of proteins ;
- Microparticles carrying nanoparticulate drug to be nano-dispersed in GI tract ;
- Colon-specific delivery system for peptides ;

Further, his micro and nano-particle processing technology has been applied to drug/atom delivery systems for cancer therapies as follows :

- Delayed-releasing, self-dispersable microcapsules for cancer chemoembolization therapy ;
- Microcapsules for gadolinium neutron capture therapy of cancer ;
- Lipid nanoparticles for i.v. injections in gadolinium neutron capture therapy of cancer ;
- Chitosan nanoparticles for i.t. injections in gadolinium neutron capture therapy of cancer.

The 14th KONA Award has been given to his remarkable achievement of many years.



**Content Extract: Journal of the Society of Powder Technology, Japan, Vol. 42 (2005)**

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