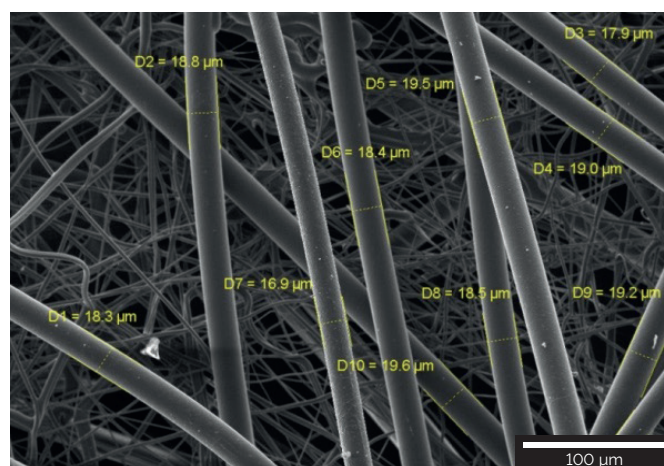
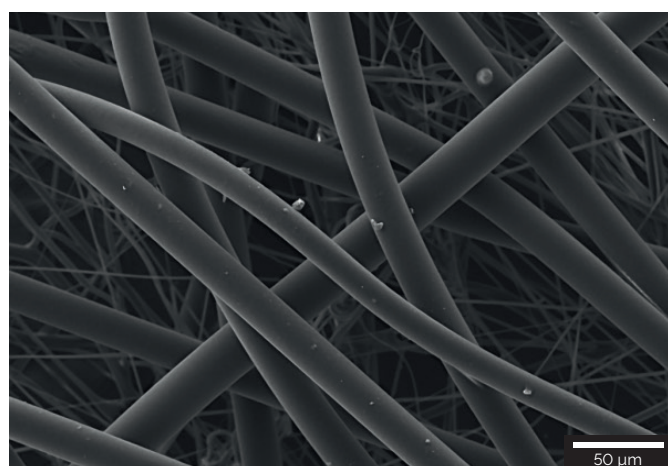


Investigation of fibres for nonwoven fabric and their size, coated with C, Au and imaged in low vacuum

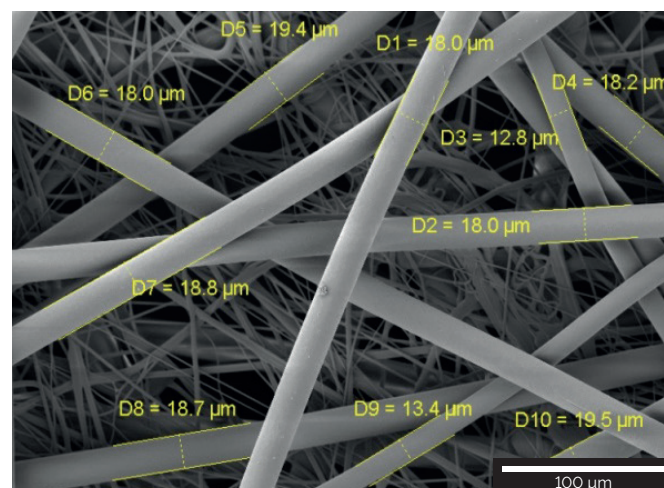
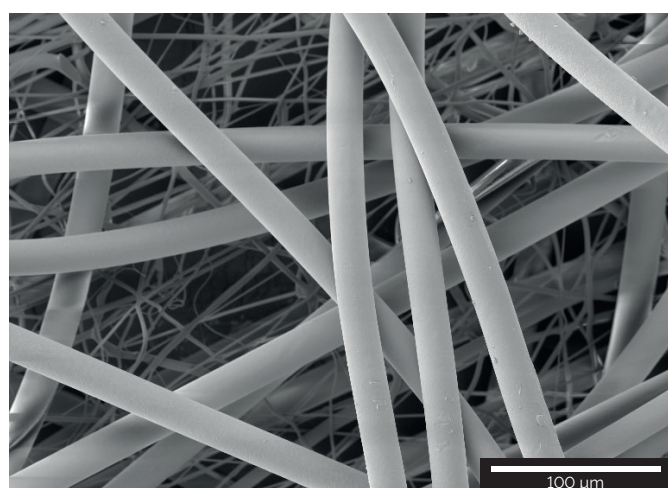
A nonwoven fabric is a fibrous material made from bonded fibres of various lengths interwoven together by means of chemical, mechanical, heat or solvent processes. These fibres can be either synthetic or natural and are generally nonconductive. While in the past imaging these types of samples with SEM was challenging, nowadays, different effective techniques against charging are available.

