

# COURSE 2024

## PARTICLE SIZE CHARACTERIZATION

### Why the course Particle Size Characterization?

Particle characterization concerns a wide range of materials and products: ranging from large molecules (proteins and polymers), micelles, micro-emulsions, viruses, droplets, latexes, fine dust particles, pigments, clay and minerals up to sand and gravel.

Powders and granular material are of key importance in industry. Approximately 80% of the industrial processes deals with such solid matter. In the chemical industry alone, half of the final products and 75% of the semi-finished products is in powder or granular form.

Delft Solids Solutions offers two courses devoted to particle characterization:

In the first 2-day course *Particle Size Characterization* the overall basic principles and definitions of particle size and particle shape are being discussed and particle size distribution techniques are being explained and compared. Pros and cons of the techniques are highlighted and common pitfalls in particle size characterization are interactively discussed. Accuracy, quality and quality control are separate topics that are dealt with together with selection of appropriate measurement techniques. A fully-equipped laboratory is located in the same premises as where the course is taught, which enables a perfect blend between theory and practice.

This course is in close relation to the 1-day course *Porosity and Surface Area Characterization*. Both courses are scheduled together in order to enable attendance of both courses in a series of 3 days.

### For whom?

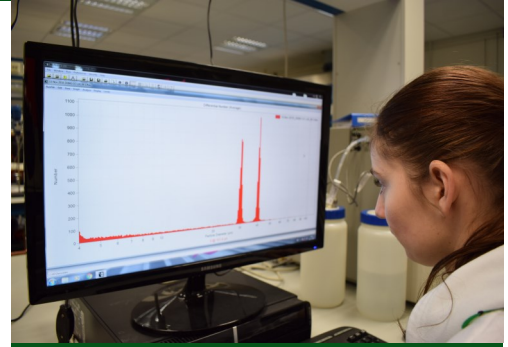
You are an operator, analyst, lab manager or technologist and are directly involved and/or interested in the characterization of particles. The course content is tailored to post-bachelor (Post-HBO) level, however the combination of theory and practical examples makes the course suitable for both experienced analysts at vocational level (MBO) or VAPRO-C as well as participants with academic background.

### Program

The central theme addressed in this course is how to define and characterize the size and shape of a particle or a set of particles.

Topics that are being discussed are:

- Introduction solid matter and particles
- Definitions particle size and shape
- Sampling
- Sample preparation
- Sieving
- Sedimentation
- Electrical Sensing Zone (Coulter principle)



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- Forward light scattering (Laser Diffraction)
- Dynamic light scattering
- Microscopy and image analysis
- Comparison of techniques
- Quality, reference materials and standards

### Methodology

The course is organized by and at the premises of Delft Solids Solutions, where also a fully equipped laboratory is available. In this laboratory the most important techniques in the area of particle size and shape characterization including sampling and sample pre-treatment equipment is available.

Practical demonstrations of the various types of equipment are used to alternate with the various lectures. Emphasis lies on the practical use and application of the techniques and how to translate results to the practical situations.

### Duration

The course consists of two successive days of 8 hours each.

### End result

After attending this course you will have a good overview of the available techniques for particle characterization. You know the underlying principles of the various methods, as well as the reliability of the measurement results. You know how to perform sampling and to interpret the results and judge the quality of it.

### Certificate

Upon completion of the course you'll receive a certificate of participation.

### Location and dates

This course is held at the premises of Delft Solids Solutions, Molenweer 2B, 2291 NR Wateringen, The Netherlands.

The next course will be held on November 26<sup>th</sup> and 27<sup>th</sup>, 2024.

### Financial investment

The investment in this 2-day course amounts to € 1.650,- ex. VAT.

In combination with the course *Porosity and Surface Area Characterization* (3 successive days in total) the overall investment is € 2.300,- ex. VAT.



### Contact

For more information on this course, visit our website [www.solids-solutions.com](http://www.solids-solutions.com) or scan the QR code. You can also reach us at +31 174 271 460 or via [info@solids-solutions.com](mailto:info@solids-solutions.com)



The course is hosted by the following lecturers:

- ◆ Course leader Dr. Ir. G.M.H. Meesters (photo left), Formulation expert and Professor at Delft University of Technology.

Other lecturers:

- ◆ L.A.A. Peffer (photo middle), General Director, Delft Solids Solutions, served 25 years at the Delft University of Technology as lab manager in the field of particle, texture and surface characterisation.
- ◆ S. Groen (photo right) is affiliated to Delft Solids Solutions since 2017 as a researcher. Specialized in fundamental assessment of particle size from nm to mm of solid materials and bulk behaviour applications such as dustiness both in  $\mu\text{m}$  and nm range.



Delft  Solids Solutions



EXPERTS IN PARTICLE TECHNOLOGY