

▪ **Background**

Coatings are an ideal protection for different kind of materials. They protect against moisture, UV radiation, rust and other influences. Additives can enhance the properties of the coating, e.g. the scratch resistance. Like in this application note these additives can be made out of non-polar surface modified silicon dioxide nanoparticles.

▪ **Measurements**

Before measurement the sample was diluted using isopropanol and treated with ultrasound for 30 s to break-up agglomerates. In total 2 samples have been measured, each of them 5 times. Each measurement was done with a fresh solution. For the measurements the SALD-2300 with the wet sampling unit for small sample volumes (BC-23) was used.

▪ **Results**

Fig. 2 shows the volume based particle size distribution of the two samples, Table 1 contains the corresponding measurement results.

Measurement 1 to 5 respectively measurement 6-10 belong to the different samples.

The measurements are nicely reproducible with a mean diameter of 22 nm for the first sample and a mean diameter of 52 nm for the second sample.

▪ **Results**

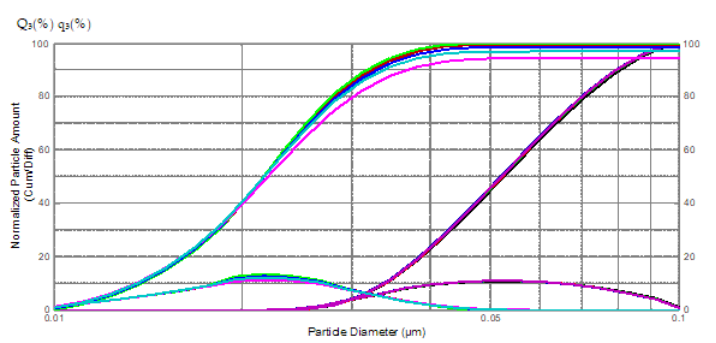


Fig. 2: Volume based particle size distribution of SiO₂

#	Median	Modal D	Mean V	Std Dev.	25%D	50%D	75%D
1	0,015	0,014	0,016	0,130	0,012	0,015	0,020
2	0,015	0,014	0,016	0,127	0,012	0,015	0,020
3	0,015	0,014	0,016	0,137	0,012	0,015	0,019
4	0,015	0,014	0,016	0,141	0,012	0,015	0,019
5	0,015	0,014	0,016	0,137	0,012	0,015	0,019
6	0,038	0,039	0,039	0,124	0,032	0,038	0,047
7	0,038	0,039	0,039	0,123	0,031	0,038	0,047
8	0,037	0,039	0,039	0,123	0,031	0,037	0,047
9	0,037	0,039	0,039	0,123	0,031	0,037	0,047
10	0,037	0,039	0,039	0,123	0,031	0,037	0,047

Table 1: Volume based results of SiO₂

▪ **Discussion**

SALD-2300 in combination with BC-23 can successfully be used to measure nanoparticles respectively additives for coatings.