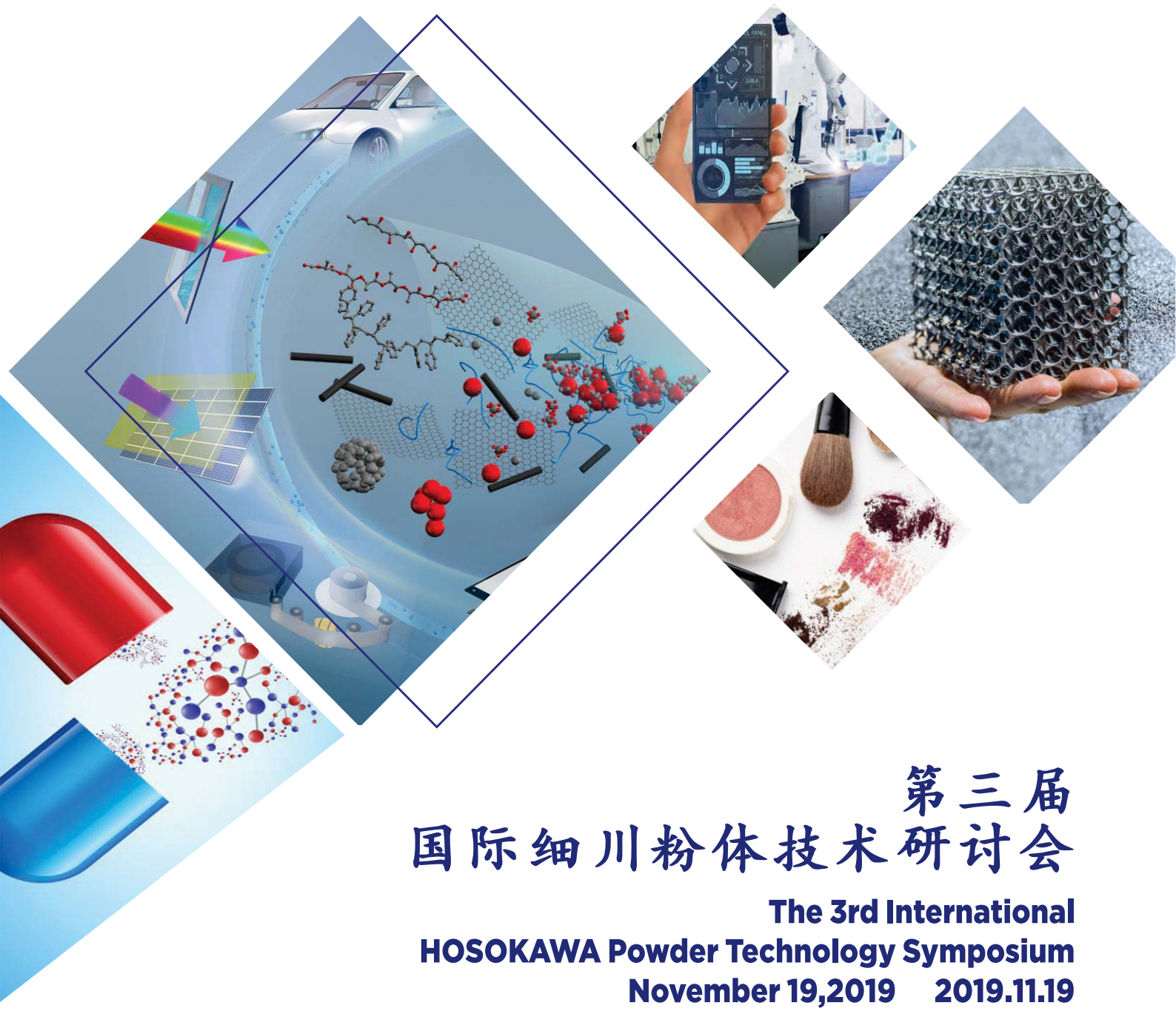
公益財団法人 ホソカワ 粉体工学振興財団
Hosokawa Powder Technology Foundation



第三届
国际细川粉体技术研讨会

The 3rd International
HOSOKAWA Powder Technology Symposium

November 19,2019　2019.11.19

Commonweal Event　公益活动

The 3rd International Hosokawa Powder Technology Symposium

第三届国际细川粉体技术研讨会

细川粉体技术研讨会最初是由日本细川密克朗公司于1968年发起，旨在推动无论在与生活息息相关的日用品的生产中，还是在诸多高新科技领域的核心材料的加工中，都与其密切相关的粉体科学技术的交流和发展。此后，日本公益财团法人细川粉体工学振兴财团成立以来便接替该项组织工作每年举办研讨大会。

