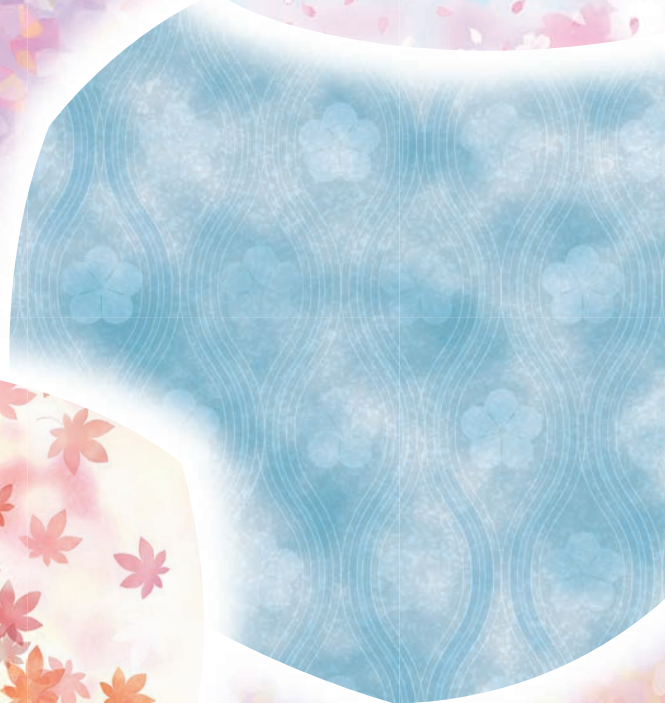
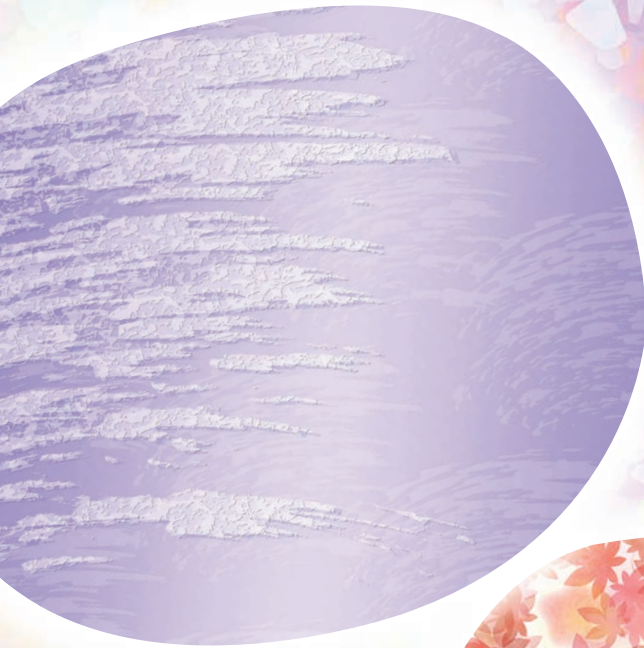




**The Association
of
Powder Process Industry and Engineering,
JAPAN**

2019-2020 Edition



Greeting

I am in my fourth year as a president of the Association of Powder Process Industry and Engineering, JAPAN (APPIE). I am very grateful for many supports that give me the energy to carry out activities for APPIE. Here, I would like to review POWTEX TOKYO 2018, one of our major events of last year, and explain our main plans for this year.

Our medium-term strategy made in 2016 ended in 2018, and the plan successfully reached our goals. I would like to thank the APPIE members, the concerned parties and the APPIE staff for their great cooperation. In 2019, we will implement our measures based on our new medium-term strategy.

POWTEX TOKYO 2018, a major event in 2018, was held at Tokyo Big Sight for three days from November 28. Visitors was 17,966, an increase of 7.0% over the previous event in 2016. On the back of moderate economic growth, we achieved the exhibition to increase visitors and business talks. I deeply appreciate the efforts of those concerned for the exhibition, and I am also proud of the fact that We successfully gave information about advanced and important powder technologies to the APPIE members and the industry people.



At POWTEX TOKYO 2018, the industry, government and academia collaboration was continued and so the autumn meeting of the Society of Powder Technology, Japan (SPTJ) was held at the exhibition. We gave the meeting participants opportunities to collect various information. The mutual exchange between APPIE and SPTJ has been very active; for example, SPTJ carried out planning of exhibitions. Both organizations show successful cooperation playing a major role in the development of powder technology. Executives from NürnbergMesse, Germany also attended the exhibition, and our overseas exchanges are developing step by step.

