

Tapped Density
 Density
 Gas Pycnometry
 Particle Size
 Molecular Weight
 Dynamic Image Analysis
 Chemisorption
 BET Surface Area
 Gas Adsorption
 Specific Surface Area
 Powder Characterization
 Breakthrough Curves
 Investigation of Catalysts
 Laser Diffraction
 Pore Analysis
 Zeta Potential
 Conductivity
 Electroacoustics
 Electrophoretic Light Scattering
 Water Vapor Sorption
 Contract Analysis
 Particle Shape
 Nanoparticle Analysis
 Dynamic Light Scattering
 Vapor Sorption



Characterization of
 particles • powders • pores



Dispersions and emulsions

Nanoparticle analysis in terms of size, molecular weight and zeta potential

The BeNano series from the manufacturer BetterSize is the latest generation of nanoparticle size and zeta potential measuring instruments for the range 0,3 nm – 15 µm. The systems combine dynamic light scattering (DLS), electrophoretic light scattering (ELS) and static light scattering (SLS) and enable measurements of particle size, zeta potential and molecular weight. Applications are broad and range from pharmaceutical and cosmetic formulations, food and beverages, proteins and biomacromolecules to paints, inks and coatings.



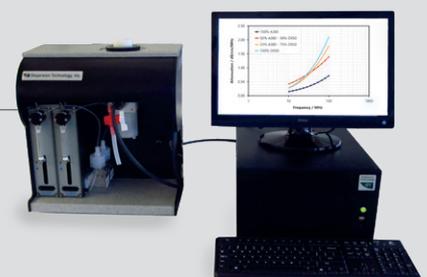
Determination of particle size and shape

The Bettersizer S3 Plus is an outstanding example of the innovative analyzers of 3P Instruments. Research groups are increasingly focusing on the combination of particle size and shape analysis. With a measuring range of 0.01 - 3,500 µm and two integrated high-speed CCD cameras, the Bettersizer S3 Plus collects additional information which a pure laser diffraction device does not provide. Alternative laser granulometers from our portfolio are the Bettersizer 2600 and the Bettersizer ST.



Determination of zeta potential and particle size in highly concentrated dispersions

The analytical instruments of the DT series manufactured by the company Dispersion Technology with CEO Dr. Andrei Dukhin stand for comprehensive investigations of dispersions in original concentration. Without any dilution, concentrated ceramic slurries or similar samples can be characterized regarding their particle size and zeta potential. Further possibilities are described on www.dispersion.com. The DT-1202 with its versatile options is a standard device for the combined application of acoustics and electroacoustics.





Particles and powders

Determination of particle size and shape by laser diffraction and dynamic image analysis in one device

The Bettersizer S3 Plus not only measures the particle size according to ISO 13320 (laser diffraction), but to ISO 13322-2 (dynamic image analysis) as well. With its parallel setup of laser diffraction and additional CCD cameras, a new level of particle analysis is achieved. Convince yourself in test measurements and analyzer demonstrations by 3P Instruments that the quality of dispersions, agglomerates, or oversized particles can be acquired optically and observed.



Complex powder characterization

The fully automatic PowderPro A1 enables the extensive determination of powder properties combined in one single analyzer. Carr angle of repose, Carr angle of fall, Carr angle of spatula, Carr packed bulk density, Carr loose bulk density, Carr dispersibility, Carr uniformity as well as Carr cohesion can be measured. Furthermore, the PowderPro A1 determines the Carr angle of difference, Carr compressibility and voidage, additional to flowability and floodability indices of the powder fill. The analyzer can be operated via tablet computer and allows digital image processing.



Bulk, apparent, tapped and true density, and flowability

For the determination of the flowability or bulk density, the Hall flowmeter HFlow-1 and the Scott volumeter BeDensi B1-S are suitable choices. Regarding tapped density of powders and granulates, we offer the BeDensi T series with one, two, or three stations for an ideal price-performance-ratio. The gas pycnometer 3P densi 100 not only impresses as a compact and automatic operating density analyzer for powders and solids, but as a complete density powder set as well.





Surface area and pores

Gas adsorption: BET surface area and pore analysis

The specific surface area and pore size distribution are key characteristics for the analysis of surface properties of micro and nano porous materials. The 3P sync series offers an optimal price-performance ratio with up to 4 measuring stations in one dewar. The 3P meso provides additional flexibility for the measurement of BET surfaces and mesopores. The 3P micro series allows high-resolution micropore analyses, including parallel measurements at the measuring ports with different gases. A major advantage of the 3P sorption devices is their flexibility.



Gas adsorption: Measurements at temperatures in the range of 82 K – 323 K

The measurement of sorption isotherms of different adsorptives often failed in the past due to the realization of relevant measuring temperatures. The temperature controllers of the cryoTune series offer a solution for this problem and can be used with modern gas sorption devices of different manufacturers. The temperature range from 82 to 323 K can be realized using only liquid nitrogen for cooling: space and energy saving as well as completely noiseless! With the cryoTune, the recommendations of ISO 9277 or IUPAC, e.g., using Ar 87 K or Kr 120 K for scientifically correct results are very easy to implement.



Catalysts, adsorbent materials, MOFs: Chemisorption, TPx and mixed gas sorption

Our product portfolio also encompasses the mixSorb analyzer series for adsorbent materials and the AMI analyzer series for catalysts – we offer the measurement technology, scientific know-how, and the associated support. Variable absorber sizes of the mixSorb analyzers ranging from 1 cm³ (MOFs, COFs, or other) up to 100 cm³ volume (industrial adsorbents) impress just as much as the diverse chemisorption and TPx options of the AMI-300 analyzer family. Both analyzer series operate under standard or high pressure, in variable temperature ranges and with specific measuring cells, depending on your analytical task.