2014年，首届国际细川粉体技术研讨会作为细川粉体工学振兴财团的专项特别活动在德国举行。第二届于2017年在美国举行。在此我们很高兴地宣布第三届细川粉体技术研讨会将于11月19日在中国·上海举行。研讨会将邀请粉体领域的学术界和工业界的各行专家担任讲师，与观众分享他们的最新研究成果，并对其未来发展进行深入讨论。

The Hosokawa Powder Technology Symposium was originally started by the Hosokawa Micron Corporation in Japan in 1968 to promote powder science and technology, which was closely related to the processing of numerous kinds of materials, from daily commodities to advanced functional materials. This Symposium has been organized by Hosokawa Powder Technology Foundation annually since its establishment taking over her role.

The first International Hosokawa Powder Technology Symposium was held in Germany in 2014 as part of a special event of the Hosokawa Powder Technology Foundation. The second one was held in USA in 2017. We are excited to announce that the 3rd symposium will be held in Shanghai, China in 2019. For the Symposium, specialists in the area are invited as lecturers from both the academic and industrial fields. Various topics concerning powder science and technology will be discussed during the lectures.

◆时间：2019年11月19日
◆地点：中国科学院上海硅酸盐研究所 (上海市长宁区定西路1295号)
◆主题："以粉体技术开创先端材料的未来"
◆主办单位：日本公益财团法人细川粉体工学振兴财团
◆协办单位：中国科学院上海硅酸盐研究所、日本粉体工学会
◆赞助单位：细川密克朗株式会社、细川密克朗(上海)粉体机械有限公司

Date : Tuesday, November 19, 2019
Place : Shanghai Institute of Ceramics, Chinese Academy of Science
(1295 Dingxi Road, Shanghai, China)
Theme : "Powder and Particle Technology for Advanced Materials"
Organizer : Hosokawa Powder Technology Foundation
Co-organizer: Shanghai Institute of Ceramics, Chinese Academy of Sciences
The Society of Powder Technology, Japan
Sponsor : Hosokawa Micron Corporation, Hosokawa Micron Shanghai

大会议程 Program

- 12:30-13:00 **Registration 签到 4F #4Building**
- 13:00-13:15 **Welcome address**
  Mr.Yoshio Hosokawa, President of Hosokawa Powder Technology Foundation, Japan
  欢迎辞 日本公益财团法人细川粉体工学振兴财团理事长 细川悦男
- 13:15-14:00 **Lecture 1:** Manufacturing of high purity ultrafine powders for advanced ceramics applications
  Prof. Dongliang Jiang, Shanghai Institute of Ceramics, Chinese Academy of Sciences, China
  报告1:「先进陶瓷材料用高纯·超细粉体」
  中国科学院上海硅酸盐研究所 江东亮 教授
- 14:00-14:45 **Lecture 2:** A novel nanoparticle sizer and in-situ fast nanoparticle sizing
  Prof. Xiaoshu Cai, Institute of Particle and Two-phase Flow Measurement, University of Shanghai for Science & Technology, China
  报告2:「一种全新的纳米粒度仪及纳米颗粒粒度的原位实时快速测量」
  上海理工大学颗粒与两相流测量研究所 蔡小舒 教授
- 14:45-15:05 Coffee break 茶歇
- 15:05-15:50 **Lecture 3:** Bioinspired functional materials templates by nature species
  Prof. Di Zhang, State Key Lab of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University, China
  报告3:「自然启迪的遗态功能材料」
  上海交通大学金属基复合材料国家重点实验室 张荻 教授
- 15:50-16:20 **Lecture 4:** Application of powder processing technology in the field of industrial materials
  Ms.Xiangqun Yan, Assistant Section Manager, Powder Processing Department, Hosokawa Micron Corporation, Japan
  报告4:「粉体加工技术在各工业材料领域的应用」
  细川密克朗株式会社 日本总部中国区销售负责人 严向群
- 16:20-16:50 **Lecture 5:** Development and commercialization of cosmetics and pharmaceuticals utilizing PLGA-nanoparticles
  Dr.Aiko Sasai, Assistant Section Manager, Materials Business Department, Hosokawa Micron Corporation, Japan
  报告5:「利用PLGA纳米粒技术促进新一代药品与化妆品的研发与商业化」
  细川密克朗株式会社材料事业部助理经理 笹井爱子 博士
- 16:50-17:00 **Closing remarks**
  Mr.Yoshinori Uchida, Managing Director, Hosokawa Micron Shanghai, China
  闭幕辞 细川密克朗(上海)粉体机械有限公司董事长兼总经理 内田良范
- 17:15 **Social gathering (Register in advance)**
  立餐酒会（提前预约报名）