The new medium-term strategy for 2019 to 2021 focuses on enhancing technical group activities, restructuring the education business, promoting internationalization, and strengthening the organizations.

In technical group activities, unit operation technical groups stimulate "development of basic technologies and notification of important key technologies" and project-oriented technical groups stimulate "dispatch of advanced technology" as a goal. We are also planning to start a new technical group.

As educational business, we will rebuild our educational courses, which have been conducted for many years under the same concept, in a way that is appropriate for today, and hope to contribute to technological advancement for the APPIE members and related industries.

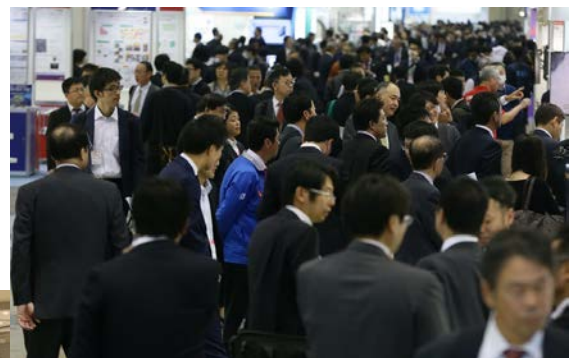
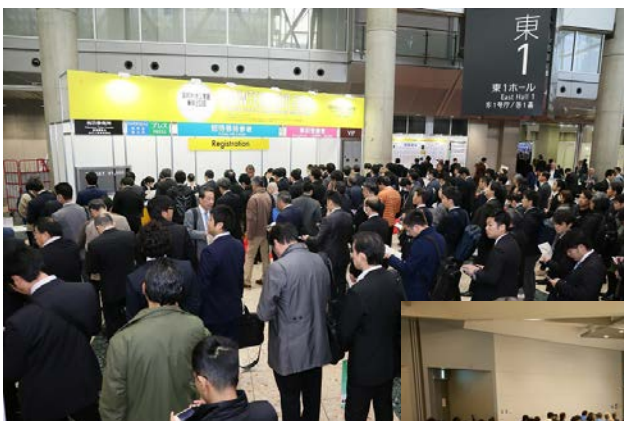
For the development of APPIE, exchanges with other countries are a necessary issue. We believe that it is important to do activities in a realistic way and make steady progress in making a strategic move for future internationalization.

Organization Strengthening Committee has been established as a new permanent committee. This committee will set strategic issues involving multiple committees, and decide policies with the relevant committees, and turn them into concrete measures. The current themes are: establishment of a new technical group, restructuring of educational courses by reviewing, approach to advanced new technologies, participation in activities of overseas companies, holding orientations to guide activities of new members. Based on these themes, we have started ambitious activities.

In order to realize these policies, we will cooperate with the APPIE members, the APPIE staff, and our friend organizations so that we can timely offer useful information. We would like to receive your support and advice as we strive to make progress step by step.

May 2019

Yuki Yoshi Yamada
President, APPIE



About us

The Association of Powder Process Industry and Engineering, JAPAN is a General Incorporated Association which aims to promote the development of powder-related industry through the development and diffusion of industrial technologies relating to powder and to contribute to the improvement of the lives of people and the sound development of the Japanese economy.

For the achievement of this aim, our member corporations which manufacture and market powder machinery and equipment, those which deal with powders such as materials, chemicals, foods, pharmaceuticals and mining and those related to powder process technology including constructions and engineering business collaborate with experts from academia and government on the following activities.

1. Research and studies on improving of powder technology
2. Consulting and funded research on powder technology
3. Provision of results of research and studies on powder technology
4. Promotion of standardization of powder technology
5. Cooperation with internal and external organizations about powder technology
6. Holding seminars and lectures on powder technology and implementation of the continuing education of engineers involved in the powder related industries
7. Holding of exhibitions for the improvement, development and spread of powder technology
8. Producing and selling standard powders for the spread of standardization
9. Activities to promote technical exchange and friendship between members
10. Other necessary activities to achieve the aims of the association