The LabSPA (Laboratory for Scientific Particle Analysis) offers a wide range of contract analyses for the characterization of dispersions, powders and porous materials.

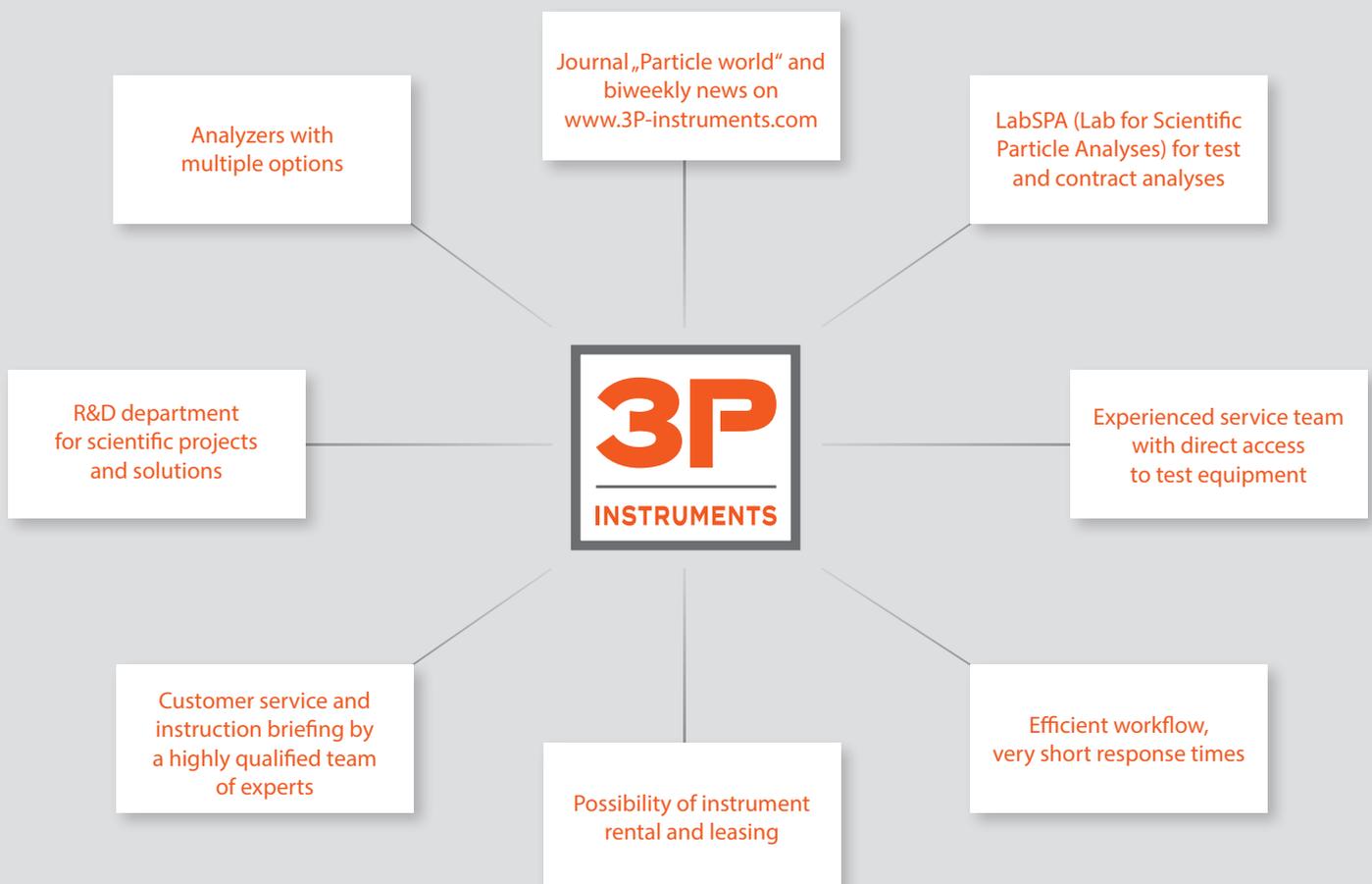
Contract analysis can be performed as individual analyses, call-off orders for a large number of samples in a defined period of time or as a comprehensive laboratory project. Individual sample preparation and/or measurement routines can be coordinated with our excellently trained laboratory staff.

We are looking forward to your inquiry and we will gladly submit you an offer. An overview of our services and further information can be found at:

<https://www.3P-instruments.com/contract-analyses/>

Your partner for particle analysis

3P Instruments offers Europe-wide a range of products and services you can hardly get anywhere else: the comprehensive expertise for the characterization of emulsions and dispersions, of particles and powders as well as of surfaces and pores.



Comprehensive characterization of various materials

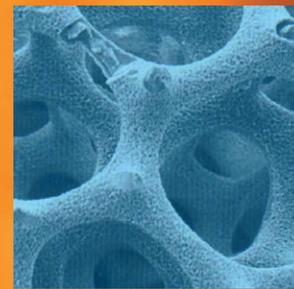
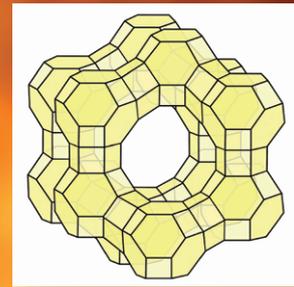
Dispersions
and emulsions



Particles
and powders



Surfaces
and pores



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