报告摘要 Abstract

◆ Lecture 1

Manufacturing of high purity ultrafine powders for advanced ceramics applications

Prof. Dongliang Jiang, Shanghai Institute of Ceramics

Advanced ceramics have many applications such as space structure materials; ultrahigh temperature rocket nozzle, reflective mirrors, transparent materials, and amour materials, due to their excellent mechanical properties, relatively lighter weight as compared with metal, and good resistance to erosion and corrosion. Nevertheless, the manufacture processing of advanced ceramics is rather complex. Especially, the sintering procedure is required to remove impurities, and control the particle size and distribution as well as morphology of the powder. In this sense, we need to develop artificial synthetic methods and treatment techniques. This presentation will briefly introduce some basic methods and treatment techniques to produce ultrafine powders with high uniformity and purity to meet the requirements of advanced ceramics applications.

报告1:「先进陶瓷材料用高纯·超细粉体」

中国科学院上海硅酸盐研究所　江东亮 教授

先进陶瓷材料具有优异的力学性能、相对金属较低的密度、优异的耐腐蚀性能等，在空间结构材料，超高温火箭喷嘴，反射镜，透明陶瓷，装甲材料等领域获得大量应用。但是，陶瓷材料的制备工艺相当复杂，特别是烧结工艺涉及到粉体的纯度，粒径和粒径分布，以及粉体形貌等因素。因此，需要建立粉体的制备和后处理技术，来获得高纯、超细、粒径分布均匀的粉体来满足先进陶瓷材料的需求。本文将介绍先进陶瓷用高质量粉体的一些基本的制备方法和处理技术。

◆ Lecture 2

A novel Nanoparticle sizer and fast nanoparticle sizing

Prof. Xiaoshu Cai, Dr. Yuanli Chen, Dr. Wu Zhou, University of Shanghai for Science & Technology

Dynamic light scattering (DLS) is a main method for measuring the size of nanoparticles. A lot of instruments based on this method have been commercialized and widely used in research and industry. However, such instruments are time consuming for measurement and large in volume and heavy in weight that limits the application of the instruments only in the lab.

Based on the principle of Imaging Dynamic Light Scattering, a novel nanoparticle sizer has been developed by authors. This instrument is a portable apparatus with battery power supply, only 204x136x40mm^3 in volume and less 1kg in weight. The measurement time needs only milliseconds. Several standard latex nanoparticles from 46nm to 980nm have been measured with this instrument. The measurement results agree well with the nominal size of those standard latex nanoparticles. Some commercial nanoparticles were measured too, such as ATO, ITO. With this instrument, the measurement for synthesis of Au nanoparticle was conducted in-situ, real time and in-line. The results show how Au nanoparticles are appearing and growing. The time resolution is up to 5ms for whole chemical reaction progress. This time resolution may be further improved down to 1ms. This new apparatus provides a completely new measurement method for studying the reaction dynamics of synthesis of nanoparticles.

报告2:「一种全新的纳米粒度仪及纳米颗粒粒度的原位实时快速测量」

上海理工大学颗粒与两相流测量研究所　蔡小舒 教授，陈远丽博士，周骛博士

动态光散射（DLS）是测量纳米颗粒粒度的主要方法，已有许多基于该原理的商品化仪器广泛用于科学研究和工业中。然而，这些仪器的测量时间都比较长，在百秒左右，且体积较大，使用条件要求严格，这就限制了这类仪器只能用于实验室分析。

基于我们提出的图像动态光散射法原理，我们研制了一种全新的纳米颗粒粒度仪。这是一种便携式的粒度仪，外形尺寸仅204*136*40mm^3，重量小于1kg，采用内部电池供电，仅须与笔记本电脑连接，就可以工作，并且测量时间缩短到毫秒级。该仪器不仅可以用于实验室测量，还可以方便地携带到任何地点工作。对从46nm到980nm纳米多种标准颗粒的测量结果与纳米标准颗粒的名义尺寸吻合很好，对其它工业纳米颗粒，如ITO，ATO等纳米颗粒的测量结果与电镜测量结果也吻合很好。