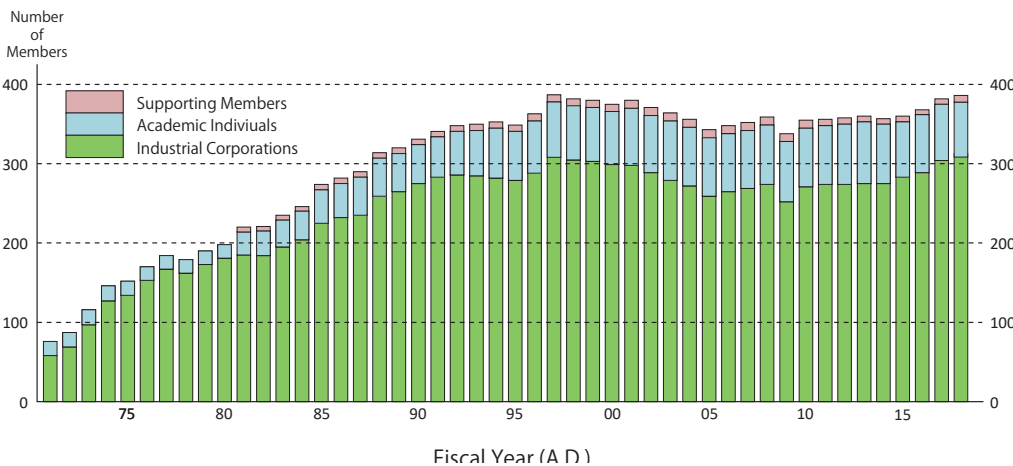
Membership

Members

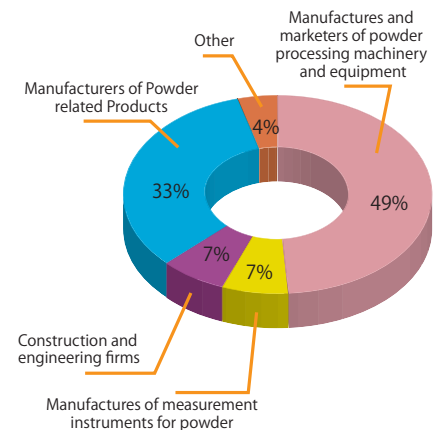
as of 2 Aug 2019

	Full Members		Supporting Members	Total
	Corporations	Individuals		
	322	69	7	398
Total	391		7	398

Change in Number of members



Classification of Industrial Corporations by Category



Activities

Technical Groups

20 technical groups are formed to study technical problems and advance powder technology together among APPIE members. They are run by experienced persons in industry and experts in academia and public research institutions. Each group holds meetings 2 to 3 times a year. In the meeting, members exchange technical information such as new products and new R & D. Occasionally technical tour of new plants are planned and implemented by the groups.

POWTEX

Exhibitions called POWTEX TOKYO and POWTEX OSAKA were started in 1976 and in 1993, respectively, and are held every year alternatively in Tokyo and Osaka. Lectures and symposia are held in conjunction with the exhibition. Besides lectures and symposia, there are unique events taking place such as Overseas information seminar, Latest information forums and industry, academia and government linkage fair.

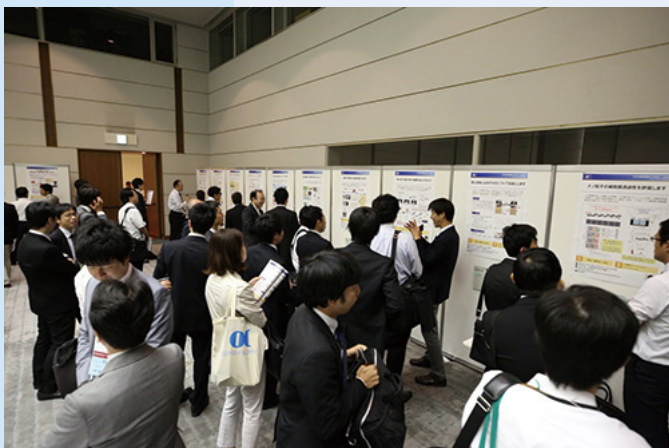
International Liaison

The following International Liaison activities are made.

1. Increasing international recognition of APPIE by setting up a booth of APPIE in overseas exhibitions (Europe, America and Asia) and transmitting annual reports in English toward the rest of the world.
2. Surveying events related to powder process and technology in the world. Providing collected information to APPIE members and other companies through the magazine and web-site.
3. Planning and implementing technical tours of overseas exhibitions and companies related to powder processing.

Standards

APPIE is devoted to making draft JIS (Japanese Industrial Standards) and amending it. It has also taken an active role as a subsidiary to the Japanese Industrial Standards Committee (JISC) in support of ISO/TC24, Particle characterization including sieving. Furthermore, APPIE establishes and maintains its own standards and guidelines. The Standardization Seminar is held every year in order to introduce the results of these standardization activities and to promote the use of these standards.



