ACTIVITIES AND SKILLS

The powder technologies and the processes engineering platform bring together research and development on the behaviour of powders, prevention/characterisation of nanomaterials and more generally gas-solid processes.

Using a multidisciplinary and multi-scale approach, we support companies for training, research and development of processes adapted to their needs.

SERVICES

- RESEARCH AND DEVELOPMENT PROJECTS
- PROJECT EXPERTISE AND MONITORING
- SERVICE PROVISION
- TRAINING

RESEARCH AND DEVELOPMENT THEMES

- PHYSICAL, TEXTURAL, MORPHOLOGICAL CHARACTERISATION AND FLOWABILITY OF POWDERS (MICRONIC, SUBMICRONIC AND NANOMETRIC)
- SOLVENT-FREE SOLID SYNTHESIS
- BIOMASS CHARACTERISATION
- GAS-SOLID FLUIDISATION METHODS: HYDRODYNAMICS, REACTION, ATTRITION, COATING AND NUMERICAL MODELLING
- DESIGN, DETECTION, SAMPLING AND CHARACTERISATION (MARKING AND ELECTRONIC NOSE) OF EXPOSURE TO NANOMATERIALS
- MINIATURISATION OF FLUIDISED BED PROCESSES

With 25 years of experience, our team offers its services to the industry in research and development, and quality services with rigorous methodologies, which guarantee reliable results.
CHARACTERISATION OF PHYSICAL AND TEXTURAL PROPERTIES OF POWDERS

MEASUREMENT OF THE SIZE DISTRIBUTION AND THE MORPHOLOGY OF POWDERS FROM MILLIMETRES TO NANO-PARTICLES

- Dispersing, chemical and mechanical deagglomeration of the agglomerates.
- Procedures and measurement methods adapted to each powder size (macro-micro-nano).
- Analysis of the particle shape.
- Statistical analysis of data.

TEXTURAL ANALYSIS OF POWDERS

- Measurement of the true and apparent density of powders.
- High-rate surface characterisation (mesopores and micropores): specific surface area, pore distribution, total pore volume.
- Mercury porosimetry analysis: pore size distribution, total pore volume, mean diameter and information on the pore geometry.
CHARACTERISATION OF POWDER FLOWABILITY PROPERTIES

POWDER SHEAR STRESS CELLS

- Measurement of flow properties and cohesion of powders.
- Study, analysis and evaluation of the different types of flow.
- Determination of the flow function.
- Measurement of the angle of friction at the wall.
- Design of silos.
- Measurement of permeability, consolidation and aeration of the powder bed.

POWDER RHEOMETER-FT4: FREEMAN TECHNOLOGY

RING SHEAR TESTER RST-XS: D. SCHULZE

POWDER SHEAR STRESS CELLS

POWDER SHER STRESS CELLS

POWDER FLOWABILITY TESTING PLATFORM: QUALITY CONTROL

- Quantify, class, control and compare the type of powder flows.
- Measurement tests: angle of slide and angle of repose.
- Measurement of packed and non-packed densities: Hausner index.
- Powder dispersion test.

BULK AND TAPPED DENSITIES

ANGLE OF REPOSE

SILO TESTER

ANGLE OF SLIDE

DISPERSIBILITY

转移技术从学术研究到工业。
Micro and nano-coating of materials.

Production of composite materials: mechanosynthesis and mechanochemistry.

Host / guest particles mechanofusion.

Solids production-spray drying technology.

Analyses, control and optimisation.

DESIGN AND COATING OF SOLIDS WITHOUT SOLVENTS, MECHANOSYNTHESIS, MECHANO FUSION AND SPRAY DRYING

DESIGN AND COATING OF SOLIDS WITHOUT SOLVENTS, MECHANOSYNTHESIS, MECHANO FUSION AND SPRAY DRYING

DEVELOPMENT OF FLUIDISED BEDS PROCESSES: MICRO-MESO AND NANOPOWDERS

Design, numerical modelling of fluidised bed processes.

Experimental and theoretical studies: hydrodynamics, heat transfer and reaction.

Particle degradation study and analysis (attrition).

Solid preparation: granulation.

Development, experimental and theoretical study of miniaturised fluidised beds.

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