采用该仪器还可以实现原位、在线、实时纳米颗粒测量。对纳米金制备过程中纳米金反应生成和长大的全过程以5ms的时间分辨率进行了实时、原位、在线连续检测，直至反应结束。连续原位检测结果清楚地显示出纳米金颗粒是如何生长的，这对于研究这类过程的反应动力学等提供了一个新的测量手段。这类测量的时间分辨率还可以提高到1ms，以满足更快的反应过程研究的需要。

◆ Lecture 3

Bioinspired functional materials templates by nature species

Prof. Di Zhang, Shanghai Jiao Tong University

Biological materials naturally display an astonishing variety of sophisticated nanostructures that are difficult to obtain even with the most technologically advanced synthetic methodologies. Inspired from nature materials with hierarchical structures, many functional materials are developed based on the templating synthesis method. This review will introduce the way to fabricate novel functional materials based on nature bio-structures with a great diversity of morphologies, in State Key Lab of Metal Matrix Composites, Shanghai Jiao Tong University in near five years. We focused on replicating the morphological characteristics and the functionality of a biological species (e.g. wood, agriculture castoff, butterfly wings). We change their original components into our desired materials with original morphologies faithfully kept. Properties of the obtained materials are studied in details. Based on these results, we discuss the possibility of using these materials in photonic control, solar cells, electromagnetic shielding, energy harvesting, and gas sensitive devices, et al. In addition, the fabrication method could be applied to other nature substrate template and inorganic systems that could eventually lead to the production of optical, magnetic. or electric devices or components as building blocks for nanoelectronic, magnetic, or photonic integrated systems. These bioinspired functional materials with improved performance characteristics are becoming increasing important, which will have great values on the development on structural function materials in the near future.

报告3:「自然启迪的遗态功能材料」

上海交通大学金属基复合材料国家重点实验室　张荻 教授

“师法自然”是推动科学进步与技术创新的重要途径。自然生物经亿万年进化出精细构型并衍生出优异性能。如何创制既能精准秉承自然生物精细构型的优异性能，又能赋予材料人工特性的新型材料?本报告将详细介绍近年来上海交通大学金属基复合材料国家重点实验室在“遗态材料”领域研究的学术新思想:即基于自然生物构型的多样性，依据性能设计，定向甄选生物精细构型，通过“结构传承、材质置换”，创制出高性能化新型材料，突破了现有技术难以精准再现自然生物精细构型及优异性能的瓶颈。我们着重于不同生物种类的形貌特色和功能复制(树木，农业废弃物，蝴蝶翅膀等等)，在如实保留生物原始结构的同时，人工替换其组分，并对这种新型材料进行了详细研究。基于上述研究结果，探究新型材料在光子控制、太阳能电池、电磁防护、能量收集以及气体传感器件等等方面的应用前途。另外，这种制备方法可以利用在其他自然基底模板和无机系统中，引领光学、磁学以及电子学设备和零件的发展，最终成为纳米电子学、磁学以及光子学系统集成的基石。生物启迪功能增强材料的重要性日趋显著，在不久的未来，会在结构功能材料领域显现出巨大的价值。发现了生物精细构型与人工材质耦合的新现象，揭示了其构效机制，为高性能新型材料研究提供了新原理、新方法。

◆ Lecture 4

Application of powder processing technology in the field of industrial materials

Ms. Xiangqun Yan, Hosokawa Micron Corporation

Hosokawa Micron Group has made remarkable achievements in the development and commercialization of process equipment and systems engineering for advanced materials.

Powder processing technology is an important technology in industrial production. In a typical production process, there are 10 major steps, namely grinding, classifying, mixing, drying, agglomeration, particle design, feed and discharge, laboratory measurement and analysis technology, bag filters, clean room. Hosokawa Micron Group offers “comprehensive process engineering services” to design and provide systems that incorporate many powders handling technologies to meet the most sophisticated application requirements. This lecture mainly introduces the application of Hosokawa process equipment in manufacturing multi-component nanoparticles and designing composite particles (electronic components, batteries and fuel cells, insulation materials, etc.), and the application of its system in powder processing technology for advanced materials such as toner, Nd-Fe-B magnet, barium titanate-based MLCC, etc.