Publishing Business

Periodical Publication

Funtai Gijutsu (powder technology)

A monthly magazine with approximately 100 pages is published. It contains several articles on recent technical topics and announcements of events and meetings.

APPIE annual REPORT

An annual report in English has been published since 2007 to introduce the activities of APPIE to the world.

Book Publication

Several books are published every year as outcomes of activities of committees and technical groups.

Research and Study

Survey reports are published as the achievement of survey research conducted by committees and technical groups. Besides publication of the reports, lectures, seminars, symposia, etc. are planned and held to disseminate the achievement of survey research to public.

Technical Center of Powder Technology

Three divisions are formed in the Technical Center of Powder Technology: Continuing Education Division, Standard Powders Division and Industry-Academia Collaboration Division. The Continuing Education Division plans the lifetime learning program and holds lectures and seminars, etc. The Standard Powders Division produces and sells JIS test powders and APPIE standard powders. Industry-Academia Collaboration Division coordinates collaboration between APPIE member companies and academic experts.

Technical Information Exchange Meetings

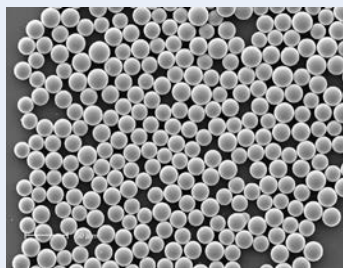
Regional meetings for APPIE members are held in Tokyo, Nagoya, Osaka and Fukuoka. The meetings are held 3 or 4 times a year in each region. APPIE members exchange various information and deepen a friendly relation in a get-together.

Standard Powders Division

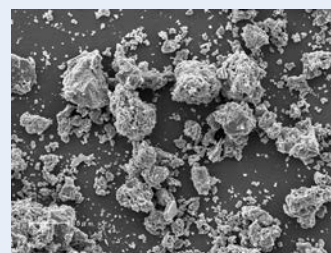
The Standard Powders Division produces and sells JIS Test Powders and APPIE Standard Powders.

- ① JIS Z 8901 Industrial Test Powders 1 (Powders existing in natural environment as dust are standardized)
Class 1, Class 2, Class 3 (Quartz Sand) / Class 4, Class 9 (Talc) / Class 5, Class 10 (Fly Ash) / Class 7, Class 8, Class 11 (Kanto Loam) / Class 12 (Carbon Black) / Class 16, Class 17 (Calcium Carbonate, Heavy)
- ② JIS Z 8901 Industrial Test Powders 2 (Narrow particle size distribution)
Glass Beads (GBL30 ~ 100, GBM20 ~ 40 : 7 classes differing in diameter, density, and refractive index)
White fused alumina (No.1, 2, 3, 4, 5, 6 : 6 classes differing in diameter)
- ③ SAP Test Powders(APPIE Standard)
- ④ E-Test Dusts(for the electrotechnical products)
- ⑤ Sub-micron range reference particles for calibrating particle size measurement apparatus (Fused silica sphere) / Reference powders for specific surface area (Titanium dioxide and carbon black) / Lycopodium / Soma standard sand /3-components mixture / Quartz dust / Air cleaner test dusts, Fine and Coarse

◆ Formore infomation, please refer to the APPIE Homepage (<http://www.appie.jp/en/testpowders/>)