There are two basic approaches that can be implemented when using TESCAN SEM systems to overcome charging. One option is to coat the samples by sputtering a thin layer of carbon or a metal such as gold or platinum. Another option is to investigate the sample under low vacuum conditions (in VEGA up to 2000 Pa with UniVac is possible). Both methods are effective and allow the fibres to be easily imaged and measured. For the purposes of measuring samples,

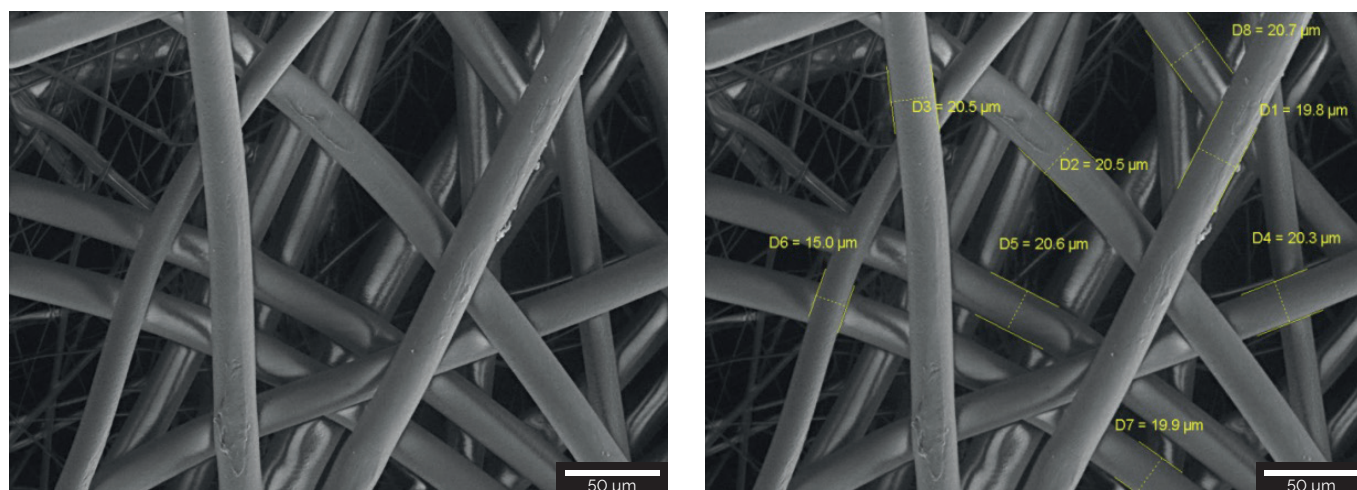
all TESCAN microscopes are equipped with Analysis & Measurement, a dedicated software module that allows measuring different features of samples. This software allows listing and exporting detailed measurements and statistics that are important in the production and especially quality control of fibres. The images below show different examples of measuring coated and uncoated fibres imaged at high and low vacuum respectively.



▲ Fig. 1: (Left) SEM image of fibres coated with carbon. (Right) Fibres measured.



▲ Fig. 2: (Left) SEM image of fibres coated with gold. (Right) Fibres measured.



▲ Fig. 3: (Left) SEM image of fibres imaged at low vacuum (60 Pa). (Right) Fibres measured.

Measurement	
Show: Objects Distances Save table	
Object name	d [µm]
D1	18.0
D10	19.5
D2	18.0
D3	12.8
D4	18.2
D5	19.4
D6	18.0
D7	18.8
D8	18.7
D9	13.4
Current position: x = 292.6 µm, y = 43.1 µm, Y = 135 ADU	

Measurement	
Show: Statistics All Save table	
Value	d [µm]
Obj. count	10
Summation	174.6
Min. value	12.8
Max. value	19.5
Mean value	17.5
Std. dev.	2.3

▲ Fig. 4: Example of measurement results: size of measured fibres (left) and statistics (right).