◆ 报告4:「粉体加工技术在各工业材料领域的应用」

细川密克朗株式会社 日本总部中国区销售负责人 严向群

细川密克朗集团在先进材料的工艺设备和系统工程的开发和商业化方面取得了卓越成就。粉体加工技术是工业生产中的一项重要技术。在一个典型的生产过程中，共分有粉碎、分级、混合、干燥、造粒、颗粒设计、进料和出料、实验室测定分析、袋式过滤器、洁净室等10个主要步骤。细川密克朗集团提供“综合工艺工程服务”，设计和提供包含许多粉体加工技术的系统，以满足最复杂的应用要求。本讲演主要介绍使用细川的工艺设备来制备多成分纳米粒子和设计复合颗粒(电子元件，电池和燃料电池，绝缘材料等应用例),和其系统在墨粉、钕铁硼磁铁、钛酸钡基MLCC等先进材料的粉体加工技术上的应用。

◆ Lecture 5

Development and commercialization of cosmetics and pharmaceuticals utilizing PLGA-nanoparticles

Dr. Aiko Sasai, Hosokawa Micron Corporation

Various drug delivery system (DDS) technologies are now attracting a great deal of attention for the horizontal development of existing drugs and the drug discovery of nucleic acids and cell drugs. In particular, liposomes, micelles and polymer particles etc., have been extensively proposed and tested as the DDS carrier particles. Among the various efforts, we have been focusing and researching the lactic acid/glycolic acid copolymer (PLGA) nano-spheres (NS) possessing excellent bio-compatibility and bio-absorbability. Several drug-encapsulated PLGA NS designed by us have been already under clinical tests. In addition, we had also launched cosmetic business involving hair tonics and skin care cosmetics utilizing PLGA NS with their high transdermal absorption function. In this presentation, we would like to introduce our PLGA NS technologies in DDS and functional cosmetic fields.

◆ 报告5:「利用PLGA纳米粒技术促进新一代药品与化妆品的研发与商业化」

细川密克朗株式会社 材料事业部助理经理　笹井爱子 博士

如今无论在现有药物的技术进步还是核酸药物及细胞药物的突破创新中，各种药物输送系统（DDS）技术已经吸引了各方面的极大关注、特别是以脂质体、胶束和聚合物颗粒等微粒作为DDS载体的技术已被广泛地采用和测验。在众多的研究对象中，我们一直致力于研发具有良好生物相容性和生物吸附性的乳酸/乙醇酸共聚物（PLGA）的纳米粒，并实现了多项自行设计的载药PLGA-NS（纳米球）的临床试验。此外，我们还将该高效透皮吸收技术成功运用于生发/育发和护肤/化妆等功能性化妆品领域。在本讲演中，我们将详细介绍该PLGA-NS技术在DDS和功能性化妆品领域的应用成果。

Followed by 同期举办粉体会议

先进陶瓷粉体工艺技术国际会议
International Symposium on Powder Processing Technology for Advanced Ceramics

Date : Wednesday, Nov. 20 and Thursday Nov.21, 2019
Place : Shanghai Institute of Ceramics, Chinese Academy of Science (No.1295, Dingxi Road, Shanghai 200050, P.R.China)
Organizer : Shanghai Institute of Ceramics, P.R.China (SICCAS)
Co-organizer: The Society of Powder Technology, Japan (SPTJ)
Sponsor : Hosokawa Powder Technology Foundation, Japan
URL: http://ceramics.ynu.ac.jp/ISPPTAC/index.html

◆ **时　　间:** 2019年11月20-21日
◆ **地　　点:** 中国科学院上海硅酸盐研究所 (上海市长宁区定西路1295号)
◆ **主办单位:** 中国科学院上海硅酸盐研究所
◆ **协办单位:** 日本粉体工学会
◆ **赞助单位:** 日本公益财团法人细川粉体工学振兴财团
◆ **会议网站:** http://ispptac2019.csp.escience.cn

公益財団法人 ホソカワ 粉体工学振興財団
Hosokawa Powder Technology Foundation

Since 1928 SICCAS

The Society of Powder Technology, Japan

Process Technologies for Tomorrow
HOSOKAWA MICRON CORPORATION

细川密克朗（上海）粉体机械有限公司
HOSOKAWA MICRON (SHANGHAI) POWDER MACHINERY CO.,LTD

第三届
国际细川粉体技术研讨会

The 3rd International
HOSOKAWA Powder Technology Symposium

时 间： 2019年11月19日

Date： November 19，2019

地 点： 中国科学院上海硅酸盐研究所（上海市长宁区定西路1295号）

Place： Shanghai Institute of Ceramics, Chinese Academy of Science
（1295 Dingxi Road, Shanghai, China）

公益財団法人 ホソカワ 粉体工学振興財団
Hosokawa Powder Technology Foundation

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