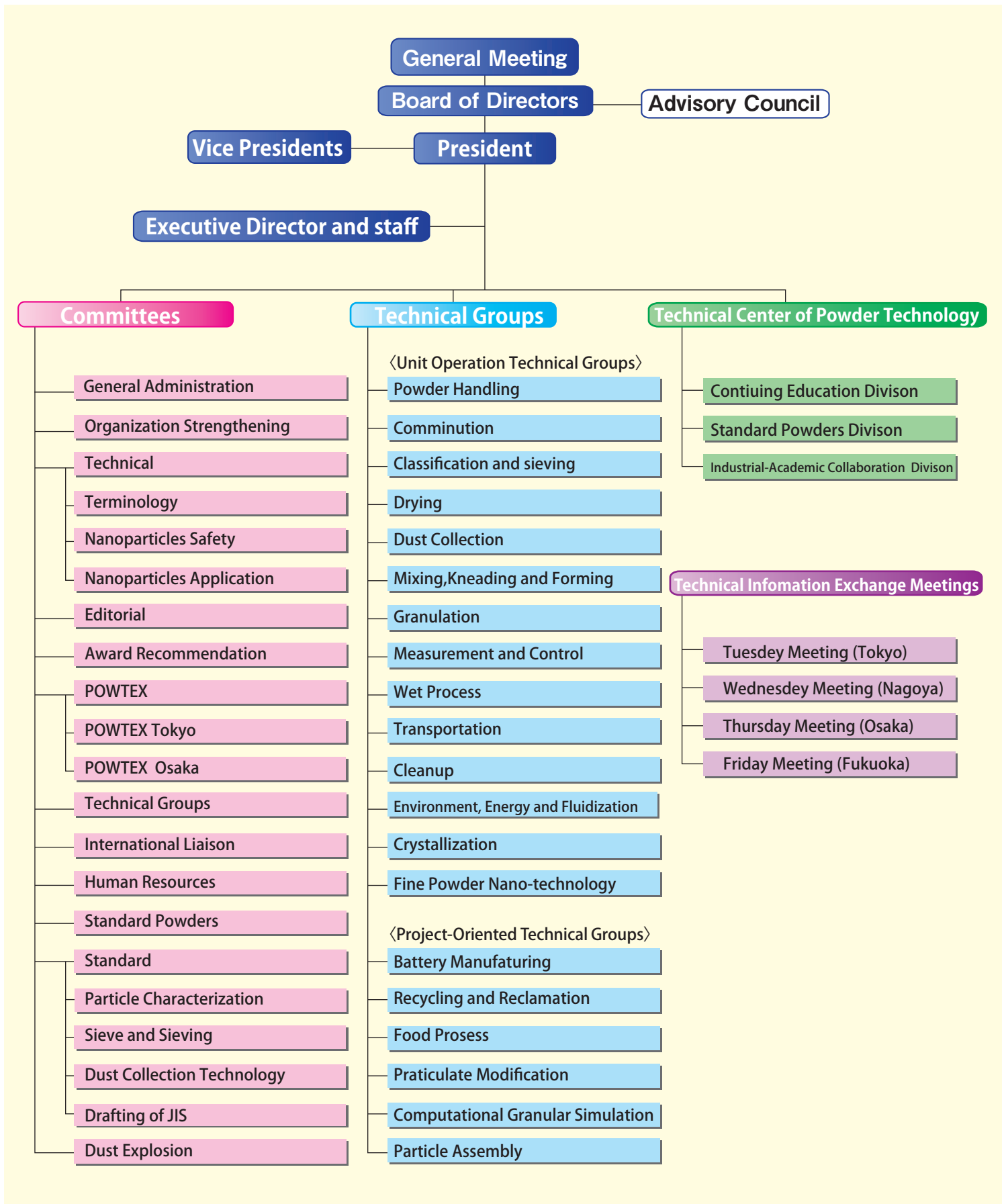
JIS Test Powders 2 GBM-20



JIS Test Powders 1 Class 8 KANTO loam

Operating Organization

The Association is operated by the organization as follows



Technical Group Activities

Group Names & Recent Subjects

Powder Handling <ul style="list-style-type: none"> Hazard and safety control, sanitation and cleanliness of machinery and equipment Development of handling method for fine powder in nano range Development of energy saving and eco-oriented (or environmentally sound) machinery and equipment Development of simple and accurate powder transfer device/tool between equipment Development of simple/effective devices for measuring powder properties and their application to material handling
Comminution <ul style="list-style-type: none"> Mechanochemistry Comminution of soft materials Selective comminution for recycling of waste materials Nano-dispersion technology (deagglomeration down to primary particles of agglomerated nano-particles) Composite process of particles Surface modification of particles
Classification and Sieving <ul style="list-style-type: none"> Optimized procedure for closed circuit grinding system Elaborate wet classification in industrial scale Component separation of recycling process Application of sieves to particle classification Ultrasonic vibration technology for screening machines Anti-corrosive and abrasive sieves
Drying <ul style="list-style-type: none"> Energy efficiency, antipollution Sanitary, non cross-contamination, sterilization Multi-purpose and/or multi-performance dryer (e.g. granulation and inclusion of pharmaceutically active substances) High quality and uniform drying of functional materials to add extra value
Dust Collection <ul style="list-style-type: none"> Establishment and standardization of estimating method of cleanable filter media Simultaneous removal of hazardous gases, wet dust, chemicals with trace quantities, and dust particles from flue gas Characterization of suspended particulate matter and its removal technique
Mixing, Kneading and Forming <ul style="list-style-type: none"> Ordered mixing and particle design (pharmaceutical, cosmetic, electric and bio-materials) Hybridizing and functionalizing of powders (polymer, magnetic and battery) Development of characterization of mixing and kneading processes Near-net shaping Sanitary improvement of facilities Improvement of pharmaceutical direct tableting technique
Granulation <ul style="list-style-type: none"> Micro design of particles and granules Coating and granulation materials Functional modification of granular materials classified by industry Development of precise functional granulators Granulation techniques in recycling resources Granulation technology in energy area
Measurement and Control <ul style="list-style-type: none"> Correspondence to ISO Standard reference particles Measurement for nano materials Automation of measurements
Wet Process <ul style="list-style-type: none"> Precise control of coagulation, dispersion, adhesion and coating of particles in aqueous and non-aqueous media Handling of highly concentrated slurries Advancement of separation technology in filtration and dewatering
Transportation <ul style="list-style-type: none"> Response to the needs of wide variety of products and diversification Prevention of contamination Energy-saving transportation Mass transportation
Cleanup <ul style="list-style-type: none"> Separation techniques and micro-environment Contamination control (fine particles, microbes, chemical materials) Age of Gbit Clean-Enough (optimal cleaning) Mini-environment and local cleaning (for 300mm wafers) Microorganism contamination control and validation (source origins, chemical filters) cGMP, HACCP and validation Application of ISO standard
