



Wir schaffen Wissen – heute für morgen

**Paul Scherrer Institut**

Serge Biollaz

**Introduction to the topic “dust measurement”**

- Dust = solids in the gas
- Solids in syngas may have an influence how to sample the gas, in order to get correct data about the compounds you want to measure (avoid sorption, reactions, etc.).
- Solids measurements includes information about:
  - concentration of particles
  - particle size distribution
  - chemical composition
  - physical properties of particles.

**Independent of the motivation for dust measurement, there is a need for a working group on “particles”**

# Degree of difficulties for different gas families

Temperature at sampling point	Content of DUST	Content of WATER	Content of organics ('tars')	Compounds organic	Compounds in-organic	total		
1,000 → 4	>10,000 → 5	>80°C → 5	>10,000 → 5	Manual: Multiply x 1	Manual: Multiply x 1			
800 → 4	<10,000 → 5	<80°C → 3	<10,000 → 3					
600 → 4	<1000 → 3	<60 → 2	<1,000 → 2	online: Multiply x 10	online: Multiply x 5			
400 → 3	<100 → 2	<40 → 1	<100 → 1					
200 → 2	<10 → 1	<10	<10					
ambient	<1	<0°C	<1	Pressure:*) Multiply x p[bar]/10	Pressure:. Multiply x p/10			
°C	mg/m <sup>3</sup>	dewpoint local pressure	mg/m <sup>3</sup> dewing	Pressure:*) factor for extractive sample preparation				
TF	+	DF	+	WF	+	OF	=	DEGREE
2+		2+		1+		2	=	normal application 7 (=medium)
4+		5+		3+		2	=	e.g. high dust fluidised bed sampling 14 high

## Needs/application for particle measurements

abrasion

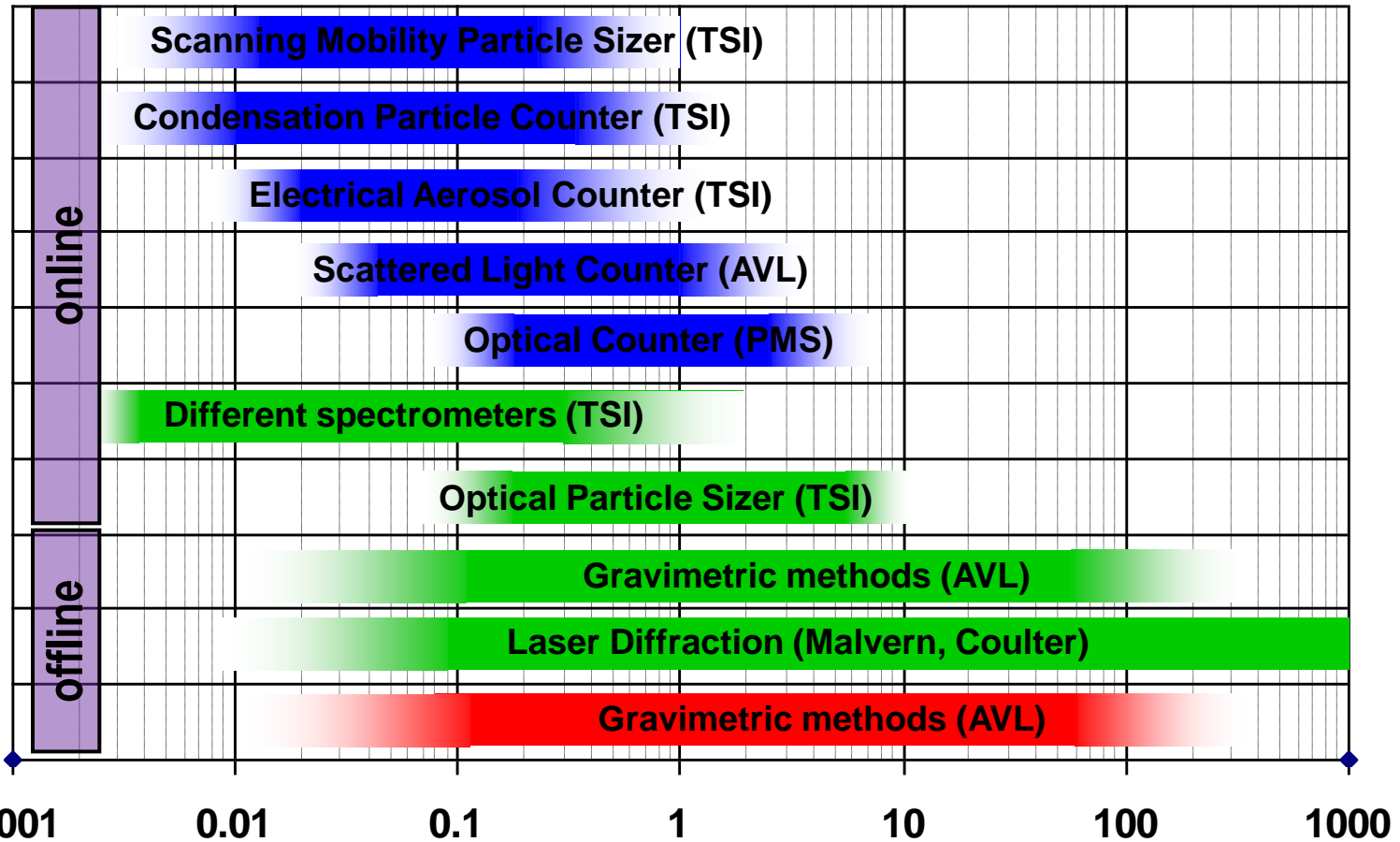
bed material

fragments

Particle counter

Particle sizer

Particle composition



A selection of technologies for particle measurements

Particle diameter [μm]