Environment, Energy and Fluidization <ul style="list-style-type: none"> Next generation stoker furnace, and gasification and slagging combustion furnace Establishment of scale-up method in granulation process and development of binderless granulation process Biomass utilization technologies such as combustion and gasification Liquid fuel production technology from biomass Combustion technology of automobile shredder residue
Crystallization <ul style="list-style-type: none"> Control of polymorphism in crystals Mixing operation and crystallization phenomena in crystallization Rigorous calculation of phase equilibrium Continuous operation Collaboration with the crystallization Party for Fine Particle Formation and Functionalization
Fine Powder Nano-technology <ul style="list-style-type: none"> Aggregation and adhesion behavior control Characterization technology for fine powder, interface structure, interaction between particles and performance Development of material performance based on fine powder design High reliability yield and low cost technology
Battery Manufacturing <ul style="list-style-type: none"> Batteries for hybrid vehicles (Ni-metal hydride battery, Li-ion battery, capacitor) : high-power capability, high reliability, long life, cost-reduction Batteries for mobile appliances (advanced Li-ion batteries) : improvement of energy density using alloy-based negative electrodes and high capacity positive electrodes. Fuel-cell system for vehicles, residences and mobile appliances : high-power capability, cost reduction, marketing, infrastructure of hydrogen supply New material development for batteries, fuel cells, hydrogen storage
Recycling and reclamation <ul style="list-style-type: none"> Advanced separation technology Reuse, Reduce & Recycle (3R) of metal resources Resolution & reproduction of plastics Conversion technology of biomass energy Assessment of environmental burden Load reduction in final landfill site
Food Process <ul style="list-style-type: none"> Food reliability ① Indication (expiration date, place of origin, etc.) ② Prevention of contamination (allergen, etc.) ③ Trace system Food safety (pesticide residue, etc.) Healthy intention (Development of nutritional supplements and low-calorie food, etc.) Environment (Global warming preventive measures, etc.)
Particulate Modification <ul style="list-style-type: none"> Process validation, Scale-up Characterization of particulate materials Conversion of empirical work into technology Development and industrialization of new particulate materials Composite and functional particles Ordered Particle System Industrialization of drug delivery system Implementation of DDS Process of continuous manufacturing
Computational Granular Simulation <ul style="list-style-type: none"> Practical application of granular flow simulations Simulation of a granular flow in an arbitrary-shaped domain Gas-solid-liquid three-phase flow simulations Parallel computation of granular flow simulations Development of large-scale numerical methods for industrial processes Modeling of non-spherical particle behavior Development of multi-scale models
Particle Assembly <ul style="list-style-type: none"> Developing dry and wet process technologies on nanoparticle assembly and their hybridization Developing technologies to fabricate 3D functional particulate layers with precisely-controlled distributions and orientations of particles Developing technologies to control structures and functions of particle-particle, and particle-substrate interfaces. Developing numerical simulation tools for process analysis and design on particle-assembly Developing technologies to utilize materials-informatics (MI) on particle assembly



The Association of Powder Process Industry and Engineering, JAPAN

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